

वार्षिक प्रतिवेदन Annual Report 2019-20

अखिल भारतीय समन्वित खुम्ब अनुसंधान परियोजना
All India Coordinated Research Project on Mushroom



भा. कृ. अनु. प. - खुम्ब अनुसंधान निदेशालय
ICAR-Directorate of Mushroom Research
चम्बाघाट, सोलन - 173213 (हि. प्र.), भारत
Chambaghat, Solan -173213 (H.P.), India



Preface

It is ironical that problem of widespread protein malnutrition prevails in so-called countries and gaps between demand and supply of protein is likely to widen further because the production of alternative sources of proteins not kept pace with the population growth. Deficient intake of protein, particularly good quality protein is the main dietary defect in many countries in general and in India in particular.

Over the recent past, many factors have worked together to expedite growth in the agriculture sector in India. Due to improved conventional agricultural practices our nation has reached the self-sufficiency in majority of the food grain production. But still our country is ranking at 97th position in Global Hunger Index and 15.2% of our populations are malnourished (IFPR-International Food Policy Research Institute report, 2016). A survey conducted by Indian Standard Market Research Bureau in 2016 showed that protein intake of 88% of people was less than the ideal amount of consumption. The depleting land and water resources for agricultural use and weird changes in climatic conditions are aggravating the prevailing situations. Coupled with increasing pressure of population, the per capita land availability in India has reduced from 0.34 ha in 1961 to 0.20 in 1985 and further down to 0.12 ha in 2013. The similar trend for few more years will put increasing pressure on land availability which can jeopardize the farmer's income levels. Black carbon emission from biomass burning in northern states causing severe air pollution in the National Capital Region. The GOI, through the ministry of agriculture, cooperation and farmers welfare, had drawn the National Policy for Management of Crop Residues 2014, which envisaged the adoption of technical measures, including diversified uses of crop residues.

Use of mushrooms as food and medicine have been known since time immemorial and probably predates any historical account. Their description and use can be seen in almost the entire ancient treatise like Vedas and Bible. The early civilizations like Greeks, Egyptians, Romans, Chinese and Mexicans appreciated mushrooms as delicacy and therapeutic agents and were used in the religious ceremonies considering them divine. The high esteem in which mushrooms were held is also indicated by the restriction of use of many species for rulers only. Mushrooms due to good quality and quantity of protein, very high productivity per unit area and time, conversion of worthless agro waste into good quality protein as well as good organic compost for field crops and above all pleasant aroma and taste have been identified as food source contributing to the protein requirement of the developing countries.

To address the challenges of malnutrition, depleting land and water resources, weird changes in climatic conditions coupled with increasing pressure of population and black carbon emission and to ensure the nutritional security for ever increasing population, it is important to diversify the agricultural activities in areas like secondary agriculture/horticulture. Mushrooms are one such component that not only impart diversification but also helps in providing nutritious food within less span of time by utilizing the various agro wastes. On the other side, mushroom cultivation strengthens the livelihood of poor and marginal farmers by generating constant farm income and reduce the vulnerability to poverty.

With varied agro-climatic conditions, abundant agricultural residues and plenty of manpower, India has tremendous potential for cultivation of different mushrooms. Viewing the importance of the crop, National Centre for Mushroom Research and Training (NCMRT), now referred as Directorate of Mushroom Research, was established in 1983 under the aegis of Indian Council of Agricultural Research along with All India Coordinated Research project on Mushroom. The Directorate exclusively works on mushroom research and development in the country with the help of its 23 Coordinating and 9 Cooperating Centres located in twenty seven states across the country.

All the coordinating centres work for a common mandate of germplasm collection of native edible flora, multilocation testing of the varieties and technologies, trainings and supply of spawn to the growers. The technical programme for conducting participatory research during 2019-20 was finalized in the annual workshop organized during 28-29 June 2019 at ICAR-Directorate of Mushroom Research, Chambaghat, Solan (HP). During the year under report, attempts were made to collect edible mushrooms in different parts of the country, evaluate promising varieties/ strains of white button mushroom, paddy straw mushroom, milky mushroom, shiitake mushroom, oyster mushroom, etc. and standardize cultivation technology of specialty mushrooms, which are needed to diversify the mushroom cultivation scenario in the country.

(Project Coordinator)

CONTENTS

	Page No.
Preface	
Summary	
Introduction	
Mandate and Objectives	
Technical Programme (2017-18)	
Research Progress (2017-18)	
Collection, Identification and Conservation of Wild Edible Germplasm	
Extension activities	
Publications	
Personalia	
Budget	

SUMMARY

All India Coordinated Research Project on Mushroom includes twenty three coordinating and nine cooperating centres located in different agro climatic zones in twenty seven states of India to test and validate the technologies or to identify varieties developed at Directorate of Mushroom Research, Solan and accomplish participatory research at other centres in various regions of India to promote climate-wise mushroom cultivation in India to reduce the cost of cultivation. During the year under report (2019-20), the research trials were conducted at all the thirty two centres based on technical programme finalized during the annual group meeting of AICRPM workers during 28-29 June 2019 at ICAR-Directorate of Mushroom Research, Chambaghat, Solan (HP).

Different Centres have reported the collection of specimens of wild mushrooms during the year and about 581 collections have been made and a total of 296 specimens were deposited at the DMR Gene Bank with passport data and a total of 236 specimens have been assigned accession numbers. During the last workshop of AICRPM, it has been decided that different mushrooms collected and consumed locally by the people of different regions will be collected and we should take advantage of the ITK available on mushrooms and utilize this germplasm instead of going for random collection of wild germplasm. In this regard it was decided that the Centres will survey the local markets for collecting the germplasm in addition to forest forays, collect the data, make cultures and deposit these with DMR along with their photographs, dried samples and passport data.

During the year 2019-20, seven experiments were conducted on strainal evaluation of six different mushrooms i.e. white button mushroom (*Agaricus bisporus*), oyster mushroom (*Pleurotus* spp.), paddy straw mushroom (*Volvariella volvacea*), milky mushroom (*Calocybe indica*), lion's mane mushroom (*Hericium* spp.) and shiitake mushroom (*Lentinula edodes*) at various centres. Strain evaluation trials of white button mushroom were on Advance varietal trial-2 for five selected white accessions of *Agaricus bisporus*. In the trials conducted using the short method compost, the maximum yield of 23.89 kg per 100 kg of compost was recorded in the strain AVTB-19-205 at Pune centre followed by 22.31 kg in AVTB-19-201 at the same centre. Overall average showed higher average Biological efficiency of 19.76 and 17.29 kg per 100 kg compost in AVTB-19-201 and AVTB-19-203 strains, respectively. Upon analysis of three year data of IVT, AVT-1 and AVT-2, the two strains AVTB-19-201 and AVTB-19-203 have shown an average yield increase of 15.21 and 9.93 % over controls, respectively. The two strains are recommended for release for the commercial uses.

In the AVT-1 of button mushroom, six selected strains of white button mushroom were evaluated. In the trials conducted, the maximum yield of 25.32 kg per 100 kg of compost was recorded in the strain AVTB-19-105 at Samastipur centre followed by 25.18 kg in AVTB-19-105 at Pune centre. Out of six strains Three strains were strains were selected for AVT-2 trials along with two controls.

The trial on evaluation of *Volvariella volvacea* strain was assigned at five centres and a total of six strains of *Volvariella volvacea* were tested. The maximum yield of 22.78 kg/100 kg of dry substrate was recorded in strain Vv-19-02 at Solan centre followed by Vv-19-03 strain (20.16 kg/100kg dry straw) at the same centre.

A total of seven high yielding strains of *Pleurotus* species were under evaluation in AVT-1. All the strains have to be evaluated on wheat and paddy straw separately, whichever is available in the area. On wheat straw substrate PL 19-03 gave maximum biological efficiency of 172.49 kg/100 kg of dry straw at Port blair centre. On paddy straw substrate, maximum biological efficiency of 114.93 kg/100 kg of dry straw was recorded at Coimbatore centre in Pl-19-03 strain.

Advance varietal trial-2 for high yielding strains of Milky mushroom (*Calocybe indica*) was conducted with seven strains of milky mushroom at nine different Centres on wheat straw and paddy straw substrate based upon availability. The maximum yield of 120.11 kg/ 100 kg straw was obtained at the Coimbatore centre in CI-19-04 strain followed by CI-19-06 strain (118.00 kg/100 kg straw) at the same centre. All the strains performed the best at Coimbatore centre. Overall average showed that CI-19-04 performed the best with an average bio-efficiency of 63.95 % over the period of three years under IVT, AVT-1 and AVT-2 trials and recommended for release.

Advance varietal trial- 1 of Lions Maine Mushroom (*Hericium erinaceus*) was allotted to ten different centres and seven strains of *Hericium erinaceus* mushroom were to be evaluated. The maximum biological

efficiency of 88.89 kg / 100 kg of dry substrate was obtained at Almora centre on saw dust based substrate in HE-19-08 followed by 48.95 kg / 100 kg saw dust substrate in the same strain at Solan centre.

Advance Varietal trial-2 of Shiitake mushroom was conducted at eight different centres and eight strains of shiitake mushroom were evaluated. The evaluation was to be done on two substrates i.e. saw dust and wheat straw whatever is available easily. The maximum biological efficiency of 80.23 kg / 100 kg of dry substrate was obtained at Solan centre on saw dust based substrate in LE-19-04 followed by 68.40kg / 100 kg saw dust in the strain LE-19-10 at Meerut centre. Overall average of three years under IVT, AVT-1 and AVT-2 showed maximum bioefficiency in LE-19-10 (46.00 %) followed by LE-19-09 (39.48%).

In crop production, evaluation of different compost formulation for button mushroom was conducted at four different centres Murthal, Pune, Ludhiana, and Pantnagar. Pantnagar centre has done the experiment on wheat straw only, while Murthal has conducted this experiment on Mustard straw and Paddy straw. Pune centre has conducted this experiment on wheat straw and sugarcane bagasse while Ludhiana centre has conducted this experiment on wheat straw and paddy straw based compost. The ready compost parameters were recorded to be good in compost prepared through different formulation. Good yields were recorded in all the formulations but maximum average yield of 18.30 kg per 100 kg compost was obtained in wheat straw based substrate followed by sugarcane bagasse based compost (17.77 kg per 100kg compost).

In crop protection experiments, botanical and microbial pesticides were used to control wet bubble disease of button mushroom. A total of ten treatments were evaluated at three centres i.e. Solan, Hisar and Pune. Hisar centre have reported very low yields hence not considered for evaluation. On the basis of the results obtained at Solan and Pune centres, two formulation were found effective against the wet bubble disease i.e. BOM-6 followed by BOM-1 giving average yield increase of 80.83 and 79.38 per cent, respectively. The results are still inconclusive, hence is recommended to be repeated.

All the centres carried out the extension activities by participating in State/National level Exhibition, Melas, Kisan Goshthies, mass communication through AIR/TV programmes, replying to letters, telephones, email and on the spot guidance during farm visits. All the centres have conducted a total of 109 one day, 88 three day, 28 five day, 19 three month, 33 SCSP and 6 TSP trainings. A total of 184 demonstration trials were organized and 68 consultancies were given. The centres have also supplied the spawn and pure culture to promote the mushroom cultivation practice in their respective areas. A total of 180552 kg of quality spawn was supplied to growers.

1. INTRODUCTION

The All India Coordinated Research Project on Mushroom (AICRP-M) was launched during VI Five-Year Plan on 01.04.1983 with its Headquarters at Directorate of Mushroom Research, Solan (HP) to validate and disseminate the technology developed at Directorate of Mushroom Research in different agro-climatic regions of the country and popularize mushrooms as secondary agriculture along with the existing farming system. The Director, ICAR-DMR, Solan (HP) also functions as the Project Coordinator of the project. Initially the AICRPM started with six Centres one each at Punjab Agricultural University, Ludhiana (Punjab), G.B.Pant University of Agriculture and Technology, Pantnagar (Uttarakhand), C.S. Azad University of Agriculture and Technology, Kanpur (UP), Bidhan Chandra Krishi Vishwa Vidyalaya, Kalyani (West Bengal), Tamil Nadu Agricultural University, Coimbatore (Tamil Nadu) and Mahatma Phule Agricultural University, Pune (Maharashtra). At a later stage during VII Plan, one new Centre at Indira Gandhi Krishi Vishwa Vidyalaya, Raipur (Chattisgarh) was added and two existing Centres at Kanpur (UP) and Kalyani (West Bengal) were dropped. However, three new Centres during VIII Five Year Plan and 3 Coordinating and one co-operating Centres during IX Five Year Plan were added to the existing list of Centres by dropping one at Goa. Four Coordinating and one Cooperating Centres have been added during XI Plan at OUAT, Bhubaneswar (Orissa), HAU, Hisar (Haryana), RAU, Pusa, Samastipur (Bihar), Central Agriculture University, CoA, Pasighat (Arunachal Pradesh) and one Cooperating Centre at HAIC, Murthal (Haryana). During the XII five year plan 9 more coordinating and 8 cooperating centre were added. Faizabad centre was dropped and in place of Faizabad, CSKHPKV, Palampur is added as the coordinating centre. HAIC murthal was upgraded as coordinating centre from cooperating centre.

At present, 23 Coordinating and 9 co-operating Centres are working under AICRPM. These are:

State Agricultural Univesrity based coornating centres

- Punjab Agricultural University, Ludhiana (Punjab)
- Tamil Nadu Agricultural University, Coimbatore (Tamil Nadu)
- G.B. Pant University of Agriculture and Technology, Pantnagar (Uttarakhand)
- CoA, Mahatma Phule Krishi Vidyapeeth, Pune (Maharashtra)
- Indira Gandhi Krishi Vishwa Vidyalaya, Raipur (Chattisgarh)
- Maharana Pratap University of Agriculture and Technology, Udaipur (Rajasthan)
- CoA, Kerala Agricultural University, Vellayani (Kerala)
- C.C.S. Haryana Agricultural University, Hisar (Haryana)
- Orissa University of Agriculture and Technology, Bhubaneswar (Orissa)
- Rajendra Agricultural University, Samastipur, Pusa (Bihar)
- College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh)
- CSK HPKV, Palampur (HP)

State Govt based Coordinating Centre

- HAIC Murthal (Haryana)

ICAR Institute based coornating centres

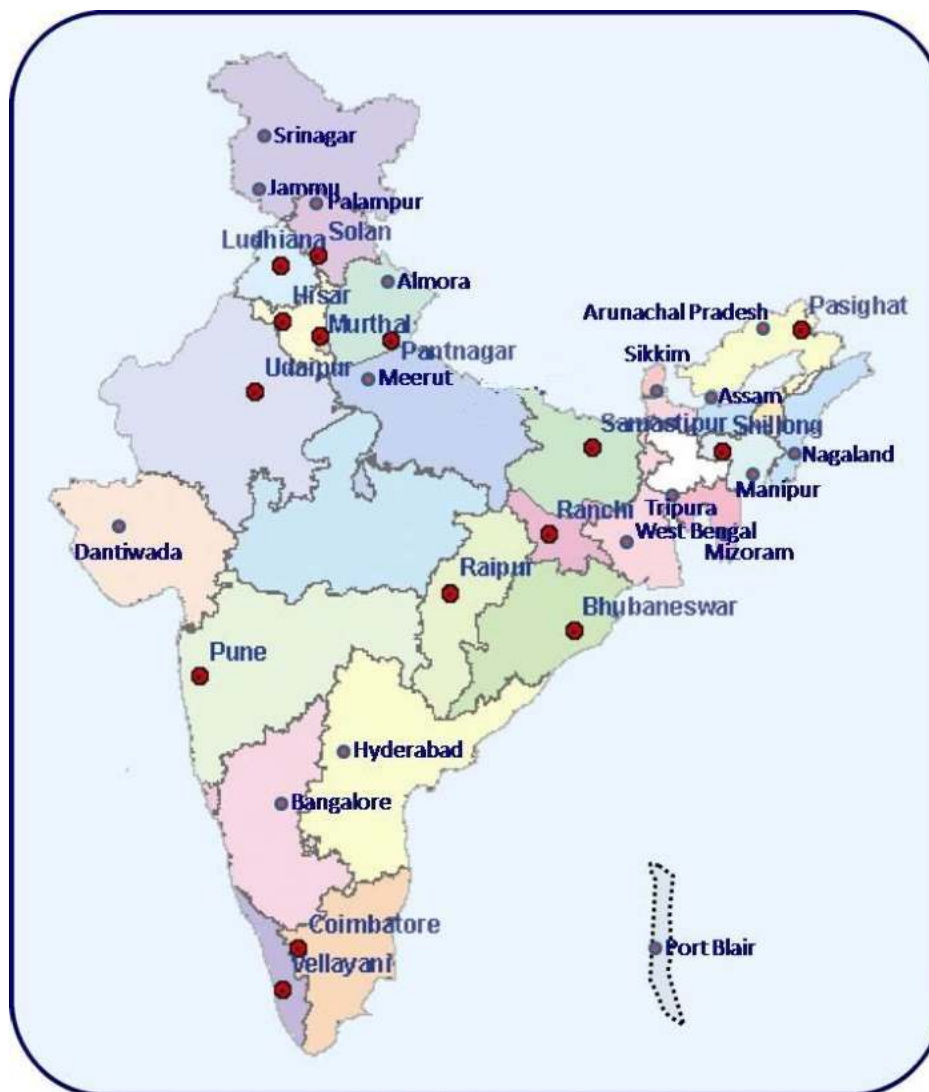
- ICAR Research Complex for NEH Region
 - ICAR Research Complex for NEH region, Barapani (Meghalaya)
 - ICAR Research Complex for NEH region, Sikkim
 - ICAR Research Complex for NEH region, Arunachal Pradesh
 - ICAR Research Complex for NEH region, Nagaland
 - ICAR Research Complex for NEH region, Manipur
 - ICAR Research Complex for NEH region, Mizorum
 - ICAR Research Complex for NEH region, Tripura
- ICAR-Research Complex for Eastern Region Research Centre, Ranchi (Jharkhand)
- ICAR-Central Island Agri. Res. Institute, Port Blair (Andaman & Nicobar Island)
- ICAR-Indian Institute of Horticultural Research, Bangalore

Co-operating Centres

- Dr.Y.S.Parmar University of Horticulture & Forestry, Nauni, Solan (HP).
- ICAR-VPKAS, Almora (Uttarakhand)
- Sher-e- Kashmir Uni.of Agri. Sci.&Technology, Srinagar (J&K)
- Sher-e- Kashmir Uni.of Agri. Sci.&Technology, Jammu (J&K)
- Assam Agri. University, Jorhat (Assam)
- Sardar Ballabh Bhai Patel Uni. Of Agri& Tech., Meerut (UP)
- Bidhan Chandra Krishi Viswavidyalaya, Nadia (WB)
- Sardarkrushinagar- Dantiwada Agri. Uni., Dantiwada (Gujrat)
- Acharya NG Ranga Agri. Uni., Rajendranagar (Hyderabad)

The last Group meeting of workers of AICRPM was held on 28-29 June 2019 at ICAR-Directorate of Mushroom Research, Chambaghat, Solan (HP). During the meeting the progress of last year (2019-20) was monitored and technical programme for 2020-21 was finalized.

2. MANDATE AND OBJECTIVES



Geographical location of different Centres of AICRP on Mushroom

The mandate of AICRP (Mushroom) is to coordinate and monitor multilocation trials with improved mushroom varieties / hybrids, cultivation practices related to crop production, crop protection measures and post harvest technology, all aimed at increasing production, productivity and utilization of mushroom in the country. Major activities under the project are:

1. To conduct survey of naturally occurring wild mushrooms, catalogue the edible/ medicinal species and explore possibilities of cultivation of promising species.
2. To evaluate the promising and high yielding strains for regional adaptability.
3. To carry multi-location trial for finalization of standard production techniques for different mushrooms.
4. To explore possibility of selection of cheaper locally available substrates for mushroom cultivation.
5. To supply good quality spawn to the mushroom growers.
6. Popularization of mushroom cultivation in different agro-eco-regions.

3. TECHNICAL PROGRAMME OF WORK FOR 2019-20

I. CROP IMPROVEMENT

Expt. 01: Collection, identification and conservation of wild edible and medicinal mushrooms

a) Participating centers	All centers except Murthal	
b) Data to be recorded	• The collection may be done area wise/district wise • Information about local names may be collected to avoid duplication • Rainfall and temperature data, indicate month and season of appearance • Supply sun dried fruit bodies/spore prints along with cultures. • Supply GPS data of the region from where mushroom was collected. • Primarily identification of mushroom by software Matchmaker (http://s158336089.onlinehome.us/lan/) or by molecular sequencing (ITS, COI, LSU etc.) • Fill the enclosed proforma as much as possible. Please send the above information within two-three weeks of collection. • Do not send the cultures without adequate supplementary information • Please ensure that the culture should not be exposed to >35°C temperature during transit. If needed, any staff may be sent along with the culture and other information. • Information regarding ethnic usage, medicinal importance and traditional usage (even it is duplicated)	
c) Area of operation	• Each Centre may select different districts so as to cover whole region over period of time	
d) Proforma for data on mushroom if collected from market		
S. No.	Information to be recorded	Observation/data
1.	Name/market/District	
2.	Date of collection	
3.	Sale price (Rs./kg)	
5.	Any association with tree(s)/soil type etc. (interact with collector if possible)	
6.	ITK and medicinal value and traditional usage	
7.	Temperature range during the collection period (15-20, 20-25, 25-30, 30-35°C)	

* Report to be sent by the end of December along with colored photograph, dried specimens and cultures and for the accessions collected between Jan to March, report to be sent by 15th April.

* When ever explorations is planned, information may be sent to Dr VP Sharma, Director, ICAR-DMR at director.mushroom@icar.gov.in and Dr. Shwet Kamal: shwetkamal@gmail.com

Annual Report – AICRP Mushroom 2019-20

Proforma for mushroom identification

Collector's Name:

Name of the PI:

Centre's Name:

☐	Specimen No.	
☐	Date of collection	
☐	Locality	
☐	GPS Data	
	Longitude	
	Latitude	
	Altitude	
☐	Single, in groups or connate (United)	
☐	Habitat (Humus, wooden stumps or trees, dung, sand, or any other)	
☐	Smell (Y/N)	
☐	Spore print colour	
☐	Cap	
	Colour	
	Diameter	
	Shape	
	Scales / smooth/any other	
☐	Stipe	
	Central, lateral or excentric	
	Colour	
	Stipe size and length	
	Stipe base	
☐	Ring present or absent	
☐	Volva present or absent	
☐	Veil present or absent	
☐	Basal association	
☐	Lamellae (in case of gill fungi)	
	Scale on cap: gills, tooth, tubes, pores	
	Attachment: Free, adnascled (just touching stem), adnate (broad by attached), Shortly decurrent (running on the stem apex)	
	Gill colour	
	Gill Edges	
☐	Edibility (edible/non-edible/ medicinal/ poisonous)	
☐	Any Other information, ITK, medicinal value and traditional usage	
☐	Photographs of natural specimen showing habitat and after taking out from the soil showing cap, stem, ring, gills, volva and stem base	
☐	Matchmaker identification result	
☐	Sequencing results (if any)	

Expt. 02: Advance Varietal trial -2 for selected white accessions of *Agaricus bisporus*

a) Participating centers	Pantnagar, Murthal, Nauni, Pune, Ludhiana, Palampur, Udaipur Samastipur and Solan
b) Experimental details	Experimental Design- RBD
	Replication-10
	Bags per replication-10
	Bag Size- 10 kg
	Treatment-05 (AVTB-19-201 to AVTB-19-205)
c) Methodology to be adopted and substrate	Short Method Preparation of compost by short method in 2 phases (phase-I and phase-II) by following standard procedure (-6, -4, 0, 2, 4, 6, 8 (fill)/phase-II (6-7 days). Compost will be ready in 18 days. Ingredients to be used are wheat straw - 1000 kg, poultry manure-500 kg, urea-15 kg, wheat bran-70 kg, gypsum-40 kg. Data for compost N(1.75 to 2.2%), colour, pH (7.2 to 7.8), moisture (60-65%), ammonia, bulk density (kg per m³) may be reported for each trial
d) Spawning rate to be used	1 % of wet compost
e) Data to be recorded during 4 weeks cropping	- The yield data should be recorded in tabulated form replication wise. - The replicates should be randomized in cropping rooms in different tiers in RBD. One replicate may be kept on one tier - Watering should be restricted to wetting of casing material. - Casing material Coir pith +FYM (4:1, v/v) both two years old (pH to be adjusted to 7.2-7.5 with CaCO₃). - The casing material should be water leached for 8 hours before treatment with steam/chemicals. Uniform layer of casing to be applied on mycelia impregnated compost (4cm thick). - Harvest mushrooms in button form, removing the soiled stem end with knife before weighing. Do not discard the weight of open mushrooms, but the number of mushrooms opened in each harvest should be recorded to determine the quality of the fruit body produced by a particular strain. - Average fruiting body weight to be recorded in each treatment (Total weight of mushrooms harvested divided by No. of mushrooms harvested) to determine the quality of mushrooms produced. - Every effort should be made to strictly adhere to the above instructions for this experiment. This will facilitate generation of uniform data for assessment and final recommendation. - A transverse section of fruit body may be cut and may be rated on a hedonic scale of 1-5 (1 for poor and 5 for excellent). The rating may be done for gill size, pileus length, stipe thickness, firmness of fruit body, etc. Photographs of TS of each strain must be supplied.
f) Environmental conditions to be maintained inside cropping room	Spawn run: Bed Temp-24±1⁰C, RH-90-95%, CO₂>10,000 ppm Case run: Bed Temp-24±1⁰C, RH-90-95%, CO₂ - >10,000 ppm Cropping: Bed Temp 16-18⁰C, RH 80-85%, CO₂<1000ppm
g) Bag size	20"x24" (polyethylene - 150 gauge)

Note: The project coordinator, Scientist In-charge-AICRP and the concerned scientist must be informed 15 days before the start of the experiment at these emails: director.mushroom@icar.gov.in; shwetkamall@gmail.com., Reporting of the experiments and results to be done to and Cultures may also be obtained from and Dr. Shwet Kamal

Exp-03. Advance Varietal trial -1 for selected white accessions of *Agaricus bisporus*

a) Participating centers	Pantnagar, Murthal, Nauni, Pune, Ludhiana, Palampur, Udaipur Samastipur and Solan
b) Experimental details	Experimental Design- RBD
	Replication-4
	Bags per replication-10
	Bag Size- 10 kg
	Treatment-06 (AVTB-19-101 to AVTB-19-106)
c) Methodology to be adopted and substrate	Short Method Preparation of compost by short method in 2 phases (phase-I and phase-II) by following standard procedure (-6, -4, 0, 2, 4, 6, 8 (fill)/phase-II (6-7 days). Compost will be ready in 18 days. Ingredients to be used are wheat straw - 1000 kg, poultry manure-500 kg, urea-15 kg, wheat bran-70 kg, gypsum-40 kg. Data for compost N(1.75 to 2.2%), colour, pH (7.2 to 7.8), moisture (< 60%), ammonia, bulk density (kg per m ³) may be reported for each trial
d) Spawning rate to be used	1 % of wet compost
e) Data to be recorded during 4 weeks cropping	- The yield data should be recorded in tabulated form replication wise. - The replicates should be randomized in cropping rooms in different tiers in RBD. One replicate may be kept on one tier - Watering should be restricted to wetting of casing material. - Casing material: Coir pith +FYM (4:1, v/v) both two years old (pH to be adjusted to 7.2-7.5 with CaCO₃). - The casing material should be water leached for 8 hours before treatment with steam/chemicals. Uniform layer of casing to be applied on mycelia impregnated compost (4cm thick). - Harvest mushrooms in button form, removing the soiled stem end with knife before weighing. Do not discard the weight of open mushrooms, but the number of mushrooms opened in each harvest should be recorded to determine the quality of the fruit body produced by a particular strain. - Average fruiting body weight to be recorded in each treatment (Total weight of mushrooms harvested divided by No. of mushrooms harvested) to determine the quality of mushrooms produced. - Every effort should be made to strictly adhere to the above instructions for this experiment. This will facilitate generation of uniform data for assessment and final recommendation. - A transverse section of fruit body may be cut and may be rated on a hedonic scale of 1-5 (1 for poor and 5 for excellent). The rating may be done for gill size, pileus length, stipe thickness, firmness of fruit body, etc. Photographs of TS of each strain must be supplied.
f) Environmental conditions to be maintained inside cropping room	Spawn run: Bed Temp-24±1 ⁰ C, RH-90-95%, CO ₂ >10,000 ppm Case run: Bed Temp-24±1 ⁰ C, RH-90-95%, CO ₂ - >10,000 ppm Cropping: Bed Temp 16-18 ⁰ C, RH 80-85%, CO ₂ <1000ppm
g) Bag size	20"x24" (polyethylene - 150 gauge)

Note: The project coordinator, Scientist In-charge-AICRP and the concerned scientist must be informed 15 days before the start of the experiment at these emails: director.mushroom@icar.gov.in; shwetkamal@gmail.com. Reporting of the experiments and results to be done to and Cultures may also be obtained from and Dr. Shwet Kamal

Expt. 04: Advance Varietal trial -1 for strains of Paddy Straw Mushroom, *Volvariella volvacea*

a) Participating centers	Coimbatore, Bhubaneswar, Ludhiana, Hisar, Raipur, Vellayani, Jammu and Solan
b) Experimental details	Experimental Design- RBD
	Replication-5
	Beds -3 beds/replication
	Method- Bundle method (3 bundles × 4 layers + 1 bundles opened at the top) with plastic sheet covering for whole cropping period (tight during spawn run and loosely during cropping) with intermittent water spray on mushroom beds
	Bed Size 1.5 x 1.5 x 1.5 cubic ft (Preferably)
	Treatment-06
c) Strains to be evaluated	Vv-19-01 to Vv-19-06
d) Substrate	Paddy straw bundles (45 cm x 15 cm) – 500 g each soaked for 12-14 hours in CaCO ₃ mixed water (@1.5%)
e) Spawning rate to be used	1 % of wet compost
f) Data to be recorded	• Substrate moisture • Substrate temperature during spawn run, pinning and cropping • Relative humidity during cropping • Time taken for mycelial colonization of the substrate • Time taken for first harvest (days post-spawning) • Mushroom yield weekly (kg/100 kg dry substrate) for 2 weeks cropping period • Average fruiting body weight • Incidence of diseases/insect-pests, if any • Fruiting body quality of unopened mushroom (length, breadth, shape, colour and dry weight) • Enclosure of ANOVA with data sheet

Note: The project coordinator, Scientist Incharge-AICRP and the concerned scientist must be informed 15 days before the start of the experiment at these emails: director.mushroom@icar.gov.in; anilrao_mpp@yahoo.co.in; shwetkamall@gmail.com. Reporting of the experiments and results to be done to and cultures may also be obtained from Dr. Anil Kumar.

Expt. 05: Advance Varietal trial -1 of high yielding varieties/strains of Oyster Mushroom (*Pleurotus* spp) on either Wheat or paddy straw

a) Participating centers	Pune, Raipur, Samastipur, Pasighat, Pantnagar, Vellayani, Ranchi, Coimbatore, Bhubaneswar, Udaipur, Meerut, Hisar, Barapani, Manipur, Tripura, Arunachal Pradesh, Kalyani, Srinagar, Port Blair, Bangalore, Jammu, Sikkim, Mizoram, Palampur, Almora, Jorhat and Solan
b) Substrate and method	Wheat straw or Paddy straw treatment: Hot water treatment 65°C for 60 min for wheat straw Dry for minimum 4 h under open pH to be adjusted to 7.50 with CaCO ₃
c) Experimental Design	Experimental Design- RBD
	Treatment-7
	Replication-3
	Bags per replication-10
	Bag Size- 5 kg wet substrate (moisture of the substrate must be reported)
	Treatments- PL-19-101 and PL-19-107

e) Temperature and humidity required during trails	Temp range – 22-28 °C Humidity - 85-90 % Light requirement- 800 lux for 6 hrs.
f) Spawn rate	10% spawn for per kg of dry substrate
h) Data to be recorded	• pH of the substrate • Moisture of the substrate • All bags should be opened starting from first flush • Days taken for spawn run. • Days taken for pinhead formation. • Yield data for three flushes. • Time taken for I, II and III flush • Data of maximum and minimum temp of the morning 10.00 AM must be supplied with yield data. Results will not be considered without this data. • Fruit body observations of individual strain • Pileus size, colour, stipe length, stipe thickness. • The data on pileus and stipe size/thickness are to be recorded for at least 10 fruit bodies • Report of any pest and diseases • Photographs of each strain
i) Information to be provided	• Date of spawning • Date of opening bags • Max. and minimum temperature and RH% in the cropping rooms • (Separate sheet is enclosed for recording) • Daily yield record (replication wise)

Note: The project coordinator, Scientist Incharge-AICRP and the concerned scientist must be informed 15 days before the start of the experiment at these emails: director.mushroom@icar.gov.in; shwetkamall@gmail.com; anupambarh6@gmail.com. Reporting of the experiments and results to be done to and cultures may also be obtained from Dr. AnupamBarh.

Expt. 06. Advance varietal trial-2 for high yielding strains of Milky mushroom (*Calocybe indica*) on either Wheat or paddy straw

a) Participating centers	Coimbatore, Kerala, Bhubaneswar, Samastipur, Arunachal Pradesh, Tripura, Jammu, Ludhiana, Udaipur, Raipur, Pune and Solan, Meerut, Pantnagar, Murthal
b) Substrate and method	Wheat straw or paddy straw (any of the two) Hot water treatment (boiling the straw bits for 60 min at 65-70°C). The substrate is shade dried to maintain 60-65% moisture at the time of bag filling)
c) Experimental design	Experimental Design- RBD
	Replication-5
	Bags per replication-6
	Bag Size- 5 kg (60 x 30 cm and after spawn run cut in two half)
	Treatments -07 (CI-19-201 to CI-19-207)
d) Spawn rate	4% (on wet weight basis)
e) Observation to be recorded	Days to spawn run; days to first harvest, No. of fruit bodies and total yield per bag; total yield per 100 kg dry substrate

f) Production technology to be followed	• Method of spawning – layer spawning 4% wet weight basis • Spawn run temp – 28-30°C; RH – 80%; Light – 800 lux • Casing – 75% soil and 25% sand (clay loam soil with pH around 8.0) • Thickness – 2.0-2.5 cm; pH – 8.0 to be adjusted with chalk powder • Casing autoclaved for 1 h about a week in advance. • Apply 1 kg casing on each half of the bag • Temp–30-35°C; RH – 80-90% maintained throughout cropping cycle • Light to be provided for maximum duration during entire cropping cycle.
--	---

Note: The project coordinator, Scientist Incharge-AICRP and the concerned scientist must be informed 15 days before the start of the experiment at these emails: director.mushroom@icar.gov.in; shwetkamall@gmail.com; satish132@gmail.com. Reporting of the experiments and results to be done to and Cultures may also be obtained from Dr. Satish Kumar.

Expt . 07: Advance varietal trial-1 of Shiitake mushroom on saw dust / wheat straw

a) Participating centers	Murthal, Bangalore, Pantnagar, Manipur, Nagaland, Hisar, Barapani, Nauli, Udaipur, Raipur, Srinagar, Pasighat, Jammu, Meerut, Sikkim and Solan,
b) Substrate and supplements	Saw dust (Broad leaved hard wood trees)/wheat straw (any of the two) Supplement - wheat bran @ 20% and treatment with 1% CaCO ₃ on dry weight basis
c) Experimental design	Experimental Design- RBD
	Replication-5
	Bags per replication-6
	Bag Size- 1.5 kg (wet weight)
	Treatments -LE-19-101 to LE-19-106
d) Method of substrate preparation	Autoclaving for 2 hrs
e) Spawn rate	5% (on wet weight basis)
f) Observation to be recorded	Days to spawn run; days to first harvest, No. of fruit bodies and total yield per bag; total yield per 100 kg dry substrate
g) Production technology to be followed	Take 40kg hard wood broad leaved trees' saw dust/wheat straw Add water (55%) for thorough wetting overnight Add wheat bran and thoroughly mix Fill in polypropylene bags 2kg each and put ring and cotton plug Autoclave at 126°C for 2 hour On cooling spawn aseptically @ 5% wet weight basis. Incubate at 24⁰C After completion of spawn run (about 60 days) allow them to turn brown. Remove the PP bags and dip the blocks in chilled water (4-5⁰C) for about 10 minutes. Keep the block for fruiting at <20-22°C Give rest 2-3 weeks Repeat 9-10 steps again.

Note: The project coordinator, Scientist Incharge-AICRP and the concerned scientist must be informed 15 days before the start of the experiment at these emails: director.mushroom@icar.gov.in; shwetkamall@gmail.com. Reporting of the experiments and results to be done to and Cultures may also be obtained from Dr. Satish Kumar.

Exp-08. Advance varietal trial-1 of Lions Maine Mushroom *Hericium erinaceus* on saw dust or wheat straw

Participating center	Samstipur, Pasighat, Nauni, Almora, Jammu, Raipur, Pantnagar, Udiapur, Hissar, Meerut, Murthal, Solan
Substrate	Saw dust or wheat straw (any of the two)
Supplement	20% wheat bran
Quantity/ bag	2kg
Method of substrate preparation	Autoclaving (121°C for 2hrs)
Spawning rate	@ 3% wet weight basis
Replication	5
No. of bags per replication	5
Number of strains	7
Temperature for spawn run	23-25°C
Temperature for fruiting	18-20°C
Observations to be recorded	Time taken for spawn run, BE, incidence of pests and diseases, if any

Note: The project coordinator, Scientist Incharge-AICRP and the concerned scientist must be informed 15 days before the start of the experiment at these emails: director.mushroom@icar.gov.in; shwetkamall@gmail.com. Reporting of the experiments and results to be done to and Cultures may also be obtained from Dr. Satish Kumar.

II. CROP PRODUCTION**Exp-09. Evaluation of different compost formulation for button mushroom**

a) Participating centers	Pantnagar (wheat straw), Murthal (Paddy straw), Nauni (Paddy straw), Pune (sugarcane baggase), Ludhiana(paddy straw), Palampur (paddy straw), Udaipur (mustard straw) and Solan (wheat Straw,Paddy straw, sugarcane baggasse)
b) Experimental details	Experimental Design- RBD
	Replication-6
	Bags per replication-10
	Bag Size- 10 kg
	Treatment-01
c) Methodology to be adopted and substrate	Short Method Preparation of compost by short method in 2 phases (phase-I and phase-II) by following standard procedure (-6, -4, 0, 2, 4, 6, 8 (fill)/phase-II (6-7 days). Compost will be ready in 18 days. Compost formula 1 Wheat straw: 1000kg; Chicken manure: 600 kg; Wheat bran: 100kg; Urea: 15 kg; Gypsum: 30kg Compost formula 2 Mustard straw: 1000kg; Chicken manure: 600kg; Wheat bran: 40 kg; Urea: 10 kg; Gypsum: 30kg. Compost formula 3 Paddy straw: 1000kg; Chicken manure: 600kg; Wheat Bran: 100; Urea: 14 Kg; Gypsum: 30 kg Compost formula 4 Sugarcane baggasse: 1000kg; Chicken manure : 400kg; Cotton seed cake: 25 kg; Gypsum: 30 kg; Urea : 12 kg Leach out sugarcane bagasse for 3 days Data for compost N(1.75 to 2.2%), colour, pH (7.2 to 7.8), moisture (60-65%), ammonia, bulk density (kg per m³) may be reported for each trial

d) Spawning rate to be used	1 % of wet compost
e) Data to be recorded during 4 weeks cropping	- The yield data should be recorded in tabulated form replication wise. - The replicates should be randomized in cropping rooms in different tiers in RBD. One replicate may be kept on one tier - Watering should be restricted to wetting of casing material. - Casing material: FYM + SMS (2:1, v/v) both two years old (pH to be adjusted to 7.2-7.5 with CaCO_3). - The casing material should be water leached for 8 hours before treatment with steam/chemicals. Uniform layer of casing to be applied on mycelia impregnated compost (4cm thick). - Harvest mushrooms in button form, removing the soiled stem end with knife before weighing. Do not discard the weight of open mushrooms, but the number of mushrooms opened in each harvest should be recorded to determine the quality of the fruit body produced by a particular strain. - Average fruiting body weight to be recorded in each treatment (Total weight of mushrooms harvested divided by No. of mushrooms harvested) to determine the quality of mushrooms produced. - Every effort should be made to strictly adhere to the above instructions for this experiment. This will facilitate generation of uniform data for assessment and final recommendation. - A transverse section of fruit body may be cut and may be rated on a hedonic scale of 1-5 (1 for poor and 5 for excellent). The rating may be done for gill size, pileus length, stipe thickness, firmness of fruit body, etc. Photographs of TS of each strain must be supplied.
f) Environmental conditions to be maintained inside cropping room	Spawn run: Bed Temp- $24 \pm 1^\circ\text{C}$, RH-90-95%, $\text{CO}_2 > 10,000$ ppm Case run: Bed Temp- $24 \pm 1^\circ\text{C}$, RH-90-95%, $\text{CO}_2 > 10,000$ ppm Cropping: Bed Temp $16-18^\circ\text{C}$, RH 80-85%, $\text{CO}_2 < 1000$ ppm
g) Bag size	20"x24" (polyethylene - 150 gauge)

III. CROP PROTECTION

Expt. 10. Management of Yellow mould in Button mushroom

a) Participating centers	Murthal and Solan
b) Substrate	Substrate quantity-10 kg compost/bag No. of replications- 5 replications each with 6 bags of 10 kg compost/replicate for each strain in RBD.
c) Treatment	- T₁- inoculated with yellow mould pathogen + spray of single super phosphate @0.5 percent - T₂- inoculated with yellow mould pathogen + spray of single super phosphate @1.0 percent - T₃- inoculated with yellow mould pathogen+ mixing of granular SSP at the time of spawning @1.0 percent of wet weight of compost - T₄-Inoculated untreated - T₅- un-inoculated untreated
d) Methodology to be adopted	Short Method Preparation of compost by short method in 2 phases (phase-I and phase-II) by following standard procedure (-6, -4, 0, 2, 4, 6, 8 (fill)/phase-II (6-7 days). Compost will be ready in 18 days.

	Ingredients to be used are wheat straw - 1000 kg, poultry manure- 500 kg, urea-15 kg, wheat bran-70 kg, gypsum-40 kg. Data for compost N(1.75 to 2.2%), colour, pH (7.2 to 7.8), moisture (< 60%), ammonia, bulk density (kg per m ³) may be reported for each trial
e) Spawning rate to be used	1 % of wet compost
f) Data to be recorded during 4 weeks cropping	- The yield data should be recorded in tabulated form replication wise. - The replicates should be randomized in cropping rooms in different tiers in RBD. One replicate may be kept on one tier - Watering should be restricted to wetting of casing material. - Casing material: FYM + SMS (2:1, v/v) both two years old (pH to be adjusted to 7.2-7.5 with CaCO₃). - The casing material should be water leached for 8 hours before treatment with steam/chemicals. Uniform layer of casing to be applied on mycelia impregnated compost (4cm thick). - Harvest mushrooms in button form, removing the soiled stem end with knife before weighing. Do not discard the weight of open mushrooms, but the number of mushrooms opened in each harvest should be recorded to determine the quality of the fruit body produced by a particular strain. - Disease scoring should be recorded. - Average fruiting body weight to be recorded in each treatment (Total weight of mushrooms harvested divided by No. of mushrooms harvested) to determine the quality of mushrooms produced. - Every effort should be made to strictly adhere to the above instructions for this experiment. This will facilitate generation of uniform data for assessment and final recommendation. - A transverse section of fruit body may be cut and may be rated on a hedonic scale of 1-5 (1 for poor and 5 for excellent). The rating may be done for gill size, pileus length, stipe thickness, firmness of fruit body, etc. Photographs of TS of each strain must be supplied.
g) Environmental conditions to be maintained inside cropping room	Spawn run: Bed Temp-24±1°C, RH-90-95%, CO ₂ >10,000 ppm. Case run: Bed Temp-24±1°C, RH-90-95%, CO ₂ - >10,000 ppm. Cropping: Bed Temp 16-18°C, RH 80-85%, CO ₂ <1000ppm
h) Bag size	20"x24" (polyethylene - 150 gauge)

Note: The project coordinator, Scientist In-charge-AICRP and the concerned scientist must be informed 15 days before the start of the experiment at these emails: director.mushroom@icar.gov.in; shwetkamall@gmail.com. Reporting of the experiments and results to be done to and Cultures may also be obtained from Dr. Shwet Kamal.

Exp11. Efficacy of botanical & microbial pesticides on the management of wet bubble diseases of white button mushroom

a) Participating centers	Murthal, Hisar, Pune., Solan
b) Substrate	Substrate quantity-10 kg compost/bag No. of replications- 6 replications each with 3 bags of 10 kg compost/replicate for each strain in RBD.
c) Treatment	10 BOM 1 to BOM 8, Inoculated & uninoculated control
d) Time of application:	Protective (immediately after casing) Curative (24 hr after inoculation in casing)

d) Methodology to be adopted	Short Method Preparation of compost by short method in 2 phases (phase-I and phase-II) by following standard procedure (-6, -4, 0, 2, 4, 6, 8 (fill)/phase-II (6-7 days). Compost will be ready in 18 days. Ingredients to be used are wheat straw - 1000 kg, poultry manure- 500 kg, urea-15 kg, wheat bran-70 kg, gypsum-40 kg. Data for compost N(1.75 to 2.2%), colour, pH (7.2 to 7.8), moisture (< 60%), ammonia, bulk density (kg per m³) may be reported for each trial
e) Spawning rate to be used	1 % of wet compost
f) Data to be recorded during 4 weeks cropping	• The yield data should be recorded in tabulated form replication wise. • The replicates should be randomized in cropping rooms in different tiers in RBD. One replicate may be kept on one tier • Watering should be restricted to wetting of casing material. • Casing material: FYM + SMS (2:1, v/v) both two years old (pH to be adjusted to 7.2-7.5 with CaCO₃). • The casing material should be water leached for 8 hours before treatment with steam/chemicals. Uniform layer of casing to be applied on mycelia impregnated compost (4cm thick). • Harvest mushrooms in button form, removing the soiled stem end with knife before weighing. Do not discard the weight of open mushrooms, but the number of mushrooms opened in each harvest should be recorded to determine the quality of the fruit body produced by a particular strain. • Average fruiting body weight to be recorded in each treatment (Total weight of mushrooms harvested divided by No. of mushrooms harvested) to determine the quality of mushrooms produced. • Disease appearance (+ and -) • Disease incidence (%) • Disease severity (%) • Disease control (%) • Biological efficiency (%) • Every effort should be made to strictly adhere to the above instructions for this experiment. This will facilitate generation of uniform data for assessment and final recommendation. • A transverse section of fruit body may be cut and may be rated on a hedonic scale of 1-5 (1 for poor and 5 for excellent). The rating may be done for gill size, pileus length, stipe thickness, firmness of fruit body, etc. Photographs of TS of each strain must be supplied.
g) Environmental conditions to be maintained inside cropping room	Spawn run: Bed Temp-24±1⁰C, RH-90-95%, CO₂>10,000 ppm. Case run: Bed Temp-24±1⁰C, RH-90-95%, CO₂- >10,000 ppm. Cropping: Bed Temp 16-18⁰C, RH 80-85%, CO₂<1000ppm
h) Bag size	20"x24" (polyethylene - 150 gauge)

Exp 12: Efficacy of botanical & microbial pesticides on the management of yellow mould disease of white button mushroom

a) Participating centers	Murthal, Hisar, Pune., Solan
b) Substrate	Substrate quantity-10 kg compost/bag No. of replications- 6 replications each with 3 bags of 10 kg compost/replicate for each strain in RBD.
c) Treatment	10 BOM 1 to BOM 8, Inoculated & uninoculated control
d) Time of application:	Protective (immediately after casing) Curative (24 hr after inoculation in casing)
d) Methodology to be adopted	Short Method Preparation of compost by short method in 2 phases (phase-I and phase-II) by following standard procedure (-6, -4, 0, 2, 4, 6, 8 (fill)/phase-II (6-7 days). Compost will be ready in 18 days. Ingredients to be used are wheat straw - 1000 kg, poultry manure- 500 kg, urea-15 kg, wheat bran-70 kg, gypsum-40 kg. Data for compost N(1.75 to 2.2%), colour, pH (7.2 to 7.8), moisture (< 60%), ammonia, bulk density (kg per m ³) may be reported for each trial
e) Spawning rate to be used	1 % of wet compost
f) Data to be recorded during 4 weeks cropping	• The yield data should be recorded in tabulated form replication wise. • The replicates should be randomized in cropping rooms in different tiers in RBD. One replicate may be kept on one tier • Watering should be restricted to wetting of casing material. • Casing material: FYM + SMS (2:1, v/v) both two years old (pH to be adjusted to 7.2-7.5 with CaCO₃). • The casing material should be water leached for 8 hours before treatment with steam/chemicals. Uniform layer of casing to be applied on mycelia impregnated compost (4cm thick). • Harvest mushrooms in button form, removing the soiled stem end with knife before weighing. Do not discard the weight of open mushrooms, but the number of mushrooms opened in each harvest should be recorded to determine the quality of the fruit body produced by a particular strain. • Average fruiting body weight to be recorded in each treatment (Total weight of mushrooms harvested divided by No. of mushrooms harvested) to determine the quality of mushrooms produced. • Disease appearance (+ and -) • Disease incidence (%) • Disease severity (%) • Disease control (%) • Biological efficiency (%) • Every effort should be made to strictly adhere to the above instructions for this experiment. This will facilitate generation of uniform data for assessment and final recommendation. • A transverse section of fruit body may be cut and may be rated on a hedonic scale of 1-5 (1 for poor and 5 for excellent). The rating may be done for gill size, pileus length, stipe thickness, firmness of fruit body, etc. Photographs of TS of each strain must be supplied.

g) Environmental conditions to be maintained inside cropping room	Spawn run: Bed Temp- $24\pm 1^{\circ}\text{C}$, RH-90-95%, $\text{CO}_2 > 10,000$ ppm. Case run: Bed Temp- $24\pm 1^{\circ}\text{C}$, RH-90-95%, $\text{CO}_2 > 10,000$ ppm. Cropping: Bed Temp $16-18^{\circ}\text{C}$, RH 80-85%, $\text{CO}_2 < 1000$ ppm
h) Bag size	20"x24" (polyethylene - 150 gauge)

IV. POST HARVEST

EXP 13. Survey and collection of information on usage of mushroom in local food and medicines, their packaging and marketing

- Use of different mushrooms in **regional (local) food items and cuisines**
- **Ethno botanical uses** (if any) of different mushrooms in the region (*based on traditional knowledge of local people*)
- Different **types of packaging** used for different mushrooms in the region
- **Marketing channel** for different mushrooms in the region

Observations to be recorded

Use of different mushrooms in regional (local) food items and cuisines

- Type of mushrooms used
- Local food items prepared
- Method of preparation (recipe) of food items

Ethno-medicinal uses of different mushrooms in the region

Based on traditional knowledge/wisdom of local people

Species of mushroom used

Purpose for which it is used (besides food)

Method of use

Types of packaging used for sale of mushrooms and mushroom products in the region

Type of packaging and packaging materials used for fresh mushrooms

Type of packaging and packaging materials used for processed mushroom products

Marketing channel for different mushrooms in the region

- Direct retail
- Sale through middleman
- Sale to processors
- Export
- Processing
- Any other (please specify)

(If possible collect the above information from all the mushroom growers of the region)

V. EXTENSION

Expt 14. Format for Farmers' Innovation**A) General Information**

1. Name of the respondent:.....
2. Age:
3. Village:.....
4. Block:.....
5. District:.....
6. Sex: Male / female
7. Level of Education:

a. Illiterate	
b. Functional literate	
c. Primary School	
d. High School	
e. Higher Secondary	
f. Graduate and above	

8. Family Size:
9. Experience in mushroom farming:(years)
10. Experience as mushroom processor(years)
11. Land holding: (acre)
12. Area utilize for mushroom farming & processing
13. Number of training received: (Nos) From.....
14. Annual income from mushroom: (in Rs)
15. Annual expenditure: (in Rs)

B) Specific Information

16. Types of mushroom grown:
17. What is your innovation:

a) Brief Explanation:

.....

.....

b) Technical Specification

.....

.....

.....

c) Economic Impact:

S. No.		Particulars	Before	After
1		Cost of production by using this innovation		
	i)	Variable cost		
	ii)	Fixed cost		
	iii)	Total cost		
2		Gross income		
3		Net income		
4		B:C ratio		

d) Farmers' Satisfaction

S.No.	Particulars	SA	A	U	DA	SDA
I	Production efficiency					
II	Labour Saving					
III	Economic viability					
IV	Input use efficiency					
V	Ensure sustainability					
VI	Advisory services solicited					

18. From where you got the idea of innovation

- i. Problem faced by self
- ii. Problem faced by peers
- iii. Own thinking but not faced any problem
- iv. Experimented purposefully
- v. Simply occurred idea
- vi. Innovation induced innovation

19. What made you to develop this innovation

Factors	Ranking
Economic gain	
Problem solving	
Lack of Marketing	
Problem solving	
Social factor	
Drudgery reduction	
Others	

20. When for the first time you developed the innovation

21. How much time the innovation took to developed

22. Whether the innovation was adopted by someone (Yes/ No) if yes, how many
reasons for adoption:

- 1).....
- 2)
- 3)

23. If No, possible reasons for non-adoption:

- 1).....
- 2)
- 3)

24. Had you contacted anyone during experimentation of innovation

.....
.....

25. Had you ever awarded for farmer-led innovation (Yes/ No) if yes, by whom

.....

26. Any kind of institutional support received for up scaling of innovation

Kind of support	Institution	Govt. / private
Input		
Training		
Financial		
Exposure		
Others		

27. Have you commercialized your innovation Yes/ No

If Yes, When

Where

How

Benefit received (one time/ continuous)

28. What efforts you made to up scale your innovation?

i.

ii.

iii.

29. Had your innovation published anywhere? Yes/ No, if yes, how many times

.....

30. Constraints faced while developing innovation?

.....

.....

.....

.....

Note: Reporting to be done to director.mushroom@icar.gov.in; shwetkamall@gmail.com; ygautamdmr@gmail.com, shrutikush0983@gmail.com

Exp 15. Generation of databases of mushroom farmers, spawn producers and total production of spawn and mushroom in your state

Participating centers: All

Format for production status of various mushrooms (button, oyster, paddy straw, milky, shitake, ear wood mushroom)

Name	GPS (Latitude & longitude)	Address	Mobile no	Type of Mushroom grown	Area used for cultivation	Capacity of unit (type and quantity of substrate)	Yield (Q)	Cost incurred (per Q)	Price in market	Annual income through mushroom	Employment provided (No)	wages

Format for processing status of various mushrooms (button, oyster, paddy straw, milky, shitake, ear wood mushroom)

Name	GPS (Latitude & longitude)	Address	Mobile no	Type of Mushroom processed	Products of mushroom (Name & quantity)	Capacity of unit	Production (Q)	Cost incurred (per Q)	Price in market of different products	Annual income through processing	Employment provided (No)	wages

Format for spawn production of various mushrooms (button, oyster, paddy straw, milky, shitake, ear wood mushroom)

Name	GPS (Latitude & longitude)	Address	Mobile no	Type of spawn produced	Capacity of unit	Production (Q)	Cost incurred (per Q)	Price in market	Annual income through production	Employment provided (No)	wages

Note: Reporting to be done to director.mushroom@icar.gov.in; shwetkamall@gmail.com; ygautamdmr@gmail.com, shrutikush0983@gmail.com

V. ACTIVITIES

Participating Centres: All

1. Organization of at least 3 training programmes of 3-7 days duration each preferably in March, August and October months of the year.
2. Involvement of women in training programmes to empower them and help in creation of self held groups and candidates from lower.
3. Organization of two field days at the farm of the progressive farmer.
4. Active participation in Workshops, Kisan-mela and Demonstration etc.
5. Development of mushroom museum
6. Supply of quality mushroom spawn to mushroom growers mentioning the quantity.
7. Feedback on diseases of respective areas
8. Impact analysis of training programmes and spawn supply data in kg instead of packet
9. Publication of Bulletins in regional languages
10. Spawn sold in each quarter must be intimated in quarterly report.
11. 23rd December may be observed as Mushroom Day.

Notes:

1. The experiments may be laid by following proper randomization and the randomization plan may be attached with results.
2. The daily temperature and humidity data may be submitted in excel sheet.
3. The replication-wise rough data may be submitted within 15 days after completion of the trial.
4. Cultures supplied are coded differently each year. Please do not use the old cultures for trials. Material transfer agreement will be supplied and the same may be returned after signing.
5. Please go through the contents above and in case of any modifications or suggestions, you may write to director.mushroom@icar.gov.in.

In case of no comments from your side, the technical programme may be treated as final.

4. RESEARCH PROGRESS

1. CROP IMPROVEMENT

1.1 Advance Varietal trial -2 for selected white accessions of *Agaricus bisporus*

This experiment was conducted on short method pasteurized compost at Pune, Pantnagar, Nauni, Ludhiana, Palampur, Murthal, Udaipur, Solan and Samastipur. The sample size of the experiment was ten replications of ten bags each of 10 kg compost in RBD. The parameters of compost i.e. pH, Nitrogen, moisture and colour were also recorded. In the trials conducted using the short method compost, the maximum yield of 23.89 kg per 100 kg of compost was recorded in the strain AVTB-19-205 at Pune centre followed by 22.31 kg in AVTB-19-201 at the Samastipur centre. The strain AVTB-19-201 performed the best at all the centres giving average yield of 19.76 kg/100 kg compost followed by AVTB-19-203 with an average yield of 17.29 kg/100 kg compost. Overall all the strains have performed well at all the centres (Table 4.1) with average yield ranging between 15.86 to 19.76 kg per 100 kg compost.

Table 4.1 Yield of different strains of white button mushroom on long method compost in four weeks cropping

<i>A. bisporus</i> strain	Udaipur	Pantnagar	Ludhiana	Murthal	Pune	Solan	Nauni	Palampur	Samastipur	Average
AVTB-19-201	15.97	18.38	20.86	20.70	20.72	19.07	20.08	--	22.31	19.76
AVTB-19-202	15.52	12.96	18.50	15.75	16.22	11.61	17.43	--	18.92	15.86
AVTB-19-203	14.87	11.91	16.21	19.29	17.95	18.72	19.03	--	20.30	17.29
AVTB-19-204	13.37	16.14	12.71	19.33	19.05	14.36	19.32	--	21.55	16.98
AVTB-19-205	10.88	15.30	16.39	16.84	23.89	15.62	18.36	--	--	16.75
CD (0.05)	4.65	2.30	2.07	1.35	1.24	2.12	0.95	--	0.80	
SE	2.30	1.14	1.02	0.67	0.62	1.04	0.47	--	0.39	
CV	47.20	17.07	13.53	8.15	7.04	4.60	5.60	--	5.31	

The average time taken in first harvest (days post casing) was in the range of 17-29 days. The lowest first harvest time (17 days post casing) was recorded at Nauni in strain AVTB-19-203 and AVTB-19-204, and AVTB-19-202 at samastipur centre. Overall the lowest first harvest time of 20.60 days was recorded in AVTB-19-201 followed 21.70 days in AVTB-19-202 (Table 4.2).

Fruit body weight also varied at different centres and was recorded maximum (26.80 g) at Udaipur centre (Table 4.2) in strain AVTB-19-204 followed by strain AVTB-19-201 (26.060 g) at the same centre. At headquarters the average fruit body weight ranged between 11.92 to 12.80 g in all the strains. On the basis of average fruit body weight, maximum fruit body weight of 14.90 g was recorded in strain AVTB-19-204 and AVTB-19-202. The quality of fruitbody ascertained by cross section showed that best quality was obtained in AVTB-19-201, AVTB-19-203 and AVTB-19-204 in all the centres.

Table 4.2. Time taken to first harvest and average fruit body weight in *A. bisporus* strains

<i>A. bisporus</i> strain	Pantnagar		Ludhiana		Murthal		Pune		Udaipur		Nauni		Solan		Pusa		Average	
	a	b	a	b	a	b	a	b	a	B	a	b	a	b	a	b	a	b
AVTB-19-201	18	10.10	23	9.06	23	12.07	19	12.07	21	26.6	18	10.27	25	12.80	18	18.8	20.6	13.9
AVTB-19-202	21	10.94	26	10.20	25	12.96	20	12.81	20	26.4	18	9.69	27	12.18	17	20.3	21.7	14.4
AVTB-19-203	28	11.90	25	9.71	25	10.86	22	11.75	20	26.31	17	8.54	25	11.92	18	20.0	22.5	13.8
AVTB-19-204	25	15.30	28	10.20	27	12.97	21	13.75	21	26.8	17	9.13	29	12.20	18	18.9	23.2	14.9
AVTB-19-205	26	13.82	27	10.04	27	13.38	18	13.16	20	26.5	18	9.54	28	12.12	--	--	23.4	14.0
CD(0.05)	3.07	2.235	1.26	0.673	NS	1.368	0.20	0.405	4.6	5.82	NS	0.40	NS	0.22	1.95	2.10		
SE	1.52	1.106	0.62	0.333	NS	0.677	0.10	0.200	2.3	2.88	NS	0.20	NS	0.11	0.96	1.04		
CV	14.42	19.92	5.46	7.563	NS	12.16	1.09	3.525	29.1	27.5	NS	4.69	NS	3.52	15.1	14.9		

a. First harvest (days post casing); b. average fruit body wt (g)

The compost parameters recorded at various centres have indicated that the pH of the compost ranged from 7.2 to 7.7 while nitrogen percent was varied from 1.75 to 2.20. The moisture percent varied from 60- 67% (Table 4.3). Colour of compost was invariably brown to dark brown at all the centres. The parameters indicated that there was slight variation in the values but overall the parameters were well within the recommended range.

Table 4.3 Compost parameters for short method compost

Centres	pH	Nitrogen (%)	Moisture (%)	Colour
Pune	7.4	1.87	60	Dark brown
Pantnagar	7.2	1.75	60	Brown
Murthal	7.7	1.92	63.10	Dark Brown
Ludhiana	7.4	2.1	67-69	Dark brown
Nauni	7.2	2.12	60	Dark brown
Solan	7.6	2.2	64	Dark brown
Pusa	7.3	2.10	63	Brown



Fig. 4.1. Button mushroom strain AVTB-19-201 (left) and AVTB-19-204 (right) at Pantnagar



Fig 4.2. AVTB-19-201 crop



Fig 4.3. AVTB-19-202 crop



Fig 4.4. AVTB-19-203 crop



Fig 4.5. Cross section of button mushroom strain



Fig 4.6. AVTB-19-204 crop



Fig 4.7. Cross section of AVTB-10-04



Fig 4.8. AVTB-19-205 crop

Fig. AVT-2 Trials at Ludhiana Centre



Fig. AVT-2 trials at Murthal centre





Fig. AVT-2 trials at Nauli centre



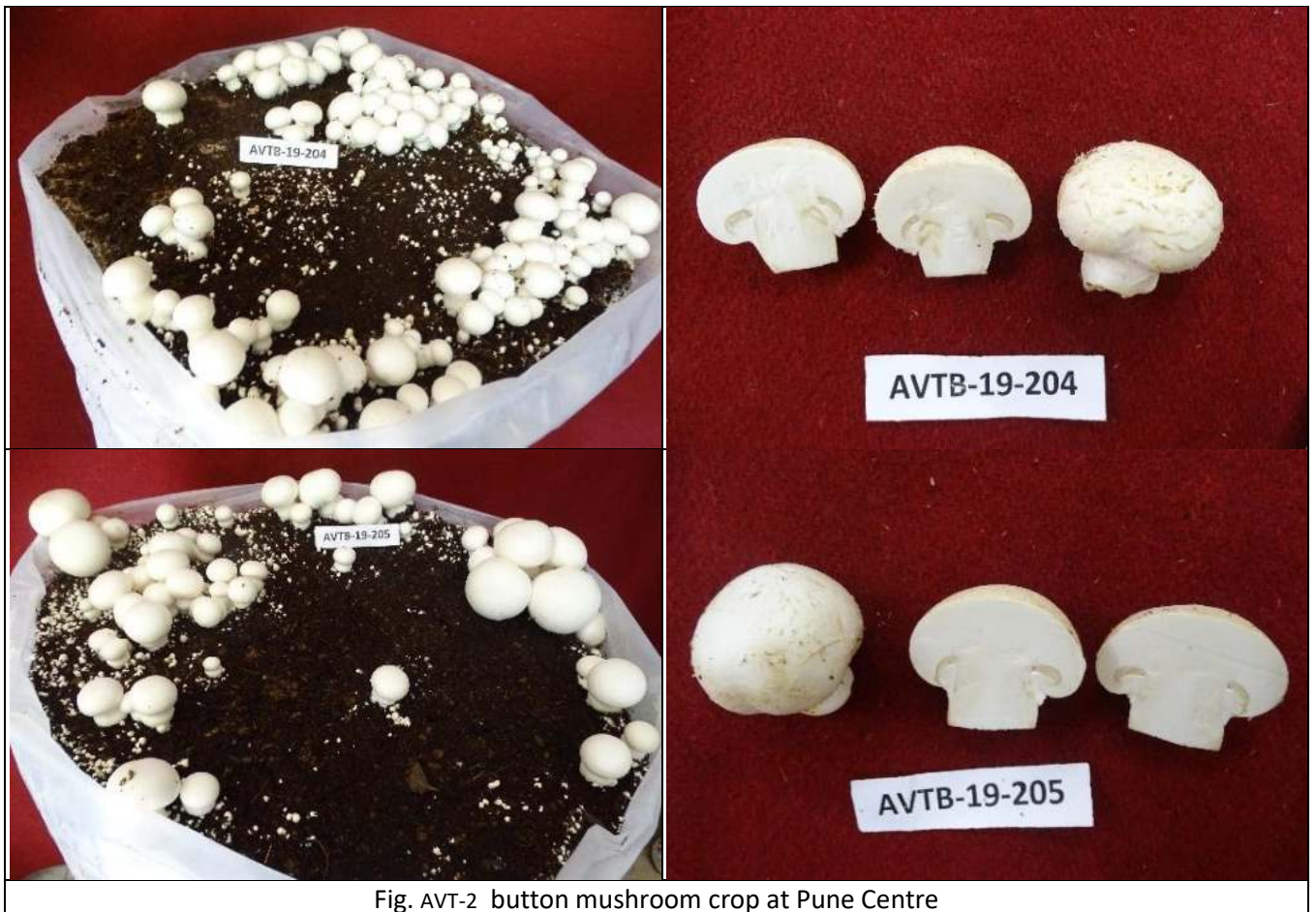




Fig. AVT-2 button mushroom crop at Udaipur Centre

1.2 Advance Varietal trial -1 for selected white accessions of *Agaricus bisporus*

This experiment was conducted on short method pasteurized compost at Pune, Pantnagar, Nauni, Ludhiana, Palampur, Murthal, Solan and Samastipur. The sample size of the experiment was four replications of ten bags each of 10 kg compost in RBD. The parameters of compost i.e. pH, Nitrogen, moisture and colour were also recorded. In the trials conducted using the short method compost, the maximum yield of 25.32 kg per 100 kg of compost was recorded in the strain AVTB-19-105 at Samastipur centre followed by 25.18 kg in AVTB-19-106 at the Pune centre. The strain AVTB-19-106 performed the best at all the centres giving average yield of 17.85 kg/100 kg compost closely followed by AVTB-19-102 and AVTB-19-104. Overall all the strains have performed well at all the centres (Table 4.4) barring barring Udaipur centre where only two of the strains could fruit.

Table 4.4 Yield of different strains of white button mushroom on long method compost in four weeks cropping

<i>A. bisporus</i> strain	Pantnagar	Ludhiana	Murthal	Pune	Solan	Nauni	Samastipur	Average
AVTB-19-101	13.99	18.10	16.36	17.25	9.22	17.16	18.33	15.54
AVTB-19-102	17.93	18.64	16.07	18.11	10.12	18.10	20.27	17.03
AVTB-19-103	13.66	14.62	17.04	20.66	8.98	18.67	17.85	15.93
AVTB-19-104	15.06	11.38	19.06	24.13	8.65	18.07	22.73	17.01
AVTB-19-105	10.56	10.72	15.58	20.74	8.99	19.70	25.32	15.94
AVTB-19-106	16.80	11.41	19.95	25.18	9.76	18.36	23.51	17.85
CD (0.05)	2.22	6.37	1.85	2.18	1.68	0.51	0.75	
SEm	1.08	3.09	0.90	1.06	0.81	0.25	0.36	
CV	10.39	35.57	7.31	7.12	8.26	1.92	2.39	

The average time taken in first harvest (days post casing) was in the range of 15-31 days. The lowest first harvest time (15 days) was recorded at Pune centre in strain AVTB-19-104. At Pusa centre, all the strains took minimum time for first harvest. Overall the lowest first harvest time of 22.17 days was recorded in AVTB-19-102, AVTB-19-104 and AVTB-19-106 (Table 4.5). However all the strain showed statistically same first harvest time.

Fruit body weight also varied at different centres and was recorded maximum (23.77 g) at Murthal centre (Table 4.5). On the basis of average fruit body weight, maximum fruit body weight of 14.12 g was recorded in strain AVTB-19-105 followed by AVTB-19-106. The quality of fruitbody ascertained by cross section showed that best quality was obtained in AVTB-19-101, AVTB-19-103 and AVTB-19-104 in all the centres.

Table 4.5. Time taken to first harvest and average fruit body weight in *A. bisporus* strains

<i>A. bisporus</i> strain	Pantnagar		Ludhiana		Murthal		Pune		Nauni		Pusa		Average	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b
AVTB-19-101	21	11.71	25	9.7	31	21.00	22	13.34	19	10.21	17	9	22.50	12.49
AVTB-19-102	19	11.30	27	9.4	31	19.96	21	14.23	19	8.98	16	9	22.17	12.15
AVTB-19-103	20	14.79	31	9.7	29	20.22	20	14.03	19	9.03	17	10	22.67	12.96
AVTB-19-104	20	13.96	30	9.5	30	20.92	15	13.04	19	9.11	19	11	22.17	12.92
AVTB-19-105	20	14.11	31	10.4	29	23.77	20	13.33	18	9.13	18	14	22.67	14.12
AVTB-19-106	21	12.36	29	9.6	28	20.05	19	13.58	19	9.06	17	15	22.17	13.28
CD (0.05)	1.84	1.30	2.14	1.57	NS	2.29	1.8	0.48	NS	0.213	0.97	1.47		
SEm	0.89	0.63	1.03	0.76	NS	1.10	0.9	0.23	NS	0.103	0.47	0.71		
CV	6.34	6.85	5.09	11.1	NS	7.47	6.33	2.45	NS	1.575	6.46	9.07		

a. First harvest (days post casing); b. average fruit body wt (g)

The compost parameters recorded at various centres have indicated that the pH of the compost ranged from 7.2 to 7.66 while nitrogen percent was varied from 1.75 to 2.25. The moisture percent varied from 60- 72% (Table 4.6). Colour of compost was invariably brown to dark brown at all the centres. The parameters indicated that there was slight variation in the values but overall the parameters were well within the recommended range.

Table 4.6 Compost parameters for short method compost

Centres	pH	Nitrogen (%)	Moisture (%)	Colour
Pune	7.4	1.87	60	Dark brown
Pantnagar	7.5	1.75	60	Brown
Murthal	7.66	1.85	61	Dark Brown
Ludhiana	7.4	2.1	67	Dark brown
Nauni	7.2	2.12	60	Dark brown
Solan	7.6	2.2	64	Dark brown
Pusa	7.2	2.25	72	Brown

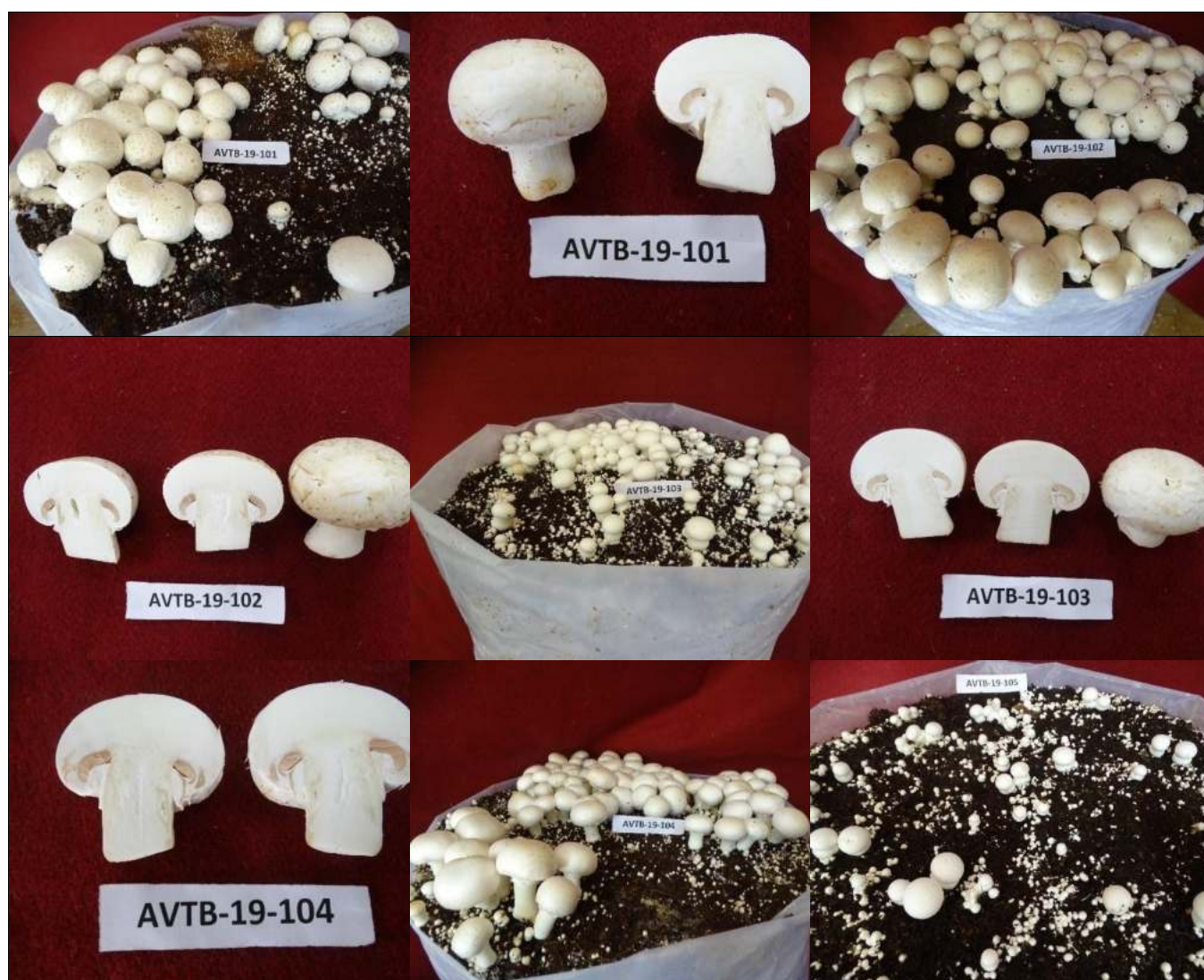




Fig. AVT-1 of button mushroom trial at Pune Centre

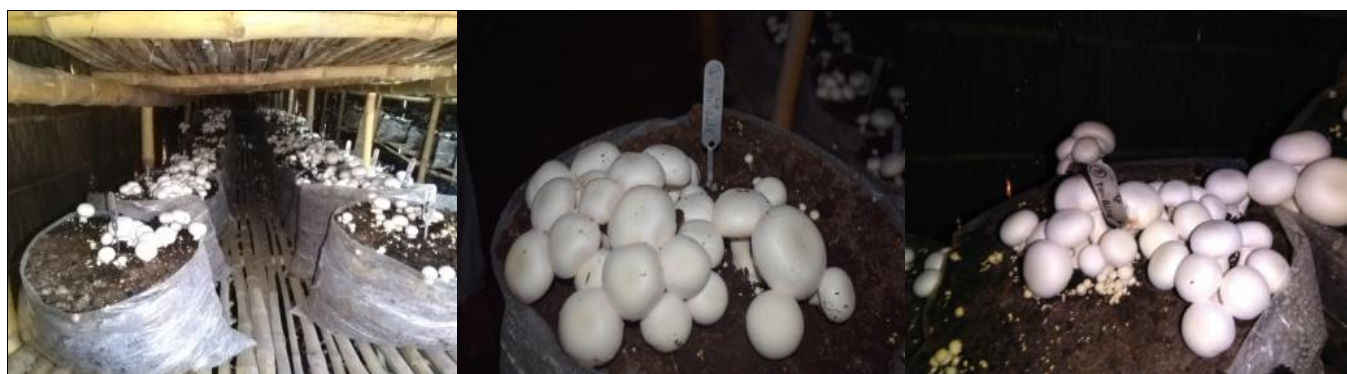


Fig. AVT-1 of button mushroom trial at Pantnagar Centre





Fig. AVT-1 of button mushroom trial at Ludhiana Centre



Fig. AVT-1 of button mushroom trial at Murthals Centre



Fig. AVT-1 of button mushroom trial at Solan Centre



Fig. AVT-1 of button mushroom trial at Nauni Centre

1.3 Advance Varietal trial -1 for strains of Paddy Straw Mushroom, *Volvariella volvacea*

The trial was assigned at seven centres and a total of six strains of *Volvariella volvacea* were tested. Out of eight centres only five could report successful results. At Vellayani and Bhubaneswar centre, the trials was could not be completed. The biological efficiency of various strains varied in the range of 6.08 to 18.75 kg/100 kg of dry substrate at various centres in different strains. The maximum yield of 18.75 kg/100 kg of dry substrate was recorded in strain Vv-19-06 at Raipur centre followed by same strain (17.44 kg/100kg dry straw) at Coimbatore centre. It was also recorded that the all the test strains performed well with good biological efficiency at the Raipur centre. The minimum biological efficiency of 6.06 kg/100 kg dry straw was recorded in Vv-19-03 at Hisar centre. Overall average showed that the maximum BE (14.77 kg) was recorded in Vv-19-06 strain while the minimum BE (9.29 kg) was in strain Vv-19-02 (Table 4.7).

Table. 4.7. Yield of different strains of Paddy Straw Mushroom, *Volvariella volvacea* (kg/100kg of dry substrate)

Strain	Coimbatore	Bhubaneswar	Vellayani	Ludhiana	Hisar	Raipur	Solan	Average
Vv-19-01	12.92	--	--	12.68	10.99	-	15.96	12.20
Vv-19-02	9.32	--	--	9.62	7.73	10.50	22.78	9.29
Vv-19-03	15.52	--	--	15.67	6.08	17.25	20.16	13.63
Vv-19-04	9.6	--	--	10.30	11.46	15.66	11.82	11.76
Vv-19-05	9.64	--	--	8.85	9.58	11.75	9.37	9.96
Vv-19-06	17.44	--	--	16.38	6.49	18.75	16.68	14.77
CD (0.05)	4.84	--	--	3.05	1.28	2.80	0.79	
SE	2.32	--	--	1.46	0.62	1.34	0.38	
CV	31.32	--	--	20.32	11.16	7.56	3.71	

The minimum time taken for the first harvest was 9 days in strain Vv-19-03 at Ludhiana centre. The overall average indicated the minimum time taken for the first harvest was in strain Vv-19-03 and Vv-19-06 while the maximum time taken for first harvest (16.00 days) in strain Vv-19-02 (Table 4.8).

The average fruit body weight varied at different centres with a maximum of 42.0 g at Raipur centre in the strain Vv-19-02 while the minimum fruit body weight was recorded to be 8.2 g at Ludhiana centre in the strain Vv-19-05. All the strains have recorded the maximum fruit body weight at Coimbatore centre followed by Raipur centre. Overall average showed that the maximum fruit body weight (25.49 g) was recorded in strain Vv-19-02 while minimum (20.81 g) in Vv-19-05 strain (Table 4.8).

Table 4.8. Average fruit body weight (g) and time taken to first harvest in strains of paddy straw mushroom

Strains	Coimbatore		Bhubaneswar		Ludhiana		Hisar		Raipur		Solan		Average	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b
Vv-19-01	12	30.28	--	--	14	9.5	20	24.32	11	--	12.0	14.8	14.25	21.37
Vv-19-02	15	23.92	--	--	16	10.5	22	25.54	11	42	11.4	32.2	16.00	25.49
Vv-19-03	11	36.22	--	--	9	11.3	20	23.52	12	27	12.6	21.0	13.00	24.51
Vv-19-04	15	24.78	--	--	13	8.6	20	22.68	12	31	14.8	8.80	15.00	21.77
Vv-19-05	15	24.44	--	--	14	8.2	22	24.60	10	26	17.2	17.6	15.25	20.81
Vv-19-06	12	35.98	--	--	10	10.8	20	25.40	13	25	12.8	18.2	13.75	24.30
CD (0.05)	1.89	2.51	--	--	1.79	2.08	0.39	0.41	2.52	3.00	0.70	1.78		
SE	0.90	1.20	--	--	0.86	1.00	0.19	0.20	1.21	1.22	0.34	0.85		
CV	10.74	6.50	--	--	10.69	15.89	1.44	1.27	3.86	4.86	3.95	7.20		

a: time taken for first harvest (days); b: average fruit body wt (g)



Vv-19-01 mushrooms in bed



Vv-19-01 sporophores



Vv-19-02 mushrooms in bed



Vv-19-02 sporophores



Vv-19-03 mushrooms in bed



Vv-19-03 sporophores



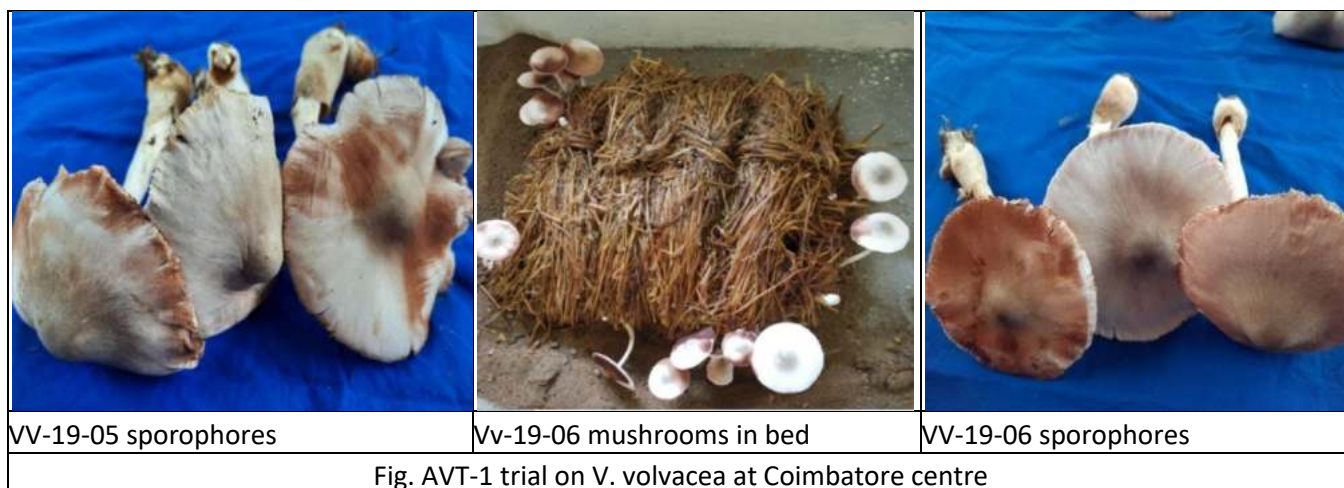
Vv-19-04 mushrooms in bed

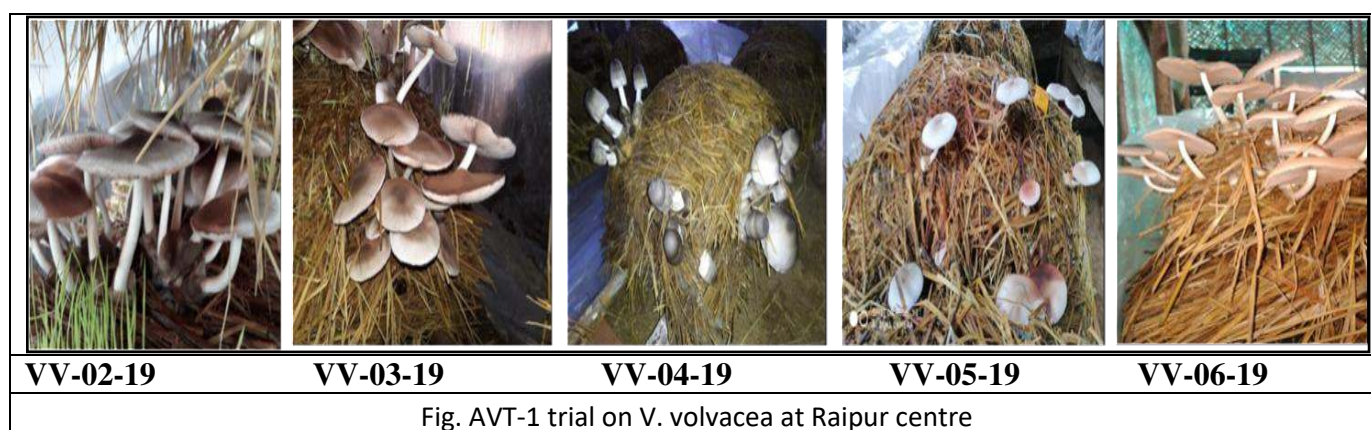


Vv-19-04 sporophores



Vv-19-05 mushrooms in bed





1.4 Advance Varietal trial -1 of high yielding varieties/strains of Oyster Mushroom (*Pleurotus* spp) on either Wheat or paddy straw

On wheat straw

This trial was conducted at 27 different centres on either wheat or paddy straw substrate depending upon the availability. A total of seven high yielding strains of *Pleurotus* species were under evaluation (Table 4.9). The experiment had 3 replications of 10 bags of 5 kg wet straw each. A total 12 centres have used wheat straw as substrate.

All the strains under testing gave maximum biological efficiency at Port Blair, Meerut, Pune and Raipur centre with a maximum BE of 172.49 kg/100 kg of dry straw in PL-19-103 strain at Port Blair centre. However, the minimum BE was recorded at Srinagar centre in all the strain. However, the minimum BE of 37.30 % was recorded PL-19-102 at Srinagar centre. No report is received from Palampur centre. Overall average showed maximum average BE of 79.07 kg/100 kg straw in PL-19-106 strain.

The minimum time taken for the first harvest was recorded as 16 days at Almora centre in PL-19-106 strain followed by PL-19-103 (17 days) at Udaipur centre while maximum first harvest time of more than 50 days was recorded at Srinagar centre in PL-19-102 strain. Maximum first harvest time was recorded at Srinagar centre in all the strains tested (Table 4.10). Maximum fruit body weight of 30.67 g was recorded in strain PL-19-105 at Hisar centre while the lowest Fruit body weight of 4.66 g at Pune centre in PL-19-04 strain (Table 4.11). Overall average showed maximum fruit body wt of 15.52 g in PL-19-105 strain.

Table 4.9. Strain evaluation of oyster mushroom species (yield kg/100kg dry substrate) on wheat straw

Location	Strains									
	PL 19-01	PL 19-02	PL 19-03	PL 19-04	PL 19-05	PL 19-06	PL 19-07	CD (0.05)	SEm	CV
Almora	57.57	51.77	89.47	48.66	66.42	99.73	41.11	9.48	4.35	8.60
Hisar	73.62	70.53	73.40	77.17	67.33	66.98	94.38	4.49	2.06	3.37
Meerut	99.00	89.00	--	64.00	91.00	94.00	98.00	4.79	2.19	--
Palampur	--	--	--	--	--	--	--	--	--	--
Pantnagar	51.26	47.83	69.90	51.10	38.62	55.35	36.13	14.80	6.79	16.63
Pune	91.24	66.98	78.24	79.43	90.10	65.22	82.43	28.85	13.24	20.50
Port Blair	113.92	121.37	172.49	144.08	170.87	157.12	131.78	5.85	2.68	2.27
Raipur	94.10	96.60	87.40	85.30	85.60	97.98	103.40	12.7	4.5	
Samastipur	77.30	70.14	69.49	62.49	80.26	72.33	78.31	3.97	1.82	3.06
Srinagar	--	37.30	39.49	50.76	44.64	38.43	40.39	0.70	0.32	2.19
Udaipur	67.85	51.27	44.96	48.90	33.73	51.22	41.63	7.76	3.56	16.89
Ranchi	65.77	66.20	63.47	73.87	67.83	64.20	68.97	3.47	1.11	2.86
Solan	53.86	60.11	41.57	53.55	59.67	72.55	21.91	7.15	3.28	7.75
Average	77.97	69.35	76.64	69.59	75.29	79.17	69.95			

Table 4.10. Time taken for first harvest in different strains of *Pleurotus* (in days) on wheat straw

Location	Strains									
	PL 19-01	PL 19-02	PL 19-03	PL 19-04	PL 19-05	PL 19-06	PL 19-07	CD (0.05)	SEm	CV
Almora	19.00	19.00	18.00	19.00	18.00	16.00	20.00	1.26	0.58	4.62
Hisar	25.83	26.63	27.67	25.73	29.37	26.57	27.67	0.21	0.09	0.43
Meerut	26.00	28.60		29.30	29.60	28.60	27.00	--	--	--
Palampur	--	--	--	--	--	--	--	--	--	--
Pantnagar	26.67	30.00	22.00	23.67	28.00	20.00	24.67	7.28	3.34	16.38
Pune	23.67	29.67	28.33	26.67	25.33	26.00	24.67	5.24	2.40	11.17
Port Blair	26.00	25.00	22.00	16.00	20.00	25.00	26.00	2.09	0.96	5.16
Raipur	21.00	27.00	29.00	19.00	18.00	26.00	25.00	7.27	3.34	-
Samastipur	21.67	23.00	24.00	22.00	23.33	22.00	23.33	3.99	1.83	9.86
Srinagar	--	50.67	35.67	33.00	41.67	41.00	39.00	4.04	1.86	6.60
Udaipur	21.00	28.00	17.00	22.00	24.00	23.00	24.00	4.05	1.86	10.03
Ranchi	16.00	17.00	16.00	15.00	17.00	16.00	17.00	2.09	0.96	3.24
Solan	30.35	34.47	34.81	29.78	29.13	28.21	32.15	1.68	0.77	3.02
Average	24.22	29.91	26.25	24.92	26.77	25.76	27.23			

Table 4.11. Average fruit body weight in different strains of *Pleurotus* (in g) on wheat straw

Location	Strains									
	PL 19-01	PL 19-02	PL 19-03	PL 19-04	PL 19-05	PL 19-06	PL 19-07	CD (0.05)	SEm	CV
Almora	7.92	10.08	12.58	7.76	9.42	12.86	12.67	2.12	0.97	2.82
Hisar	22.00	25.33	31.33	29.33	30.67	21.33	28.67	2.67	1.23	5.57
Meerut	26.00	20.00		24.00	25.00	28.00	26.00	--	--	--
Palampur	--	--	--	--	--	--	--	--	--	--
Pantnagar	11.28	7.46	9.87	10.52	13.70	13.52	13.10	3.45	1.58	17.06
Pune	6.04	8.40	6.75	4.66	6.12	5.75	6.27	1.51	0.69	13.48
Samastipur	9.02	13.68	9.50	10.31	12.45	10.52	11.03	4.02	1.85	20.69
Srinagar	--	15.33	16.00	23.00	19.00	18.00	13.33	4.07	1.87	15.28
Udaipur	6.35	8.97	9.71	7.20	4.84	8.41	9.88	4.73	2.17	32.47
Ranchi	12.09	11.59	11.34	12.10	10.99	11.45	12.09	1.51	0.69	5.57
Solan	11.37	12.83	17.53	11.80	15.67	12.33	9.83	3.52	1.61	15.14
Average	13.12	13.34	14.47	14.76	15.52	14.87	15.01			



Fig. AVT-1 on oyster mushroom at Solan centre



Fig. AVT-1 on oyster mushroom at Almora centre



Fig. AVT-1 on oyster mushroom at Pantnagar centre



Fig. AVT-1 on oyster mushroom at Pune centre



Fig. AVT-1 on oyster mushroom at Srinagar centre





Fig. AVT-1 on oyster mushroom at Udaipur centre



Fig. AVT-1 on oyster mushroom at Ranchi Centre

On Paddy straw

A total 11 centres have used paddy straw as substrate. All the strains under testing gave maximum biological efficiency at Coimbatore centre with a maximum BE of 114.93 kg/100 kg of dry straw in PL-19-103 strain followed by PL-19-04 (109.04 kg/100 kg dry substrate) at the same centre. However, the minimum BE was recorded to be 27.66 % at Kalyani centre in PL-19-103 strain. Overall average showed maximum average BE of 68.09 kg/100 kg straw in PL-19-104 strain (Table 4.12).

The minimum time taken for the first harvest was recorded as 16 days at Barapani centre in PL-19-103 strain while maximum first harvest time of more than 44.90 days was recorded at Manipur centre in PL-19-103 strain. Maximum first harvest time was recorded at Manipur centre in all the strains tested (Table 4.13). Maximum fruit body weight of 42.03 g was recorded in strain PL-19-102 at Manipur centre (Table 4.14). All the strains showed maximum fruit body weight at Manipur centre only.

Table 4.12. Strain evaluation of oyster mushroom species (yield kg/100kg dry substrate) on Paddy straw

Location	Strains									
	PL 19-01	PL 19-02	PL 19-03	PL 19-04	PL 19-05	PL 19-06	PL 19-07	CD (0.05)	SEm	CV
Bangalore	53.06	55.51	60.72	63.81	41.58	46.15	--	2.80	1.28	10.02
Barapani	84.70	86.30	75.30	96.30	83.40	79.50	62.70	9.45	4.34	7.85
Bhubaneswar	56.00	63.67	63.22	82.33	64.56	79.78	85.22	2.88	1.32	3.06

Coimbatore	74.40	91.67	114.93	109.04	85.80	95.79	72.70	8.00	3.67	4.88
Jammu	44.77	31.45	33.58	53.15	35.63	35.80	47.13	17.36	7.97	27.40
Jorhat	39.37	65.81	63.78	59.08	39.24	44.63	47.68	5.87	2.69	6.43
Kalyani	40.25	45.90	27.66	35.83	33.47	39.08	40.65	2.35	1.08	8.96
Manipur	74.24	75.78	62.22	71.85	77.46	71.28	63.58	3.29	1.51	4.69
Mizoram	65.02	45.29	31.11	59.27	51.97	41.03	45.18	12.94	5.94	15.50
Tripura	66.60	56.14	54.46	68.29	60.29	63.36	65.88	18.29	8.39	6.63
Vellayani	34.20	51.05	43.17	50.00	73.25	57.05	34.61	3.22	1.48	7.39
Average	57.51	60.78	57.29	68.09	58.79	59.40	56.53			

Table 4.13. Time taken for first harvest in different strains of *Pleurotus* (in days) on Paddy straw

Location	Strains									
	PL 19-01	PL 19-02	PL 19-03	PL 19-04	PL 19-05	PL 19-06	PL 19-07	CD(0.05)	SEm	CV
Bangalore	33.00	33.00	33.00	33.00	23.00	29.00	28.00	NS	NS	NS
Barapani	17.00	19.33	16.00	17.33	17.67	18.33	17.00	0.95	0.44	3.05
Bhubaneswar	25.33	32.90	32.40	27.27	27.37	32.33	25.80	0.29	0.13	0.56
Coimbatore	23.03	24.53	22.77	20.73	21.77	22.87	16.30	0.29	0.13	0.74
Jammu	27.00	32.00	26.00	24.00	28.00	26.00	32.00	2.91	1.34	5.86
Jorhat	19.67	22.66	21.33	16.00	22.67	21.33	19.33	2.52	1.15	6.92
Kalyani	18.27	17.93	18.23	17.93	18.23	18.03	17.67	0.53	0.24	1.44
Manipur	40.60	37.40	44.90	41.70	33.70	25.40	40.30	2.37	1.09	3.41
Mizoram	25.73	29.70	32.27	30.53	27.87	31.57	28.63	4.79	2.20	9.14
Tripura	30.67	32.67	32.67	31.33	35.33	31.67	28.67	3.43	1.58	6.06
Vellayani	21.00	22.00	22.00	21.00	19.00	23.00	24.00	2.97	1.36	7.60
Average	25.57	27.65	27.42	25.53	24.96	25.41	25.25			

Table 4.14. Average fruit body weight in different strains of *Pleurotus* (in g) on Paddy straw

Location	Strains									
	PL 19-01	PL 19-02	PL 19-03	PL 19-04	PL 19-05	PL 19-06	PL 19-07	CD(0.05)	SEm	CV
Bangalore	7.59	7.78	4.33	3.93	8.30	5.25	4.84	2.88	1.32	26.97
Bhubaneswar	5.56	6.06	4.01	3.67	5.04	5.50	3.49	0.28	0.13	3.27
Coimbatore	8.09	8.07	7.61	7.51	7.61	7.97	8.98	0.45	0.21	3.16
Jammu	18.11	11.33	17.00	19.00	18.33	18.00	19.33	3.49	1.60	11.33
Jorhat	9.90	11.90	10.83	11.75	8.90	9.67	11.70	3.03	1.39	15.96
Kalyani	7.06	8.30	10.11	9.67	8.70	9.06	8.80	1.56	0.71	8.58
Manipur	37.67	42.03	15.40	29.00	37.70	36.67	26.07	3.68	1.69	6.46
Mizoram	10.00	7.00	5.00	9.00	8.00	6.00	7.00	0.52	0.24	3.99
Tripura	6.74	5.33	6.47	7.67	5.53	6.62	3.33	1.16	0.53	10.95
Vellayani	3.89	5.31	4.86	4.94	8.24	10.96	3.47	1.83	0.84	17.28
Average	11.46	11.31	8.56	10.61	11.64	11.57	9.70			





Fig. 4.44. Crop at Bangalore centre



Fig. 4.45. Crop at Barapani centre



Fig. 4.47. Crop at Bhubaneswar centre





Fig. 4.48. Crop at Coimbatore centre



Fig. AVT-1 on oyster mushroom at Jammu centre



Fig. AVT-1 on oyster mushroom at Kalyani centre



Fig. AVT-1 on oyster mushroom at Manipur centre



Fig. AVT-1 on oyster mushroom at Mizoram centre



Fig. AVT-1 on oyster mushroom at Vellayani centre



Fig. AVT-1 on oyster mushroom at Jorhat centre

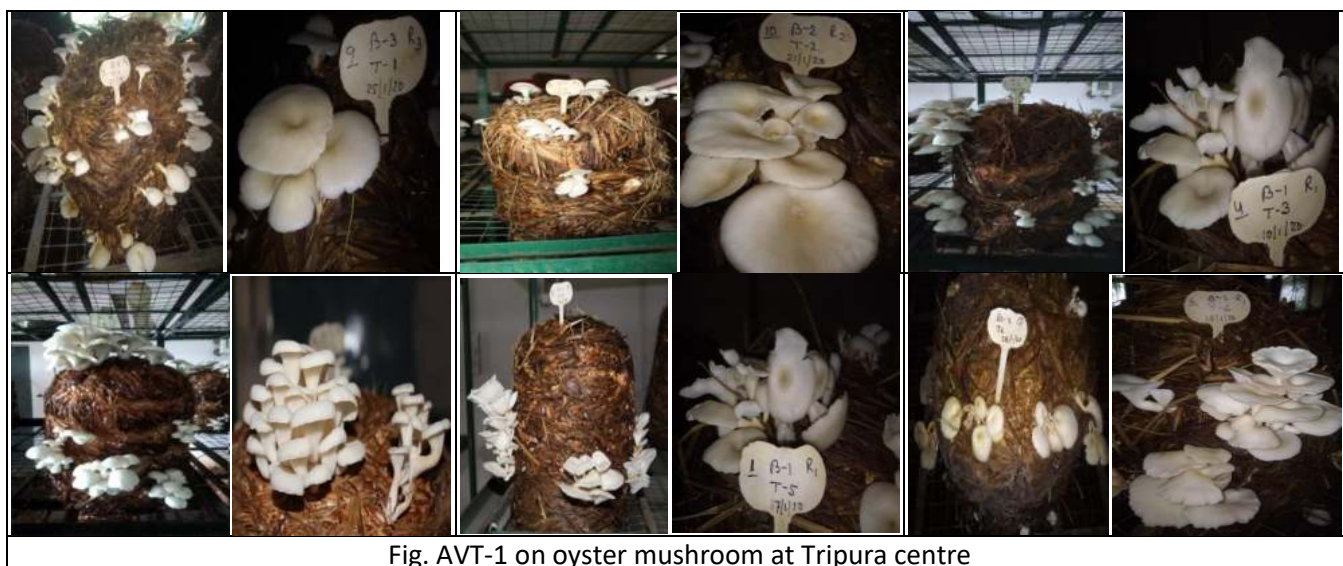


Fig. AVT-1 on oyster mushroom at Tripura centre

1.5 Advance varietal trial-2 for high yielding strains of Milky mushroom (*Calocybe indica*)

This trial was allotted to fourteen different Centres and seven strains of milky mushroom were to be evaluated on wheat and paddy straw based on availability of the substrate. A total of eight centres have reported the results. At rest of the centres, the experiment could not be completed due to lockdown. Six centres have done this experiment on wheat straw based substrate while two of the centres Coimbatore and vellayani have done it on paddy straw. At the centres using wheat straw substrate, the maximum yield was recorded at Meerut and Samastipur centres with a maximum yield of 99.00 kg/ 100 kg straw in CI-19-03 strain. At ICAR-DMR, Solan the experiment was also conducted and maximum yield of 90.68 kg per 100 kg dry straw was achieved in CI-19-07 strain. Overall average showed that CI-19-04 performed the best amongst the strains tested with overall average of 63.95 kg per 100 kg dry substrate (Table 4.15). At the centres, where paddy straw was used as substrate, maximum yield of 120.11 kg per 100 kg dry straw was obtained at Coimbatore centre in CI-109-04 strain. All the strains performed very good at Coimbatore centre.

The minimum days taken for first harvest (18.00 days) was observed in the strain CI-19-04 and CI-19-09 at Pantnagar centre while maximum days taken for first harvest (45.00 days) in strain CI-19-07 at Meerut Centre. Overall average showed that the average minimum time of 23.23 days taken for first harvest was in strain CI-19-06 while average maximum time of 33.55 days was taken in the strain CI-19-07 (Table 4.16). The maximum fruitbody weight (92.80 g) was observed in strain CI-19-07 at Vellayani centre while a minimum fruit body weight of 15.28 g was recorded in CI-19-02 strain at Murthal centre (Table 4.17).

Table 4.15. Initial varietal trail for high yielding strains of milky mushroom (kg/100 kg dry sub) on wheat straw

Centres	Strains									
	CI-19-02	CI-19-03	CI-19-04	CI-19-05	CI-19-06	CI-19-07	CI-19-09	CD(0.05)	SEm	CV
Bhubneshwar	--	--	--	--	--	--	--	--	--	--
Coimbatore	89.79	103.32	120.11	86.98	118.00	104.54	96.66	3.59	1.74	2.67
Jammu	--	--	--	--	--	--	--	--	--	--
Ludhiana	48.72	40.17	48.35	72.23	0.00	51.63	40.85	22.28	10.79	52.97
Meerut	90.00	99.00	92.00	93.00	0.00	71.00	88.00	4.71	--	--
Murthal	40.58	42.82	32.01	24.67	32.88	29.29	36.16	5.25	2.54	12.23
Pantnagar	39.75	28.50	74.49	28.85	56.86	27.51	51.40	20.85	10.10	31.04
Pune	--	--	--	--	--	--	--	--	--	--
Raipur	36.05	43.25	44.30	--	43.80	40.55	--	2.18	1.00	--
Samastipur	55.80	65.75	70.85	60.70	75.65	53.80	68.85	3.23	1.56	3.89
Solan	19.29	51.41	22.34	25.98	77.68	90.68	38.70	3.81	1.85	6.21
Tripura	--	--	--	--	--	--	--	--	--	--

Udaipur	--	--	--	--	--	--	--	--	--	--
Vellayani	31.04	30.56	71.12	31.72	20.54	60.14	21.51	8.09	3.92	16.10
Average	50.11	56.09	63.95	53.02	47.27	58.79	55.27			

Table 4.16. Day taken to first harvest on wheat straw

Centres	Strains									
	CI-19-02	CI-19-03	CI-19-04	CI-19-05	CI-19-06	CI-19-07	CI-19-09	CD (0.05)	SEm	CV
Bhubneshwar	--	--	--	--	--	--	--	--	--	--
Coimbatore	28.70	28.40	27.90	28.40	28.70	28.00	27.80	1.37	0.66	3.71
Jammu	--	--	--	--	--	--	--	--	--	--
Ludhiana	30.00	27.00	32.00	26.40	0.00	27.00	31.00	3.08	1.49	9.53
Meerut	37.00	40.00	38.00	42.00	0.00	45.00	38.00	NS	NS	NS
Murthal	32.00	29.00	30.00	38.00	34.00	35.00	32.00	NS	NS	NS
Pantnagar	20.00	21.00	18.00	24.60	19.60	19.20	18.00	0.54	0.26	2.08
Pune	--	--	--	--	--	--	--	--	--	--
Raipur	35.00	37.00	34.00	--	38.00	41.00	--	1.38	0.63	
Samastipur	34.80	33.40	32.80	31.80	31.40	40.00	35.60	4.46	2.16	9.97
Solan	61.60	42.80	63.20	49.00	48.40	42.60	48.20	0.87	0.42	1.32
Tripura	--	--	--	--	--	--	--	--	--	--
Udaipur	--	--	--	--	--	--	--	--	--	--
Vellayani	32.13	35.02	29.66	35.22	34.13	33.20	33.20	3.23	1.57	7.45
Average	34.58	32.62	33.95	34.43	26.03	34.56	32.98			

Table 4.17. Average fruit body weight on wheat straw

Centres	Strains									
	CI-19-02	CI-19-03	CI-19-04	CI-19-05	CI-19-06	CI-19-07	CI-19-09	CD(0.05)	SEm	CV
Bhubneshwar	--	--	--	--	--	--	--	--	--	--
Coimbatore	31.70	32.10	32.50	32.50	32.60	32.30	31.80	0.68	0.33	1.63
Jammu	--	--	--	--	--	--	--	--	--	--
Ludhiana	32.82	20.60	28.20	35.20	0.00	25.60	40.20	3.53	1.71	10.36
Meerut	45.00	46.00	44.20	40.00		38.00	40.40	NS	NS	NS
Murthal	15.28	22.02	19.38	20.61	20.12	20.01	20.63	4.67	2.26	18.13
Pantnagar	42.37	39.58	69.36	54.65	90.77	55.03	43.63	13.97	6.77	18.94
Pune	--	--	--	--	--	--	--	--	--	--
Raipur	64.38	74.57	73.97	--	56.88	66.48	--	2.38	1.09	--
Samastipur	39.43	50.61	41.57	64.02	36.08	52.62	43.50	10.44	5.06	17.07
Solan	67.20	125.80	83.80	46.60	128.00	194.80	100.20	11.45	5.55	8.23
Tripura	--	--	--	--	--	--	--	--	--	--
Udaipur	--	--	--	--	--	--	--	--	--	--
Vellayani	48.20	44.00	90.40	73.20	60.00	92.80	53.60	12.64	6.12	14.66
Average	42.93	50.59	53.71	45.85	53.06	64.18	46.75			





Fig. AVT-1 on Milky mushroom at Coimbatore centre





Fig. AVT-1 on Milky mushroom at Ludhiana centre



Fig. AVT-1 on Milky mushroom at Murthal centre



Fig. AVT-1 on Milky mushroom at Pantnagar centre





Fig. AVT-1 on Milky mushroom at Vellayani centre



Fig. AVT-1 on Milky mushroom at ICAR-DMR, Solan centre

1.6 Advance Varietal trial-2 of Shiitake mushroom

This trial was allotted to sixteen different centres and eight strains of shiitake mushroom were to be evaluated. The evaluation was to be done on two substrates i.e. saw dust and wheat straw whatever is available easily. A total of seven centres have reported successful results of the experiment. At rest of the nine centres the experiment is ongoing and results could not be reported. The maximum biological efficiency of 80.23 kg /100 kg dry saw dust was obtained at dsolan Centre in LE-19-04 strain followed by 68.40 kg / 100 kg of dry substrate was obtained at Meerut centre on saw dust based substrate in LE-19-10 strain. Lowest BE was of 12.27 kg / 100 kg of dry substrate was recorded at Murthal centre in the strain LE-19-04 on saw dust substrate. Overall average biological efficiency of 46.00 kg per 100 kg dry substrate was obtained in the strain LE-19-10 (Table 4.21).

It was observed that the maximum time taken to first harvest was 95 days in LE-19-03 at Murthal centre while minimum first harvest time of 37.04 days in saw dust substrate was recorded in strain LE-19-10 at Bangalore centre (Table 4.22 and Table 4.23).

Table 4.21. Initial varietal trail for shiitake mushroom (kg/100 kg dry sub)

Centres	Strains								CD (0.05)	SEm	CV
	LE-19-01	LE-19-02	LE-19-03	LE-19-04	LE-19-05	LE-19-06	LE-19-09	LE-19-10			
Bangalore	-	14.37	22.41	-	15.46	14.07	16.58	14.77	1.831	0.88	13.514
Hisar	32.15	37.29	29.38	32.01	23.47	26.25	30.09	28.26	3.54	1.70	14.85
Jammu	28.13	26.42	20.11	31.31	29.19	30.11	20.28	18.04	4.47	2.14	4.91
Meerut	31.00	37.30	53.00	37.50	61.70	30.30	48.20	68.40	2.73	1.31	6.30
Murthal	14.39	18.27	12.30	12.27	15.34	18.61	15.20	13.26	2.56	1.23	21.31
Nauni	51.21	54.10	49.15	53.10	57.29	51.73	52.76	48.32	3.69	1.77	5.31
Pantnagar	49.60	33.62	38.81	26.59	-	-	49.97	51.56	15.42	7.39	30.60
Solan	57.92	50.87	49.13	43.62	80.23	54.90	58.20	67.85	6.42	3.07	12.46
Average	34.41	31.62	32.17	32.13	33.74	28.51	39.48	46.00			

Table 4.22. Day taken to first in high yielding strains of shiitake mushroom

Centres	Strains										
	LE-19-01	LE-19-02	LE-19-03	LE-19-04	LE-19-05	LE-19-06	LE-19-09	LE-19-10	CD (0.05)	SEm	CV
Bangalore	-	54.60	55.40	58.77	-	53.47	55.56	37.04	15.16	7.27	31.02
Hisar	79.62	81.18	85.46	82.38	80.80	78.90	81.39	68.12	0.36	0.17	0.33
Jammu	93.31	89.71	86.54	80.34	83.32	78.31	91.10	90.04	3.86	1.85	3.44
Meerut	84.60	82.00	85.60	83.30	84.30	86.10	85.60	85.00	NS	NS	NS
Murthal	88.00	90.00	95.00	89.00	90.00	91.00	90.50	60.83	0.00	0.00	0.00
Nauni	63.00	71.00	71.00	69.00	65.00	65.00	67.33	46.00	0.00	0.00	0.00
Pantnagar	81.20	84.40	79.60	78.60	-	-	75.00	77.00	2.11	1.01	2.02
Average	81.62	78.98	79.80	77.34	80.68	75.46	83.90	84.01			

Table 4.23. Average fruit body wt in high yielding strains of shiitake mushroom

Centres	Strains										
	LE-19-01	LE-19-02	LE-19-03	LE-19-04	LE-19-05	LE-19-06	LE-19-09	LE-19-10	CD (0.05)	SEm	CV
Bangalore	-	10.20	14.40	11.30	-	15.30	13.40	14.30	2.70	1.29	23.95
Hisar	22.24	22.62	20.32	20.26	18.34	19.54	19.26	18.22	0.87	0.42	3.20
Jammu	14.96	15.70	14.44	16.90	15.64	16.34	12.11	16.32	2.10	1.01	10.29
Meerut	7.70	9.30	10.60	9.40	8.80	7.50	9.60	9.90	NS	NS	NS
Murthal	12.16	13.88	14.01	14.34	13.36	14.48	12.20	13.46	2.95	1.41	16.31
Nauni	13.27	15.60	14.20	15.00	16.80	15.00	15.16	13.84	0.68	0.33	3.46
Pantnagar	31.81	49.09	57.09	55.71	-	-	27.38	31.81	7.57	3.63	12.50
Average	17.02	19.48	20.72	20.42	14.59	14.69	16.36	19.34			



Fig. 4.67. Crop of Shiitake at Meerut centre



Fig. 4.67. Crop of Shiitake at Murthal centre



Fig. 4.67. Crop of Shiitake at Nauni centre



Fig. 4.67. Crop of Shiitake at Pantnagar centre

1.7 Advance varietal trial-1 of Lions Maine Mushroom *Hericium erinaceus* on saw dust or wheat straw

This trial was allotted to eleven different centres and seven strains of *Hericium erinaceus* mushroom (HE-19-01, HE-19-02, HE-19-04, HE-19-05, HE-19-07, HE-19-08 and HE-19-09) were to be evaluated. The evaluation was to be done on two substrates i.e. saw dust and wheat straw whatever is available easily. A total of eight centres have reported successful results of the experiment. The maximum biological efficiency of 88.89 kg / 100 kg of dry substrate was obtained at Almora centre on saw dust based substrate in HE-19-08 followed by 48.95 kg / 100 kg saw dust substrate in the strain HE-19-09 at the Solan centre. Lowest BE was of 9.72 kg / 100 kg of dry substrate was recorded at Almora centre in the strain HE-19-01 on saw dust substrate. Overall average biological efficiency showed that the strain HE-19-08 and HE-19-09 performed the best (Table 4.24).

It was observed that the maximum time taken to first harvest was 71.00 days in HE-19-08 at Nauni centre while minimum first harvest time of 20.20 days in saw dust substrate was recorded in strain HE-19-07 at Raipur centre (Table 4.25).

Table 4.24. Initial varietal trail for *Hericum* mushroom (kg/100 kg dry sub)

Centres	Strains									
	HE-19-01	HE-19-02	HE-19-04	HE-19-05	HE-19-07	HE-19-08	HE-19-09	CD(0.05)	SEm	CV
Samastipur	14.00	18.50	21.00	16.00	18.40	28.00	30.80	2.89	1.40	17.55
Pasighat	-	-	-	-	-	-	-	-	-	-
Nauni	20.51	12.82	21.53	27.00	15.38	11.96	28.37	12.23	5.92	30.78
Almora	9.72	-	9.99	11.66	14.43	88.89	47.22			
Jammu	28.20	31.45	36.43	38.42	23.84	39.84	37.31	4.98	2.41	6.76
Raipur	30.80	-	25.40	29.28	20.20	36.72	33.00	5.18	2.51	-
Pantnagar	14.28	6.63	32.83	18.41	24.13	14.28	22.10	7.82	3.79	52.06
Udaipur	-	-	-	-	-	-	-	-	-	-
Hisar	34.58	40.95	-	26.17	-	-	34.67	12.44	6.02	67.90
Meerut	24.10	43.30	30.80	25.60	27.30	28.40	23.10	2.74		
Murthal	19.46	15.43	17.48	12.65	12.73	13.33	13.77	1.91	0.92	16.26
Solan	30.2	20.65	29.48	28.12	22.48	48.95	44.35	4.26	2.06	14.22
Average	22.59	23.72	24.99	23.33	19.88	34.49	31.47			

Table 4.25. Day taken to first in high yielding strains of *Hericum* mushroom

Centres	Strains									
	HE-19-01	HE-19-02	HE-19-04	HE-19-05	HE-19-07	HE-19-08	HE-19-09	CD(0.05)	SEm	CV
Samastipur	27.40	28.20	30.80	27.60	30.80	31.00	33.80	2.01	0.98	5.15
Pasighat	-	-	-	-	-	-	-	-	-	-
Nauni	68.00	68.00	66.00	64.00	69.00	71.00	68.00	NS	NS	NS
Almora	52	--	52	52	51	42	45			
Jammu	42.40	37.93	32.54	32.45	46.31	38.49	36.62	2.69	1.30	7.55
Raipur	30.80	-	25.40	29.28	20.20	36.72	33.00	2.37	1.15	-
Pantnagar	42.20	45.40	36.80	52.00	55.00	51.60	50.60	6.99	3.39	11.24
Udaipur	-	-	-	-	-	-	-	-	-	-
Hisar	36.80	34.40	-	39.60	-	-	37.60	0.93	0.45	3.37
Meerut	56.00	58.00	57.00	55.00	53.00	57.00	59.00	56.00	58.00	57.00
Murthal	41.40	50.80	43.40	45.80	45.20	43.20	45.60	0.83	0.40	1.42
Average	44.11	46.10	42.99	44.19	46.31	46.38	45.47			

Table 4.25. Average fruit body weight in high yielding strains of *Hericum* mushroom

Centres	Strains									
	HE-19-01	HE-19-02	HE-19-04	HE-19-05	HE-19-07	HE-19-08	HE-19-09	CD (0.05)	SEm	CV
Samastipur	18.34	23.33	15.04	25.00	22.66	23.94	21.82	9.30	4.51	33.23
Pasighat	-	-	-	-	-	-	-	-	-	-
Nauni	29.40	44.60	54.80	77.40	35.00	34.20	51.40	13.66	6.62	22.41
Almora	10.92	--	10	13.19	28.88	61.58	31.48			
Jammu	76.94	84.37	126.51	85.14	116.04	110.31	68.10	7.30	3.54	8.01
Pantnagar	14.33	10.10	16.76	15.09	15.31	18.62	19.24	4.49	2.17	21.99
Udaipur	-	-	-	-	-	-	-	-	-	-
Meerut	8.03	8.66	10.22	6.40	9.10	9.40	6.02	8.03		
Murthal	14.74	12.22	10.85	15.81	16.45	14.40	15.79	1.67	0.81	8.94
Average	24.67	30.55	34.88	34.00	34.78	38.92	30.55			



Fig. 68. Crop of Hericium at Samastipur centre



Fig. 4.69. Crop of Hericium at Nauni centre



Fig. 4.70. Crop of Hericium at Almora centre



Fig. 4.70. Crop of Hericium at Jammu centre



Fig. 4.70. Crop of Hericium at Raipur centre



Fig. 4.70. Crop of Hericium at Pantnagar centre



Fig. 4.70. Crop of Hericium at Meerut centre



Fig. 4.70. Crop of Hericium at Murthal centre

2. CROP PRODUCTION

2.1 Evaluation of different compost formulation for button mushroom

The trial was assigned to seven different centres Murthal, Nauni, Pune, Ludhiana, Palampur, Udaipur, Pune and Pantnagar. The compost formulae used is given in Table.... A total of four centres (Pantnagar, Murthal, Pune and Ludhiana) could complete the experiment and reported the successful results. The Prepared compost

parameters are given in the Table Reviewing the parameters it could be observed that the nitrogen percent in compost prepared through different formulation was within the range for good compost.

Table. 4.32. Compost formulae used

Ingredients							
Formula I (kg)		Formula II (kg)		Formula III (kg)		Formula IV (kg)	
Wheat straw	1000	Mustard straw	1000	Paddy straw	1000	Baggasse	1000
Chicken manure	400	Chicken manure	400	Chicken manure	400	Chicken manure	500
Wheat bran	100	Wheat bran	45	Urea	10	Urea	20
Urea	14.5	Urea	3	Ammonium sulphate	10	Cotton seed cake	25
Gypsum	30	Gypsum	40	Gypsum	80	Gypsum	80

Table 4.33. Analysis of composite compost sample (dry weight basis)

Parameter	Value											
	I			II			III			IV		
	Moisture (%)	pH	N (%)	Moisture (%)	pH	N (%)	Moisture (%)	pH	N (%)	Moisture (%)	pH	N (%)
Pantnagar	7	2.2	70	--	--	--	--	--	--	--	--	--
Murthal	--	--	--	7.69	1.87	63.21	7.57	1.79	61.70	--	--	--
Pune	63	7.7	1.98	--	--	--	--	--	--	64	7.6	1.93
Ludhiana	67	7.4	2.1	--	--	--	67	7.1	2.0	--	--	--

The results showed that yield of compost made by different composition have different yield (Table 4.19). all the centres have evaluated atleast two formulations. All the formulations have resulted in good yields. However, lesser yields were recorded in formulation III using paddy straw. The quality of the produce was at par in all the compost (Table 4.34).

Table 4.34. Yield, days to first harvest and average fruit body weight of button mushroom on different compost

Centres	Compost formulae											
	I			II			III			IV		
	BE(%)	First harvest days	Average fruit body wt (g)	Yield	First harvest days	Average fruit body wt (g)	Yield	First harvest days	Average fruit body wt (g)	Yield	First harvest days	Average fruit body wt (g)
Pantnagar	16.2	17.61	13.62	--	--	--	--	--	--	--	--	--
Murthal	--	--	--	16.31	32	13.21	14.18	35	12.57	--	--	--
Pune	20.06	18.95	12.80	--	--	--	--	--	--	17.77	20.57	12.39
Ludhiana	18.65	25	9.2	--	--	--	13.72	32	10.5	--	--	--
Average	18.30	20.52	11.87	16.31	32.00	13.21	13.95	33.50	11.54	17.77	20.57	12.39



Fig. Evaluation of compost formulation at Pantnagar centre



Fig. Evaluation of compost formulation at Murthal centre



Fig. Evaluation of compost formulation at Pune centre

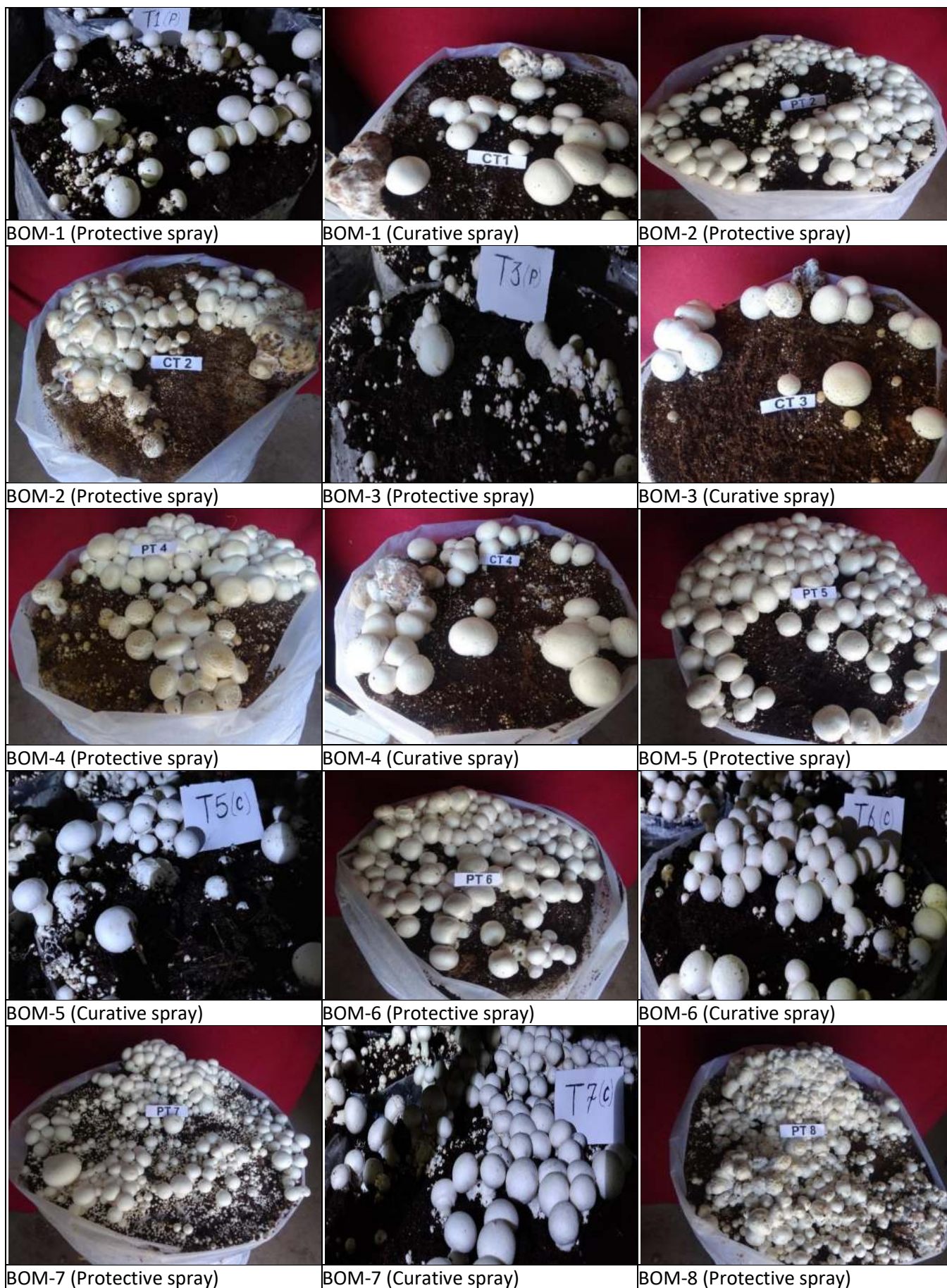


Fig. Evaluation of compost formulation at Ludhiana centre

2.2 Efficacy of botanical & microbial pesticides on the management of wet bubble diseases of white button mushroom

The experiment was assigned to three centres i.e. Hisar, Pune and Murthal. Hisar and Pune centre have reported the results. At Hisar centre the yield levels are ver low, hence it is difficult to conclude, however, results reported by Pune centre are conclusive and showed the yield increase up to 101.49 per cent over inoculated control using BOM 6 treatment.

Treatment	Hisar centre		Pune centre			
	Protective	Curative	Protective	Curative	% increase in yield over control	
BOM 1	4.56	4.30	20.68	15.76	72.33	96.18
BOM 2	5.09	4.77	19.10	14.72	59.14	83.25
BOM 3	4.69	4.38	13.05	9.02	8.69	12.26
BOM 4	4.77	4.47	16.19	11.73	34.90	46.05
BOM 5	4.89	4.65	17.57	13.67	46.38	70.19
BOM 6	4.56	4.22	24.20	19.46	101.60	142.25
BOM 7	4.58	4.32	22.50	18.23	87.49	126.92
BOM 8	0.00	0.00	12.00	8.03	0.00	0.00
Inoculated control	4.35	4.35	12.00	8.03		
Uninoculated control	5.85	5.85	-	-		
CD (0.05)	0.06	0.05	1.45	0.31		
SEm	0.03	0.03	0.50	0.11		
CV	2.12	2.03				



		
BOM-8 (Curative spray)		
Fig. Efficacy of botanical & microbial pesticides on the management of wet bubble diseases of white button mushroom		

2.3 Efficacy of botanical & microbial pesticides on the management of yellow mould diseases of white button mushroom

The experiment was assigned to three centres i.e. Hisar, Pune and Murthal. Only Hisar centre reported the results. The yield levels are ver low, hence it is difficult to conclude from the experiment.

Treatment	Hisar centre		Pune centre		Murthal centre	
	Protective	Curative	Protective	Curative	Protective	Curative
BOM 1	5.89	5.81	--	--	--	--
BOM 2	5.84	5.82	--	--	--	--
BOM 3	5.81	5.79	--	--	--	--
BOM 4	5.80	5.83	--	--	--	--
BOM 5	5.78	5.72	--	--	--	--
BOM 6	5.82	5.69	--	--	--	--
BOM 7	5.82	5.71	--	--	--	--
BOM 8	0.00	0.00	--	--	--	--
Inoculated control	5.79	5.79	--	--	--	--
Uninoculated control	5.83	5.83	--	--	--	--
CD (0.05)	0.09	0.06	--	--	--	--
SEm	0.04	0.03	--	--	--	--
CV	2.50	1.77	--	--	--	--

5. COLLECTION, IDENTIFICATION AND CONSERVATION OF WILD EDIBLE AND MEDICINAL MUSHROOMS

Different Centers have reported the collection of specimens of wild mushrooms during the year and about 581 collections have been made and a total of 296 specimens/cultures were deposited at the DMR Gene Bank with passport data and accession numbers were given to 236 cultures. Rest of the cultures was contaminated. The outcome has been summarized in table 5.1.

Table.5.1. Germplasm and passport data collected and supplied to DMR, Solan by AICRP Centres

Centres	No. of mushroom specimens Collected	No. of specimens deposited	Accession No obtained
PAU, Ludhiana	07	07	07
TNAU, Coimbatore	31	19	19
MPKV, Pune	94	49	15
GBPUA&T, Pantnagar	24	21	15
IGKV, Raipur	09	00	00
MPUAT, Udaipur	49	23	08
KAU, Kerala	10	06	04
HAU, Hisar	00	00	00
OUAT, Bhubneshwar	08	00	00
RAU, Samastipur	02	00	00
CAU Pasighat	00	00	00
HAIC, Murthal	00	00	00
HPKV, Palampur	00	00	00
ICAR RC NEH Region, Barapani	07	00	00
ICAR RC, Sikkim	08	06	05
ICAR RC, Arunachal Pradesh	00	00	00
ICAR RC, Nagaland	00	00	00
ICAR RC, Mizoram	65	00	00
ICAR RC, Tripura	00	00	00
ICAR RC, Manipur	18	05	05
ICAR-RC ER, Ranchi, Jharkhand	04	00	00
ICAR-CARI, Port Blair	00	00	00
IIHR, Bangalore	05	00	00
UHF, Nauni	00	00	00
VPKAS, Almora	07	00	00
SKUAST, Kashmir	12	00	00
SKUAST, Jammu	18	09	07
AU Assam	01	00	00
SVBP, Meerut	03	00	00
BCKVV, Kalyani	00	00	00
DAU, Gujrat	00	00	00
ANGRAU, Hyderabad	00	00	00
ICAR-DMR, Solan	203	151	151
Total	581	296	236

1. PAU, Ludhiana

Wild mushroom flora was surveyed in the districts of Punjab during the months from July to October, 2019. Seven mushrooms were collected and accessioned as DMRO-1167 to DMRO-1169 and DMRX-1756 to DMRX-1759. Mushrooms were identified as *Psythyrella* sp. (DMRO 1167), *Crepidotus applanatus* (DMRO 1168), *Pleurotus* sp. (DMRO 1169), *Agaricus* sp. (DMRX-1756), *Lactarius* sp. (DMRX-1757), *Schizophyllum commune* (DMRX-1758) and *Hebeloma crustuliniforme* (DMRO 1759).

Data of Collected Specimen

Sample no	DMR Accession no.	Habitat	GPS data	Tentative identification
1	DMRO-1167	Humus	Longitude 75°85'73"E Latitude 30°90'10"N	<i>Psythyrella</i> sp.
2	DMRO-1168	Humus	75° 25' 39" E 32° 3' 7" N	<i>Crepidotus applanatus</i>
3	DMRO-1169	Humus	75°48'2"E 30°39'18"N	<i>Pleurotus</i> sp.
4	DMRX-1756	Humus	75°85'73"E 30°90'10"N	<i>Agaricus</i> sp.
5	DMRX-1757	Humus	75°46'70"E 30°79'23"N	<i>Lactarius</i> sp.
6	DMRX-1758	Tree bark	75°85'73"E 30°90'10"N	<i>Schizophyllum commune</i>
7	DMRX-1759	Humus	75°67'21"E 30°84'47"N	<i>Hebeloma crustuliniforme</i>

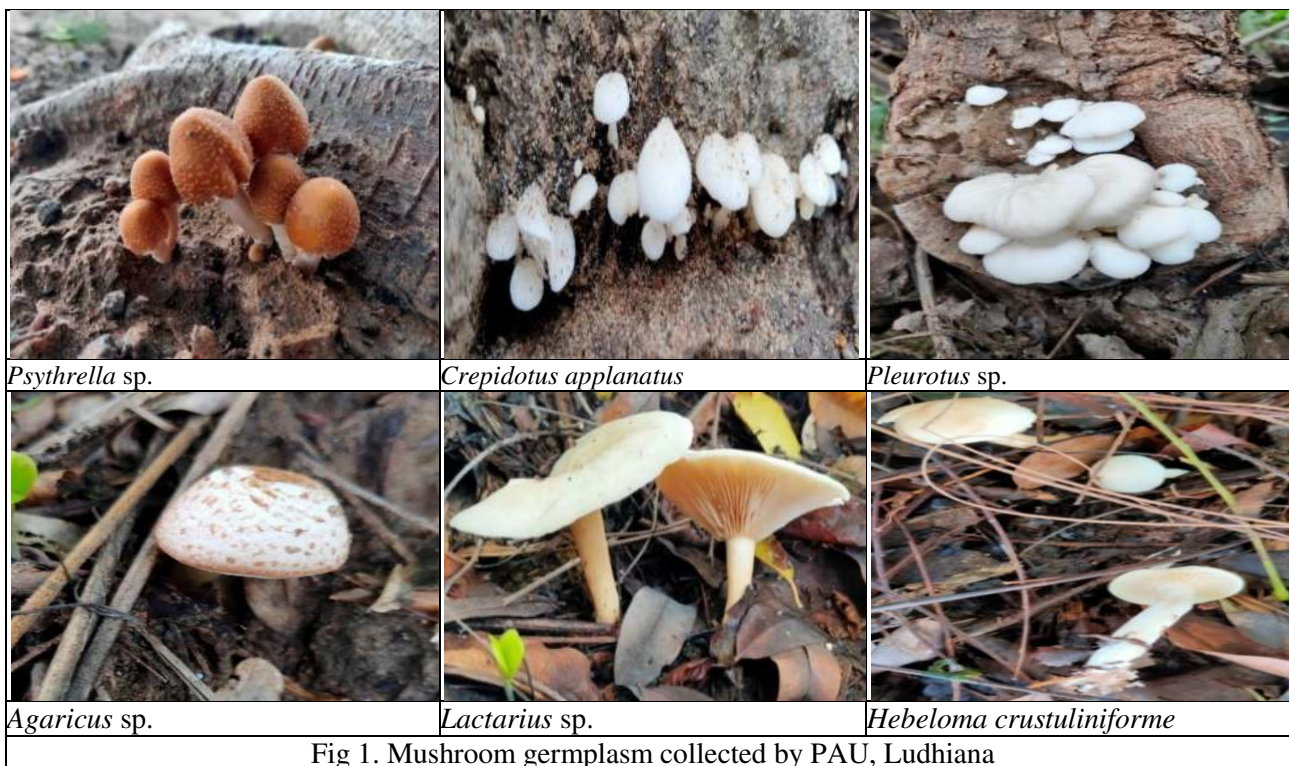


Fig 1. Mushroom germplasm collected by PAU, Ludhiana

2. TNAU Coimbtore

Survey for mushrooms were performed at Coimbatore (Siruvani, TNAU campus) and in Ooty, Kallar and Kodaikanal areas of Tamil Nadu for the period from May 2019 to December, 2020. About 31 mushroom fungi were documented and collected from the surveyed locations. Out of this only 19 pure cultures were made and submitted to Directorate of Mushroom Research, Solan. The mushroom fungi were identified as *Agaricus augustus*, *Auricularia polytricha*, *Amanita phalloides*, *Calocybe indica*, *Fomes fomentarius*, *Ganoderma lucidum*, *Laccaria amethystina*, *Lepiota castaneoides*, *Mycena flavescens*, *Psathyrella cernua*, *Pluteus cervinus*, *Polyporus* sp., *Pycnoporus sanguineus*, *Rusulla olivacea*, *Trametes versicolor*, *Termitomyces clypeatus*, *Schizophyllum commune* and *Tricholoma terreum* based on the morphological keys and microscopic characters provided by DMR, Solan. The pure cultures of the mushroom fungi were sent to DMR, Solan and allotted with accession numbers.

The other 12 mushroom fungi documented (not pure cultured) were *Tramella fimbriata*, *Gymnopus subprunius*, *Trametes* sp., *Mycena* sp., *Amanita phalloides*, *Trametes ijubarskii*, *Geastrum* sp., *Leucosporinus creataceus*, *Lycoperdon perlatum*, *Panaeolus papilionaceus*, *Laccaria laccata*, *Volvariella pusilla*

Data of Collected Specimen

Sample no	DMR Accession no.	Habitat	GPS data	Tentative identification
TNAU-CBE-19-01	DMRX-1792	Soil / humus on lawn	Dodabedda 76.7358° E 11.4007° N	<i>Agaricus augustus</i>
TNAU-CBE-19-02	DMRX-1793	On dead felled trees	Kodaikanal , 77.4658° E , 10.2212° N	<i>Auricularia polytricha</i>
TNAU-CBE-19-03	DMRX-1794	In soil in association with <i>Delonix regia</i>	TNAU Coimbatore 76.9355° E 11.0123° N	<i>Calocybe indica</i>
TNAU-CBE-19-04	DMRX-1795	Soil in with pungam tree root	TNAU Coimbatore 76.9355° E 11.0123° N	<i>Calocybe indica</i>
TNAU-CBE-19-05	DMRX-1796	In association with pine tree trunk	Kodaikanal 77.4658° E , 10.2212° N	<i>Fomes fomentarius</i>
TNAU-CBE-19-06	DMRX-1797	In association with <i>Delonix regia</i> base	Dodabedda 76.7358° E 11.4007° N	<i>Ganoderma lucidum</i>
TNAU-CBE-19-07	DMRX-1798	Associated with felled tree stump	Kodaikanal , 77.4658° E , 10.2212° N,	<i>Ganoderma lucidum</i>
TNAU-CBE-19-08	DMRX-1799	Leaf litters of <i>Delonix regia</i> tree	TNAU Coimbatore 76.9355° E 11.0123° N	<i>Laccaria amethystina</i>
TNAU-CBE-19-09	DMRX-1800	In Groups, Soil/ debris on lawn	TNAU Coimbatore 76.9355° E 11.0123° N	<i>Lepiota castaneoides</i>
TNAU-CBE-19-10	DMRX-1801	In groups, association with pine tree	Dodabedda 76.7358° E 11.4007° N	<i>Mycena flavescens</i>
TNAU-CBE-19-11	DMRX-1792	On soil in humus rich area under trees	Kodaikanal , 77.4658° E , 10.2212° N,	<i>Psathyrella cernua</i> -

Annual Report – AICRP Mushroom 2019-20

TNAU-CBE-19-12	DMRX-1793	Gregarious, Dead woods of felled trees	TNAU Coimbatore, 76.9355° E 11.0123° N	<i>Pluteus cervinus</i>
TNAU-CBE-19-13	DMRX-1794	On felled tree stump	TNAU Coimbatore, 76.9355° E 11.0123° N	<i>Pycnoporus sanguineus</i>
TNAU-CBE-19-14	DMRX-1795	In Groups on pine tree debris	Kodaikanal , 77.4658° E , 10.2212° N,	<i>Polyporus</i> sp
TNAU-CBE-19-15	DMRX-1796	On felled trees	Dodabedda 76.7358° E 11.4007° N	<i>Rusulla olivacea</i>
TNAU-CBE-19-16	DMRX-1797	On felled wood logs	Kodaikanal , 77.4658° E , 10.2212° N	<i>Schizophyllum commune</i>
TNAU-CBE-19-17	DMRX-1798	Humus / soil	TNAU Coimbatore , 76.9355° E 11.0123° N	<i>Trametes versicolor</i>
TNAU-CBE-19-18	DMRX-1799	On soil in association with Pungam tree	TNAU Coimbatore , 76.9355° E 11.0123° N	<i>Termitomyces clypeatus</i>
TNAU-CBE-19-19	DMRX-1800	In groups, association with pine tree	Dodabedda 76.7358° E 11.4007° N	<i>Tricholoma terreum</i>



Agaricus augustus



Auricularia polytricha



Calocybe indica



Calocybe indica



Fomes fomentarius



Ganoderma lucidum

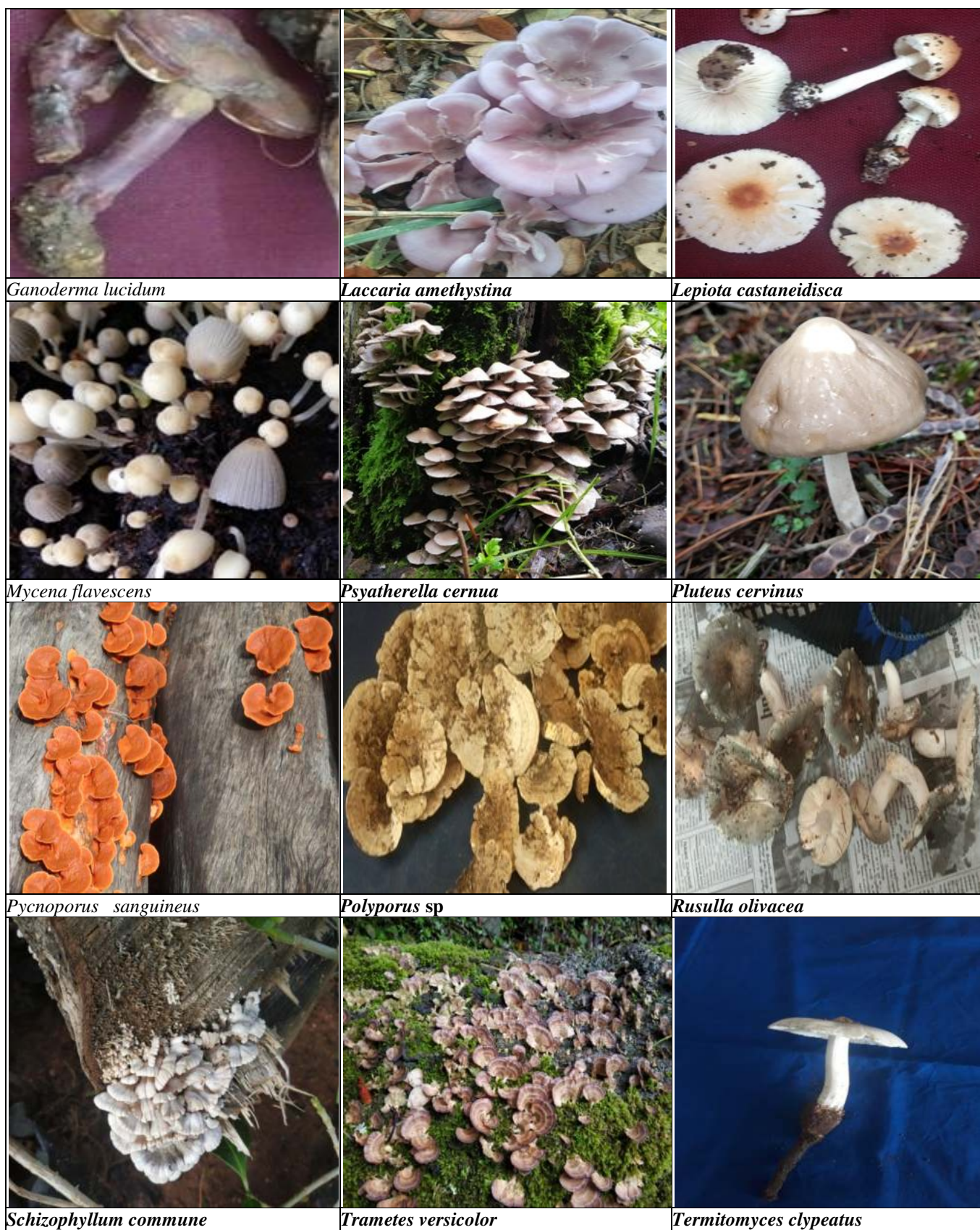


Fig 2. Germplasm collected by TNAU, Coimbatore

3. MPKV, Pune

During the survey work, in all 94 samples were collected and identified on the basis of mycological characters. Among the identified samples, some species belonged to genera *Pleurotus*, *Tricholoma*, *Agaricus*, *Termitomyces*, *Calocybe*, *Hygrophorus*, *Podoscypha*, *Auricularia*, *Polyporus*, *Ramaria*, etc. The tissue isolation of the collected samples was done and in all **49 pure mushroom cultures** was successfully derived and maintained.

The pure cultures along with identification proforma sheets, spore prints, dry fruit sample and cultures were submitted to DMR, Chambaghat, Solan (HP). Out of 49 cultures deposited, in all **15 cultures** received the accession numbers.

Table. List of wild fleshy fungi collected

Sample No.	DMR Accession No.	Habitat	GPS data: Latitude / Longitude	Tentative identification
PN-19-01	-	Soil	La-18 ⁰ 31'54"N Lo-73 ⁰ 50'40 "E	<i>Lactarius</i> sp.
PN-19-02	-	Humus	La-17 ⁰ 30'12"N Lo-73 ⁰ 48'44 "E	<i>Termitomyces</i> sp.
PN-19-03	-	Humus	La-17 ⁰ 30'15"N Lo-73 ⁰ 48'45 "E	Unidentified sp.
PN-19-04	-	Soil	La-17 ⁰ 30'11"N Lo-73 ⁰ 48'43 "E	<i>Podoscypha</i> sp.
PN-19-05	-	Humus	La-17 ⁰ 30'17"N Lo-73 ⁰ 48'43 "E	<i>Agaricus</i> sp.
PN-19-06	-	Tree trunk	La-16 ⁰ 08'39"N Lo-74 ⁰ 10'59 "E	<i>Pleurotus</i> sp.
PN-19-07	-	Soil	La-16 ⁰ 07'11"N Lo-74 ⁰ 08'42 "E	<i>Stereum</i> sp.
PN-19-08	-	Humus	La-15 ⁰ 72'11"N Lo-73 ⁰ 57'25"E	<i>Termitomyces</i> sp.
PN-19-09	-	Tree trunk	La-15 ⁰ 58'10"N Lo-73 ⁰ 58'49 "E	<i>Hygrophorus</i> sp.
PN-19-10	-	Bamboo root zone	La-15 ⁰ 57'11"N Lo-73 ⁰ 55'47 "E	<i>Ganoderma</i> sp.
PN-19-11	-	Soil	La-15 ⁰ 58'16"N Lo-73 ⁰ 58'48 "E	<i>Termitomyces</i> sp.
PN-19-12	-	Soil	La-15 ⁰ 58'15"N Lo-73 ⁰ 58'47 "E	Unidentified sp.
PN-19-13	DMRX-1764	Soil	La-16 ⁰ 08'17"N Lo-73 ⁰ 40'22 "E	<i>Termitomyces</i> sp.
PN-19-14	-	Humus	La-16 ⁰ 10'17"N Lo-73 ⁰ 41'09 "E	<i>Agaricus</i> sp.
PN-19-15	-	Humus	La-16 ⁰ 11'38"N Lo-73 ⁰ 42'02 "E	<i>Termitomyces</i> sp.
PN-19-16	-	Tree trunk	La-16 ⁰ 47'23"N Lo-73 ⁰ 34'34 "E	<i>Ganoderma</i> sp.
PN-19-17	-	Wooden stump	La-16 ⁰ 51'02"N Lo-73 ⁰ 32'45 "E	Unidentified sp.

Annual Report – AICRP Mushroom 2019-20

PN-19-18	-	Humus	La-18 ⁰ 44'55"N Lo-73 ⁰ 24'03"E	Unidentified sp.
PN-19-19	DMRX-1765	Humus	La-18⁰44'18"N Lo-73⁰24'43"E	Unknown
PN-19-20	-	Humus	La-18 ⁰ 44'23"N Lo-73 ⁰ 24'03"E	<i>Unidentified</i> sp.
PN-19-21	-	Tree trunk	La-15 ⁰ 57'31"N Lo-73 ⁰ 59'50 "E	<i>Pholiota</i> sp.
PN-19-22	-	Humus	La-18 ⁰ 45'37"N Lo-73 ⁰ 28'40"E	<i>Unidentified</i> sp.
PN-19-23	-	Sand	La-15 ⁰ 57'27"N Lo-73 ⁰ 59'51 "E	<i>Tricholoma</i> sp.
PN-19-24	-	Humus	La-15 ⁰ 57'25"N Lo-73 ⁰ 59'50 "E	Unidentified sp.
PN-19-25	-	Tree trunk	La-15 ⁰ 57'34"N Lo-73 ⁰ 59'49 "E	<i>Pleurotus</i> sp.
PN-19-26	-	Humus	La-17 ⁰ 30'15"N Lo-73 ⁰ 48'49 "E	<i>Agaricus</i> sp.
PN-19-27	-	Dead tree trunk	La-15 ⁰ 59'59"N Lo-73 ⁰ 41'05 "E	<i>Tricholoma</i> sp.
PN-19-28	-	Tree trunk	La-16 ⁰ 20'55"N Lo-73 ⁰ 33'34 "E	<i>Auricularia</i> sp.
PN-19-29	-	Tree base	La-18 ⁰ 56'47"N Lo-73 ⁰ 56'25 "E	<i>Agaricus</i> sp.
PN-19-30	-	Tree base	La-18 ⁰ 56'46"N Lo-73 ⁰ 56'20 "E	<i>Termitomyces</i> sp.
PN-19-31	-	Tree trunk	La-18 ⁰ 33'48"N Lo-73 ⁰ 49'32"E	<i>Unidentified</i> sp.
PN-19-32	-	Humus	La-18 ⁰ 33'49"N Lo-73 ⁰ 49'27"E	<i>Leucoagaricus</i> sp.
PN-19-33	-	Humus	La-18 ⁰ 33'49"N Lo-73 ⁰ 49'27"E	<i>Termitomyces</i> sp.
PN-19-34	-	Humus	La-18 ⁰ 33'52"N Lo-73 ⁰ 49'32"E	<i>Unidentified</i> sp.
PN-19-35	DMRX-1766	Humus	La-18⁰34'01"N Lo-73⁰49'30"E	<i>Podoscypha</i> sp.
PN-19-36	-	Humus	La-18 ⁰ 33'12"N Lo-73 ⁰ 49'18"E	<i>Leucoagaricus</i> sp.
PN-19-37	-	Tree trunk	La-18 ⁰ 33'12"N Lo-73 ⁰ 49'28"E	<i>Pleurotus</i> sp.
PN-19-38	-	Humus	La-18 ⁰ 33'14"N Lo-73 ⁰ 49'18"E	<i>Pleurocybella</i> sp.
PN-19-39	-	Wooden stump	La-18 ⁰ 33'14"N Lo-73 ⁰ 49'21"E	<i>Auricularia</i> sp.
PN-19-40	DMRX-1767	Wooden stump	La-18⁰33'15"N Lo-73⁰49'14"E	<i>Coprinus</i> sp.
PN-19-41	-	Wooden stump	La-18 ⁰ 33'15"N Lo-73 ⁰ 49'18"E	<i>Stereum</i> sp.
PN-19-42	-	Tree trunk	La-18 ⁰ 33'18"N Lo-73 ⁰ 49'16"E	<i>Unidentified</i> sp.
PN-19-43	-	Soil	La-18 ⁰ 33'18"N Lo-73 ⁰ 49'26"E	<i>Unidentified</i> sp.
PN-19-44	-	Humus	La-18 ⁰ 33'51"N Lo-73 ⁰ 49'18"E	<i>Leucoagaricus</i> sp.

Annual Report – AICRP Mushroom 2019-20

PN-19-45	DMRX-1768	Humus	La-18⁰33'54"N Lo-73⁰49'16"E	<i>Pleurotus</i> sp.
PN-19-46	-	Tree base	La-18 ⁰ 33'54"N Lo-73 ⁰ 49'13"E	<i>Pleurotus</i> sp.
PN-19-47	-	Humus	La-18 ⁰ 33'54"N Lo-73 ⁰ 49'14"E	<i>Amanita</i> sp.
PN-19-48	DMRX-1769	Humus	La-18⁰33'54"N Lo-73⁰49'32"E	<i>Hypoloma</i> sp.
PN-19-49	-	Humus	La-18 ⁰ 33'54"N Lo-73 ⁰ 49'14"E	<i>Bovita</i> sp.
PN-19-50	-	Wood trunk	La-18 ⁰ 33'54"N Lo-73 ⁰ 49'48"E	<i>Auricularia</i> sp.
PN-19-51	-	Tree trunk	La-18 ⁰ 33'54"N Lo-73 ⁰ 49'37"E	<i>Pleurotus</i> sp.
Sample No.	DMR Accession No.	Habitat	GPS data: Latitude / Longitude	Tentative identification
PN-19-52	-	Tree trunk	La-18 ⁰ 33'57"N Lo-73 ⁰ 49'37"E	<i>Pleurotus</i> sp.
PN-19-53	DMRX-1770	Humus	La-18⁰33'57"N Lo-73⁰49'48"E	<i>Phallus</i> sp.
PN-19-54	DMRX-1771	Humus	La-18⁰33'57"N Lo-73⁰49'18"E	<i>Podoscypha</i> sp
PN-19-55	-	Humus	La-18 ⁰ 33'57"N Lo-73 ⁰ 49'23"E	<i>Leucoagaricus</i> sp.
PN-19-56	-	Humus	La-18 ⁰ 33'57"N Lo-73 ⁰ 49'37"E	<i>Tricholoma</i> sp.
PN-19-57	-	Humus	La-18 ⁰ 33'52"N Lo-73 ⁰ 49'78"E	<i>Psilocybe</i> sp.
PN-19-58	-	Humus	La-18 ⁰ 33'52"N Lo-73 ⁰ 49'74"E	<i>Bovista</i> sp.
PN-19-59	DMRX-1772	Tree trunk	La-18⁰33'52"N Lo-73⁰49'54"E	Unknown
PN-19-60	-	Wooden stump	La-18 ⁰ 57'03"N Lo-73 ⁰ 56'15 "E	<i>Stereum</i> sp.
PN-19-61	-	Tree trunk	La-18 ⁰ 57'01"N Lo-73 ⁰ 56'36 "E	<i>Podoscypha</i> sp
PN-19-62	DMRX-1773	Tree trunk	La-18⁰57'02"N Lo-73⁰56'13 "E	<i>Pleurotus</i> sp.
PN-19-63	-	Tree trunk	La-18 ⁰ 56'58"N Lo-73 ⁰ 56'11 "E	<i>Mycena</i> sp.
PN-19-64	-	Tree trunk	La-18 ⁰ 56'59"N Lo-73 ⁰ 56'20 "E	<i>Ganoderma</i> sp.
PN-19-65	-	Wooden trunk	La-18 ⁰ 56'51"N Lo-73 ⁰ 56'20 "E	<i>Unidentified</i> sp.
PN-19-66	-	Wooden stump	La-18 ⁰ 57'00"N Lo-73 ⁰ 56'22 "E	<i>Polyporus</i> sp.
PN-19-67	-	Humus	La-18 ⁰ 53'41"N Lo-73 ⁰ 07'57 "E	<i>Agaricus</i> sp.
PN-19-68	-	Tree trunk	La-18 ⁰ 53'33"N Lo-73 ⁰ 07'14 "E	<i>Ganoderma</i> sp.
PN-19-69	-	Tree trunk	La-18 ⁰ 53'03"N Lo-73 ⁰ 07'00 "E	<i>Unidentified</i>
PN-19-70	-	Humus	La-18 ⁰ 53'57"N Lo-73 ⁰ 07'04 "E	<i>Pleurocybella</i> sp.

Annual Report – AICRP Mushroom 2019-20

PN-19-71	-	Tree trunk	La-18 ⁰ 53'20"N Lo-73 ⁰ 07'14 "E	<i>Unidentified sp.</i>
PN-19-72	DMRX-1774	Humus	La-18⁰53'25"N Lo-73⁰07'12 "E	<i>Mycena sp.</i>
PN-19-73	-	Dead tree trunk	La-19 ⁰ 14'04"N Lo-72 ⁰ 52'21 "E	<i>Pleurotus sp.</i>
PN-19-74	-	Dead tree trunk	La-19 ⁰ 14'02"N Lo-72 ⁰ 52'24 "E	<i>Pleurotus sp.</i>
PN-19-75	-	Dead tree trunk	La-19 ⁰ 14'05"N Lo-72 ⁰ 52'21 "E	<i>Pleurotus sp.</i>
PN-19-76	-	Dead tree trunk	La-19 ⁰ 14'06"N Lo-72 ⁰ 52'22 "E	<i>Unidentified sp.</i>
PN-19-77	-	Dead wod tree trunk	La-19 ⁰ 13'50"N Lo-72 ⁰ 52'19 "E	<i>Auricularia sp.</i>
PN-19-78	DMRX-1775	Tree base	La-19⁰13'50"N Lo-72⁰52'18 "E	<i>Lennus sp.</i>
PN-19-79	-	Humus	La-19 ⁰ 13'52"N Lo-72 ⁰ 52'20 "E	<i>Ramaria sp.</i>
PN-19-80	DMRX-1776	Tree base	La-19⁰13'53"N Lo-72⁰52'21 "E	<i>Lennus sp.</i>
PN-19-81	DMRX-1777	Humus	La-19⁰13'53"N Lo-72⁰52'22 "E	<i>Coprinus sp.</i>
PN-19-82	DMRX-1778	Humus	La-19⁰13'55"N Lo-72⁰52'21 "E	<i>Farolus sp.</i>
PN-19-83	-	Dead tree trunk	La-19 ⁰ 13'56"N Lo-72 ⁰ 52'23 "E	<i>Pleurotus sp.</i>
PN-19-84	-	Dead dead trunk	La-19 ⁰ 13'56"N Lo-72 ⁰ 52'21 "E	<i>Pleurotus sp.</i>
PN-19-85	-	Dead tree trunk	La-19 ⁰ 13'57"N Lo-72 ⁰ 52'22 "E	<i>Pleurotus sp.</i>
PN-19-86	-	Dead tree trunk	La-19 ⁰ 13'57"N Lo-72 ⁰ 52'21 "E	<i>Unidentified sp.</i>
PN-19-87	-	Humus	La-19 ⁰ 13'57"N Lo-72 ⁰ 52'21 "E	<i>Rusulla sp.</i>
PN-19-88	-	Dead tree trunk	La-18 ⁰ 39'21"N Lo-72 ⁰ 52'02 "E	<i>Ganoderma sp.</i>
PN-19-89	-	Humus	La-18 ⁰ 39'18"N Lo-72 ⁰ 52'58 "E	<i>Ramaria sp.</i>
PN-19-90	-	Tree base	La-18 ⁰ 39'20"N Lo-72 ⁰ 51'54 "E	<i>Unidentified sp.</i>
PN-19-91	-	Soil	La-18 ⁰ 39'43"N Lo-72 ⁰ 51'58 "E	<i>Unidentified sp.</i>
PN-19-92	-	Soil	La-18 ⁰ 10'42"N Lo-74 ⁰ 36'53 "E	<i>Calocybe sp.</i>
PN-19-93	-	Soil	La-18 ⁰ 10'34"N Lo-74 ⁰ 36'47 "E	<i>Calocybe sp.</i>
PN-19-94	-	Humus	La-18 ⁰ 10'36"N Lo-74 ⁰ 36'49 "E	<i>Amanita sp.</i>





Fig 3. Germplasm collected by Pune centre

4. Pantnagar Centre

Total 24 specimens of wild edible and medicinal mushrooms were collected from Khatima, Pantnagar, Bhimatal, Padampur of Uttarakhand. Out of which 21 specimens have been deposited to DMR Solan. The 15 specimens were identified and allotted with their accession numbers by DMR, Solan. Remaining 9 collected specimens either putrefied or contaminated before or during culturing.

Table. Accession numbers of germplasms of wild mushrooms allotted by DMR, Solan

Sample no	DMR Accession no.	Habitat	GPS data Longitude Latitude	Tentative identification
Pant-19-01	DMRO-1170	Sal Forest (Sandy soil)	N28.9228 E79.9690	<i>Black truffles</i>
Pant-19-02	DMRO-1171	Humus rich Soil	N29.0282 E79.4744	<i>Calocybe</i>
Pant-19-04	DMRO-1172	Humus rich Soil	N29.0282 E79.4744	<i>Calvatiagigantea</i>
Pant-19-07	DMRO-1173	Mango Wooden Stump	N29.0282 E79.4744	<i>Lentinussquarrosulus</i>
Pant-19-09	DMRO-1174	Humus	N29.0282 E79.4744	<i>Leucoprinus</i>
Pant-19-11	DMRO-1176	Wooden	N29.0282 E79.4744	<i>Pleurotus</i>
Pant-19-12	DMRO-1177	Wooden stump of tree	N029.3576 E79.5519	<i>Lentinus tigrinus</i>
Pant-19-14	DMRO-1178	Humus	N29.3576 E79.5519	<i>Boletus</i>
Pant-19-16	DMRX-1749	Wooden tree root	N29.0282 E79.4744	<i>Volvariella sp</i>
Pant-19-18	DMRX-1750	Forest Soil	N79.5877 E29.3531	<i>Amanita</i>
Pant-19-19	DMRX-1751	Humus & soil near to the pine trees	N79.5877 E29.3531	<i>Geostrium</i>
Pant-19-20	DMRX-1752	Humus	N79.5877 E29.3531	<i>Termitomyces</i>
Pant-19-22	DMRX-1753	Humus	N79.5877 E29.3531	<i>Amanita</i>
Pant-19-23	DMRX-1754	Wooden stump of tree	N79.5877 E29.3531	<i>Pleurotus</i>



Pant -19-01



Pant - 19-02



Pant -19-03



Pant -19-04



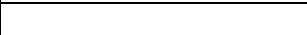
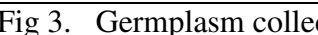
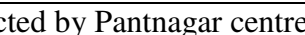
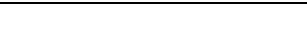
Pant -19-05	Pant -19-06	Pant -19-07	Pant -19-08
			
Pant -19-09	Pant -19-10	Pant -19-11	
			
Pant -19-12	Pant -19-13	Pant -19-14	Pant-19-16
			
Pant -19-17	Pant -19-18	Pant-19-19	Pant-19-20
			
Pant-19-22	Pant-19-23	Pant-19-23	Pant-19-24
			

Fig 3. Germplasm collected by Pantnagar centre

5. IGKVV, Raipur

Extensive surveys of fleshy fungi were conducted in various location of Chhattisgarh including forest area and local market. The mushrooms were collected from different habitat like forest rotten straw heaps, decaying wood etc. The fungi were also collected from local markets of Raipur, Bilaspur, Kanker Ambikapur, Gariyaband, Jagdalpur, Jashpur, Jagdishpur. Site of collection and other information were obtained from seller, village chief and local men and women. Each collected samples were wrapped in paper and brought to the laboratory for identification. Identification of each sample was done very meticulously with the help of standard manuals. Both microscopic and macroscopic characters were recorded with due care. The collected samples were preserved in 4% formalin solution Spore print and dried samples of have also been preserved. Nine different species of *Termitomyces* namely *Termitomyces microcarpus*, *T. eurhizus*, *T. clypeatus*, *T. globules*, *T. heimii*, *T. striatus*, *T. robustus*, *T. unkowaan* and *T. mammiformis* were identified based on the key identification features.

The detailed information regarding the wealth of edible macro-fungi in Chhattisgarh has been documented and is given below.

Table: Wild edible mushroom collection, identification and conservation by Raipur centre

S.no	Species	Stipe Length (cm)	Pileus length (cm)	Pseudorhiza (cm)	Annulus	Lamellae	Spore print colour
1	<i>Termitomyces microcarpus</i>	2 - 4 × 0.2 - 0.3	0.4 - 2	lacking a true pseudorhiza	Absent	Adnexed to free, White then pinkish, moderately crowded.	Whitish cream
2	<i>Termitomyces eurhizus</i>	4 - 9 × 1.5 - 3	9-18	8 - 15 × 0.2	Absent	Free to adnexed, white to pinkish, densely crowded	Pink to pale brown
3	<i>Termitomyces clypeatus</i>	5-12 × 0.4 - 1.2	4-10	5 - 17 × 0.3	Absent	Free, whitish pink, crowded	Pinkish cream
4	<i>Termitomyces heimii</i>	5 - 10 × 1.5 - 2	7.5-17.5	22-45 × 0.4	Present	Free, White then pinkish, crowded	Pinkish to pale brown
5	<i>Termitomyces globulus</i>	6 - 12 × 1 - 2.5	6-20	10 - 30 × 0.5 - 0.2	Absent	Free, Densely crowded, cream to pink	Pinkish cream
6	<i>Termitomyces striatus</i>	3 - 5.2 × 0.5 - 1.3	3 - 5.6	8-12.5 × 0.3	May be or may not	Free, cream to pinkish, crowded	Pinkish cream
7	<i>Termitomyces robustus</i>	6-8 × 0.8-1	4-8	6.4 × 0.3	Absent	Free, crowded	brown to light cream.
8	<i>Termitomyces unkowaan</i>	6.6 - 10.4 × 0.7-1.4	5.4-11.2		Absent	White, free, crowded	Cream to pink
9	<i>Termitomyces mammiformis</i>	3-5 × 1-2	4-7	20-37 × 0.5	present	White then pale pink, free, crowded	Pinkish cream



Fig. Market survey at Chattishgarh state



Fig. Germplasm collected by Raipur centre

6. MPUAT, Udaipur

This is one of the very important experiment/task/experience, which takes a scientist to new horizon and it is a golden opportunity to be with nature to understand the “World of Mushrooms.” During the year 2019 Rainfall was very nice received homogenously in all parts of state. However, we have conducted **nine forays** taking all team members together for collection, identification and conservation of wild edible mushrooms **during monsoon season of 2019** in the month of July, August and September. Total of 49 varied wild mushroom specimens were collected from Forests of Udaipur, Forest of Mount Abu, Forest of Pindwara-Sirohi, Dhariyawad sanctuary- Sita Mata , Sawai Madhopur, Forest of Sikar and parts of Ajmer nearby Pushkar forest. Some important edible mushrooms collected were *Pleurotus spp.*, *Polypore spp.*, *Podaxis pistillaris*, *Agaricus spp.*, *Coriolus versicolor*, *Geaster spp.*, *Ganoderma spp.*, *Pleurotus spp.*, *Termitomyces spp.*, *Tricholoma spp.*, *Pseudocoprinus sp.*, *Phomes spp.*, *Trametes versicolor* and *Volvariella volvacea*.

Table: Wild edible mushroom collection, identification and conservation by Udaipur centre

DMR Accession no.		Habitat	GPS data Longitude Latitude	Tentative identification
UD-08/19	DMRX-1784	On dead wood of <i>Mangifera indica</i> .	N-24°28.784' E-074°15.180' Elevation- 494m	<i>Auricularia sp.</i>
UD-09/19	DMRX-1785	Fallen twigs of <i>Butea frondosa</i>	N-24°20.820' E-074°21.896' Elevation- 497m	<i>Polypore sp.</i>
UD-12/19	DMRX-1786	On the ground with leaf litter and FYM	N-24°20.820' E-074°21.896' Elevation- 497m	<i>Agaricus sp</i>
UD-16/19	DMRX-1787	On soil and loamy sand	N-29°20.813' E-074°21.928' Elevation- 499m	<i>Podaxis pistillaris</i>
UD-18/19	DMRX-1788	On deadwood logs and live trees of <i>Sheesham</i> etc.	N-24°33.377' E-073°40.681' Elevation- 524 m	<i>Polypore spp</i>
UD-19/19	DMRX-1789	On dead wood logs of <i>Butea</i> , <i>Thore</i> , <i>Mango</i> and other broad leaved trees.	N-25°09.930' E-073°29.732' Elevation- 412 m	<i>Pleurotus spp.</i>
UD-21/19	DMRX-1790	On dead wood of wild trees plantation like <i>Morris alba</i> , <i>Butea</i>	N-25°09.930' E-073°29.732' Elevation- 412 m	<i>Pleurotus spp.</i>
UD-23/19	DMRX-1791	Found on living trees like <i>Banyan</i> , <i>Peepal</i> and other latex containing trees.	N-26°20.960' E-084°26.896' Elevation- 645m	<i>Polypore sp</i>



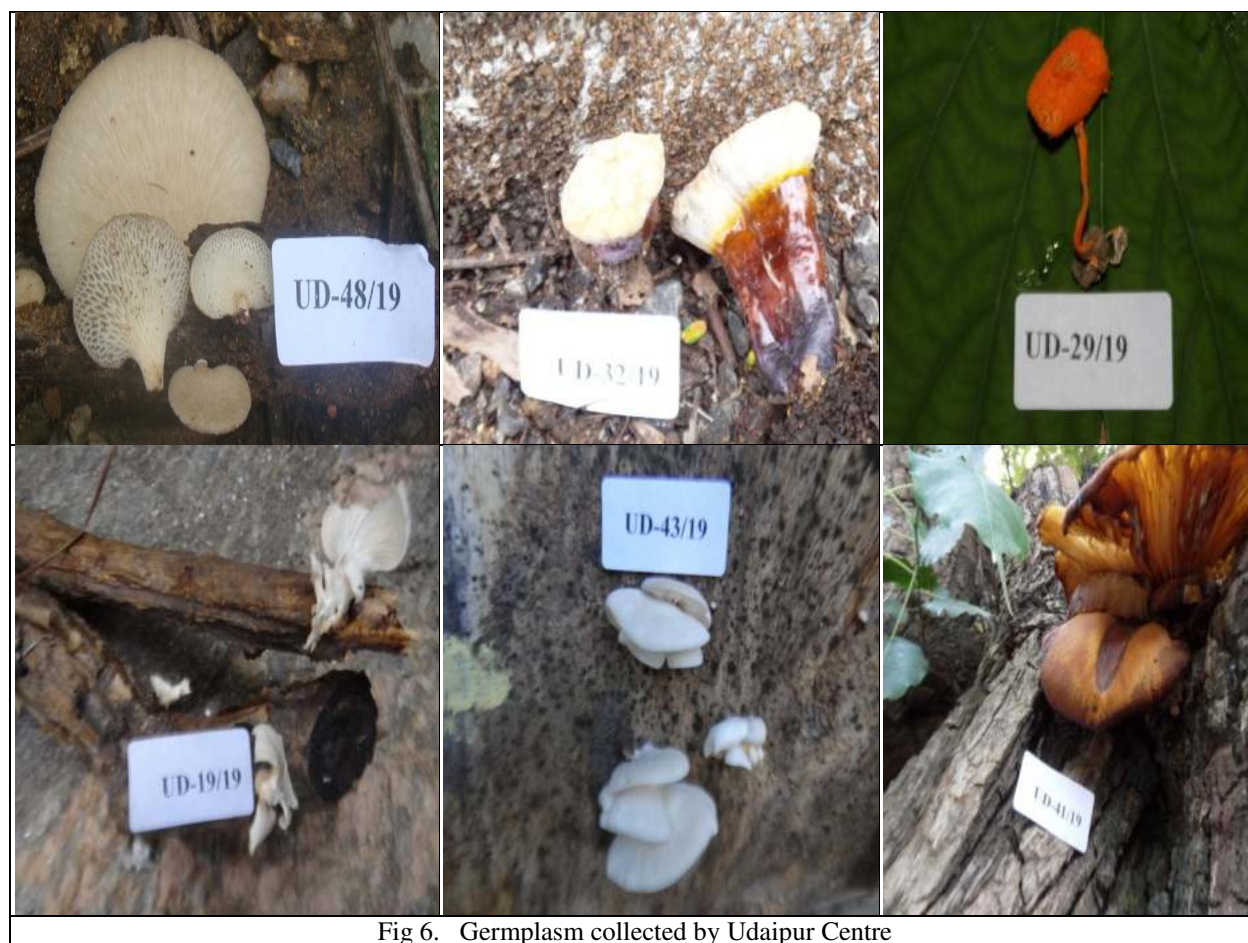


Fig 6. Germplasm collected by Udaipur Centre

7. KAU, Kerela

Surveys were conducted in Trivandrum, Kollam, Idukki districts of Kerala. A total of 10 specimens were obtained. These were isolated and brought into pure culture. Cultures of 6 specimens were deposited to DMR and accession numbers were obtained for 4 cultures. The specimens obtained accession no were *Calocybe* sp., *Tricholoma* sp., *V. volvaceae* and *Cyathius* sp.

Data of collected specimen

Sample no	DMR Accession no.	Habitat	Place	GPS data Longitude Latitude	Tentative identification
VLYN-19-167	DMRX-1760	Organic matter rich soil	Ambalathara	Latitude 76.95 E Longitude 8.45N	<i>Calocybe</i> sp.
VLYN-19-168	DMRX-1761	Organic matter rich soil	Kaliyoor	Latitude 76.98 E Longitude 8.43N	<i>Tricholoma</i> sp.
VLYN-19-169	--	Soil	Vandithadam	Latitude 76.96 E Longitude 8.43N	<i>Calocybe</i>
VLYN-19-170	DMRX-1762	Banana pseudostem	Vellayani	Latitude 76.99E Longitude 8.44N	<i>V. volvaceae</i>
VLYN-19-171	--	Fallen tree stump	Kakkamoola	Latitude 77.00 E Longitude 8.42N	<i>Pleurotus squarrosulus</i>
VLYN-19-	DMRX-1763	Coir mat	Vellayani	Latitude 76.99 E	<i>Birds nest fungus</i>

172				Longitude 8.44N	(<i>Cyathius</i>)
VLYN-19-174	--	Tree stump	Kakkamoola	Latitude 77.00 E Longitude 8.42`N	<i>Pleurotus tuberregium</i>
VLYN-19-175	--	Tree stump	Thiruvananthapuram	Latitude 76.94 E Longitude 8.52`N	<i>Auricularia</i>
VLYN-19-176	--	Tree stump	Kuttichal	Latitude 77.09 E Longitude 8.56N	<i>Pleurotus eous</i>
VLYN-19-177	--	Organic matter rich soil	Vellayani	Latitude 76.99 E Longitude 8.44N	<i>Termitomyces</i>
VLYN-19-178	--	Humus rich soil	Venganoor	Latitude 77.00 E Longitude 8.41N	<i>Dictyophora</i>

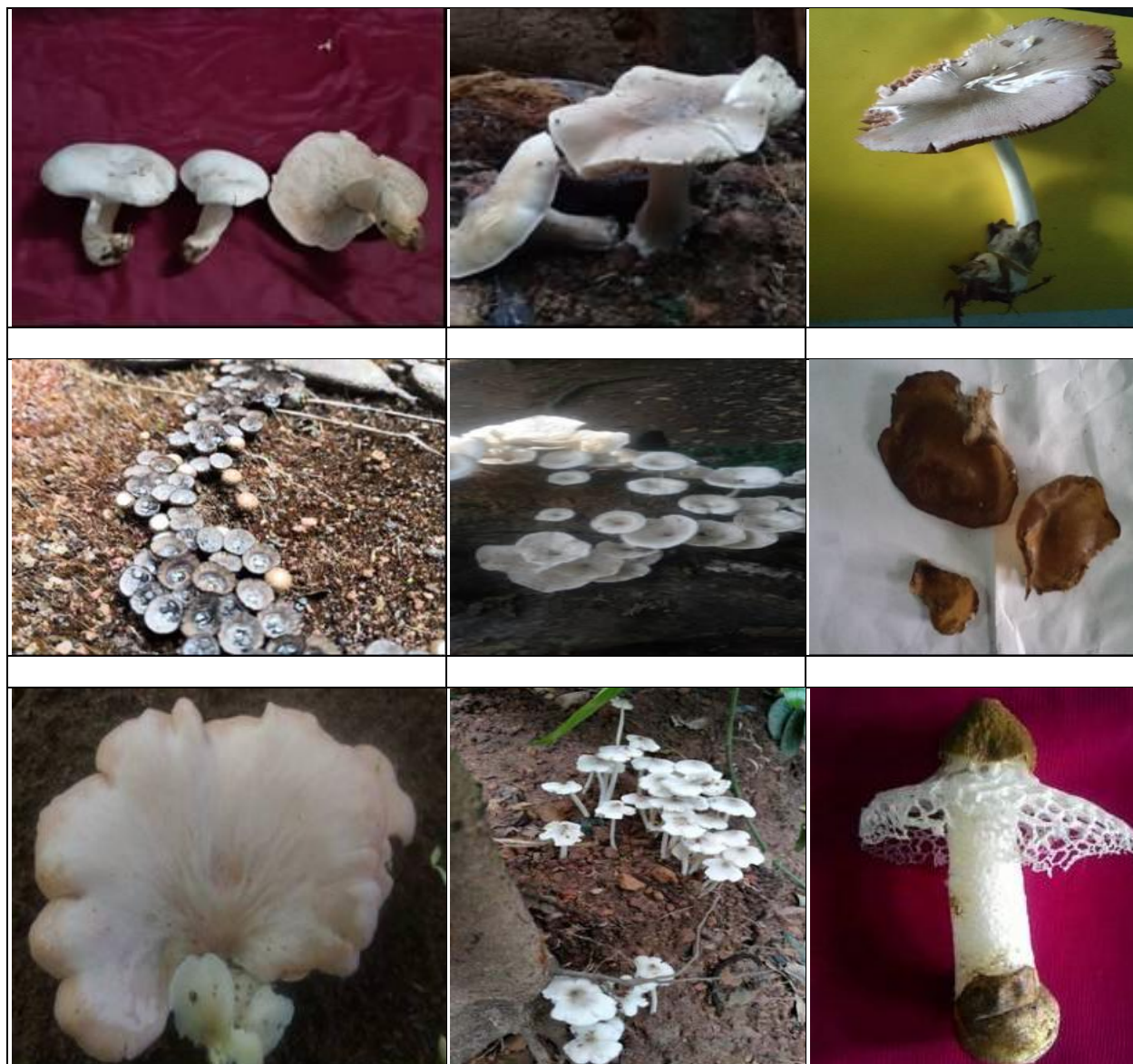


Fig 7. Germplasm collected by Vellayani Centre

8. OUAT, Bhubaneswar

Surveys were conducted in four districts i.e. Khordha, Nayagarh, Puri, Keonjhar and Malkangiri during Kharif, 2019. Eight indigenous mushrooms have been collected and identified based on available information. They were *Calocybe indica*, *Lentinus* sp. and *Cantherella* sp.



9. ICAR National Organic Farming Research Institute, Tadong, Gangtok, Sikkim

Sikkim centre has collected 8 specimens and deposited 6 specimens and cultures to ICAR-DMR, Solan. Out of which 5 specimens has been assigned accession numbers.



Fig. Mushroom germplasm collected by Sikkim Centre

10. ICAR RC for NEH Region, Umiam, Meghayala

Mushroom survey in the market revealed that *Ramaria* sp., *Gomphus* sp., *Canthrellus* sp., *Lyophyllum* sp., *Pleurotus* sp., *Laccaria* sp. were available for sale in the markets. From the wild seven wild specimens were collected.

11. ICAR Research Complex for NEH Region, Mizoram Centre, Kolasib

Survey of mushroom was done in the forests and markets of Mizoram. During our survey around sixty five naturally growing edible or non-edible mushrooms which included *Lactifluusspp.*, *Russula* spp., *Schizophyllum commune*, and *Tuber* spp. were collected and documented from different parts of Mizoram. The wild mushrooms were collected from different habitats such as soil, jhum field, forest, decaying wood, rotting plant parts etc. The mushrooms were also collected from markets which is collected and sale by the local people. The collection site and other associated information were collected from the seller and also from local mushroom hunter.

Sl.No	Sample No.	Habitat	Location	GPS data	Identification
1.	MZ 19/01	Soil	Champhai	23°28'40.8"N 93°19'16.1"E	<i>Lactifluusvolemus</i>
2.	MZ 19/02	Soil	Champhai	23°28'41.2"N 93°19'16.0"E	<i>Russulasubfragiliformis</i>
3.	MZ 19/03	Wood	Khawzawl	23°31'40.8"N 93°11'14.8"E	<i>Schizophyllum commune</i>
4.	MZ 19/04	Soil	Champhai	23°26'58.6"N 93°15'36.0"E	Not identified
5.	MZ 19/05	Soil	Champhai	23°28'41.7"N 93°19'14.5"E	<i>Tuber sp</i>
6.	MZ 19/06	Soil	Champhai	23°28'39.5"N 93°19'18.2"E	Not identified
7.	MZ 19/07	Soil	Champhai	23°28'41.9"N 93°19'14.6"E	Not identified
8.	MZ 19/08	Soil	Champhai	23°28'28.2"N 93°19'59.5"E	Not identified
9.	MZ 19/09	Soil	Champhai	23°28'27.9"N 93°19'59.5"E	Not identified
10.	MZ 19/10	Soil	Champhai	23°28'29.2"N 93°19'58.8"E	Not identified
11.	MZ 19/11	Sand / rocky soil	East Lungdar	23°12'12.1"N 93°05'36.6"E	Not identified
12.	MZ 19/12	Soil	East Lungdar	23°12'12.1"N 93°05'36.7"E	Not identified
13.	MZ 19/13	Sand / rocky soil	East Lungdar	23°12'12.1"N 93°05'36.7"E	Not identified
14.	MZ 19/14	Soil	East Lungdar	23°12'12.1"N 93°05'36.7"E	Not identified
15.	MZ 19/15	Soil	East Lungdar	23°12'12.1"N 93°05'36.7"E	Not identified
16.	MZ 19/16	Soil	East Lungdar	23°12'12.1"N 93°05'36.7"E	Not identified
17.	MZ 19/17	Soil	East Lungdar	23°12'12.1"N	Not identified

Annual Report – AICRP Mushroom 2019-20

				93°05'36.7"E	
18.	MZ 19/18	Soil	East Lungdar	23°12'12.1" N 93°05'36.7"E	Not identified
19.	MZ 19/19	Soil	East Lungdar	23°12'12.1" N 93°05'36.6"E	Not identified
20.	MZ 19/20	Soil	East Lungdar	23°12'12.0" N 93°05'36.5"E	Not identified
21.	MZ 19/21	Soil	East Lungdar	23°12'12.1" N 93°05'36.6"E	Not identified
22.	MZ 19/22	Soil	East Lungdar	23°12'12.1" N 93°05'36.6"E	Not identified
23.	MZ 19/23	Soil	East Lungdar	23°12'12.1" N 93°05'36.6"E	Not identified
24.	MZ 19/24	Soil	East Lungdar	23°12'04.1" N 93°04'58.2"E	Not identified
25.	MZ 19/25	Soil	East Lungdar	23°12'04.1" N 93°04'58.2"E	Not identified
26.	MZ 19/26	Wood	Champhai Farmers field	23°28'23.7" N 93°20'10.0"E	Not identified
27.	MZ 19/27	Soil	Champhai Farmers field	23°28'23.7" N 93°20'10.1"E	Not identified
28.	MZ 19/28	Wood	Champhai Farmers field	23°28'23.6" N 93°20'10.1"E	Not identified
29.	MZ-19/29	Soil	Champhai	23°28'28.1" N 93°19'59.5"E	Not identified
30.	MZ 19/30	Paddy straw	Champhai Farmers field	23°27'55.7" N 93°20'05.9"E	Not identified
31.	MZ 19/31	Soil	Champhai Tourist Lodge	23°28'28.3" N 93°19'59.2"E	Not identified
32.	MZ 19/32	Soil	Champhai Tourist Lodge	23°28'28.6" N 93°19'59.2"E	Not identified
33.	MZ 19/33	Soil	Champhai Tourist Lodge	23°28'28.6" N 93°19'58.8"E	Not identified
34.	MZ 19/34	Soil	Champhai Tourist Lodge	23°28'28.6" N 93°19'58.8"E	Not identified
35.	MZ 19/35	Soil	Champhai Tourist Lodge	23°28'28.6" N 93°19'58.8"E	Not identified
36.	MZ 19/36	Soil	Champhai Tourist Lodge	23°28'28.6" N 93°19'58.8"E	Not identified
37.	MZ 19/37	Soil	Champhai Tourist Lodge	23°28'28.6" N 93°19'58.8"E	Not identified
38.	MZ 19/38	Soil	Champhai Tourist Lodge	23°28'28.6" N 93°19'58.8"E	Not identified
39.	MZ 19/39	Soil	Champhai Tourist Lodge	23°28'28.6" N 93°19'58.8"E	Not identified
40.	MZ 19/40	Soil	Champhai Tourist Lodge	23°28'28.6" N 93°19'58.8"E	Not identified
41.	MZ 19/41	Paddy straw	Champhai Tourist Lodge	23°28'28.6" N 93°19'58.8"E	Not identified
42.	MZ 19/42	Soil	Champhai	23°28'27.6" N 93°19'59.0"E	Not identified
43.	MZ 19/43	Soil	Champhai	23°28'27.9" N 93°19'59.4"E	Not identified
44.	MZ 19/44	Soil	Champhai	23°27'55.6" N 93°20'05.8"E	Not identified

Annual Report – AICRP Mushroom 2019-20

45.	MZ 19/45	Soil	Champhai	23°19'30.4" N 93°17'33.2" E	Not identified
46.	MZ 19/46	Soil	Champhai	23°19'30.4" N 93°17'33.2" E	Not identified
47.	MZ 19/47	Soil	Thenzawl	23°17'21.1" N 92°47'03.9" E	Not identified
48.	MZ 19/48	Wood	Khawbung	23°19'11.7" N 93°17'17.9" E	Not identified
49.	MZ 19/49	Soil	New Searchip	23°17'04.8" N 93°53'13.8" E	Not identified
50.	MZ 19/50	Wood	Saiha, Chakhang rd.	22°20'44.8" N 93°08'12.9" E	Not identified
51.	MZ 19/51	Wood	Theiva	22°30'03.8" N 92°58'05.1" E	Not identified
52.	MZ 19/52	Soil	Theiva	22°30'03.8" N 92°58'05.1" E	Not identified
53.	MZ 19/53	Soil	Siaha	22°29'40.7" N 92°59'55.5" E	Not identified
54.	MZ 19/54	Soil	Siaha	22°29'40.6" N 92°59'55.5" E	Not identified
55.	MZ 19/55	Jhum Soil	Hnathial	22°29'40.6" N 92°59'55.5" E	Not identified
56.	MZ 19/56	Soil	Hnathial	22°29'40.6" N 92°59'55.5" E	Not identified
57.	MZ 19/57	Soil	KVK , Siaha	22°29'40.7" N 92°59'55.5" E	Not identified
58.	MZ 19/58	Soil	KVK, Farm Lawngtlai	22°30'18.2" N 92°53'40.0" E	Not identified
59.	MZ 19/59	Soil	KVK, Farm Lawngtlai	22°30'18.2" N 92°53'40.3" E	Not identified
60.	MZ 19/60	Soil	Siaha, KVK	22°29'33.8" N 92°59'34.3" E	Not identified
61.	MZ 19/61	Wood	Siaha	22°29'40.6" N 92°59'55.5" E	Not identified
62.	MZ 19/62	Wood	KVK , Siaha	22°29'40.7" N 92°59'55.5" E	Not identified
63.	MZ 19/63	Jhum Soil	Khawzawl	23°32'01.7" N 93°10'25.2" E	Not identified
64.	MZ 19/64	Soil	KVK , Siaha	22°29'40.7" N 92°59'55.5" E	Not identified
65.	MZ 19/65	Jhum soil	NH 502	23°24'20.4" N 93°21'12.1" E	Not identified





Fig. Mushroom germplasm collected by Mizoram centre

12. ICAR-RC regional Centre, Manipur

Survey for collection of mushrooms from different districts of Manipur was undertaken during the months of April, June, July, August, Oct and Nov. 2019. A total of 18 different mushroom specimens were collected, out of which pure culture and dried specimen of 5 mushrooms were submitted to ICAR-DMR, Solan. The details of these specimens are given as below

S. No.	Sample No	DMR Accession Number	Habitat	GPS Data	Tentative identification
1.	IMP/2019/01	DMRX-1779	Wooden stumps and tree trunk	24° 50' 7.1" N 93° 54' 50.1" E	<i>Pleurotus</i> spp
2.	IMP/2019/03	DMRX-1780	Soil and humus	25 ° 7 ' 10.452 " N 94° 21' 51.012 " E	<i>Pleurotus</i> spp
3.	IMP/2019/05	DMRX-1781	Soil and humus	24° 48' 5.216 " N 93° 56' 40.598 " E	<i>Macrocybe</i> spp.
4.	IMP/2019/07	DMRX-1782	Humus	24° 59' 59.059 " N 93° 54' 27.141 " E	<i>Pleurotus</i> spp
5	IMP/2019/08	DMRX-1783	Wooden stumps and dead wood	24° 59' 59.059 " N 93° 54' 27.141 " E	<i>Lentinus</i> spp



Fig. Mushroom germplasm collected by Manipur centre

13. ICAR-RCER, Plandu, Ranchi

Under AICRP project on mushroom, “Collection, identification and conservation of wild edible mushroom from forest and local market” were conducted in the local markets for Ranchi and nearby forest during 2019-2020. Four types of naturally grown wild edible mushrooms were widely distributed and collected from Saal forest, Termitarium of termites from the local forest of Ranchi, Jharkhand and identified as Tecnus (*Termitomyces* species) and Rugda (*Scleroderma* species), Rasulla species and Boletus species. These wild edible mushrooms play an important role in improvement of rural livelihood. Among the wild edible mushroom, *Termitomyces* were sold at a premium price @ Rs. 600-800/kg in the local market of Ranchi. These mushrooms are known for its delicacy and taste (Fig.).



Fig. Mushroom Germplasm collected by AICRP centre, Ranchi

14. ICAR-IIHR CENTRE

CAR-IIHR, Bangalore centre has collected 5 mushroom specimens.



Termitomyces spp.

Termitomyces spp.

Macrocybe spp.



Macrocybe spp.



Macrocybe spp.

Fig. Mushroom germplasm collected from IIHR campus, Karnataka

15. ICAR-VPKAS, Almora

Survey was conducted during the rainy season of 2019. Total of 07 mushroom samples were collected, brought to laboratory for culture. However, succeeded in culturing of two mushrooms.



Fig. Wild edible mushroom collected from the by Almora Centre

16. SKUAST-J, Jammu

Surveys were conducted in Doda and Kathua district during the year 2019-20 to collect wild edible mushrooms of the region. Spot photographs of the samples in wild were taken and the samples were brought to the laboratory. Fresh samples of mushrooms were cultured and fruit bodies have also been preserved in the mushroom museum of the centre. Dried samples as well as cultures of wild mushroom were submitted to DMR, Solan and accession numbers have been obtained.

Sample no	DMR Accession no.	Habitat	GPS data Longitude Latitude	Tentative identification
J-19-20-56	DMRX-1811	On tree	75.72°E 32.82°N	Unknown

J-19-20-50	DMRX-1812	Scattered in grasses	75.82°E 32.65°N	Unknown
J-19-20-58	DMRX-1813	Base of tree	75.72°E 32.82°N	Unknown
J-19-20-55	DMRX-1814	Humus	75.82°E 32.65°N	Unknown
J-19-20-61	DMRX-1815	open grasslands	75.72°E 32.82°N	Unknown
J-19-20-54	DMRX-1816	On humicolous soil in shady and moist places	75.72°E 32.82°N	Unknown
J-19-20-62	DMRX-1817	On humicolous soil in shady places	75.82°E 32.65°N	Unknown



Fig. Mushroom Germplasm collected by Jammu Centre

17. SKUAST-K, Srinagar

Survey for collection of mushrooms was conducted during the month of February-March 2019-20 different locations of district Ganderbal to collect wild edible and medicinal mushrooms of the region. Spot photographs of the samples in wild were taken. Spore prints and dry specimen were ever possible were preserved.



18. Assam Agricultural University, Jorhat

Out of several specimens collected at Jorhat centre one specimen of oyster mushroom was found to be edible. Due to contamination problems the specimen could not be submitted, but now pure culture is ready for submission.



Fig. Mushroom Germplasm collected by Jorhat Centre

19. SVPuat, Meerut (UP.)

Collection of Medicinal mushroom *Ganoderma lucidum* from Modipuram Meerut (UP) in Aug. 2019.

Sample no	DMR Accession no.	Habitat	GPS data Longitude Latitude	Tentative identification
Vallabh Ga - 01	-	Terrestrial		<i>Ganoderma lucidum</i>
Vallabh Ga. - 02	-	Terrestrial		<i>Ganoderma lucidum</i>
Vallabh Ar. 01		Terrestrial		<i>Auricularia auricula</i>



Fig. Mushroom Germplasm collected by Meerut centre

20. ICAR-DMR, Solan

203 specimens were collected and 151 among them were identified up to genus level. All the specimens have been preserved in the herbarium of ICAR-DMR, Solan and examined. The mushroom genera collected in the year 2018-19 were *Echinoderma pseudoasperula* , *Neolentinus lepidens* , *Hygrocybe*

miniata, *Laccaria laccata* , *Infundulocybe gibba* , *Descolea flavommulata* , *Tricholoma aurantum* , *Hygrocybe flavescens* , *Cortinaruis* sp. *Rusulla nignscans* , *Hydnum repandum* , *Lactarius volmus* , *Microporus xanthopus* and *Issaria cicadae* etc.



6. EXTENSION ACTIVITIES

Bhubaneswar Centre

Five day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
18.6.2019-22.06.2019	OUAT, Bhubaneswar	35	29	6	Mushroom cultivation and processing
29.10.2019-2.11.2019		44	37	7	
24.2.2020-28.2.2020		17	13	4	

Long term training

Date	Venue	No. of Participants	Male	Female	Remarks if any
11.9.2019-20.9.2019	OUAT	22	17	5	Mushroom spawn production

SCSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any
19.8.2019-20.8.2019	OUAT	50			SCSP training of ICAR-DMR
21.8.2019-22.8.2019	OUAT	50			

3. Spawn supply and revenue generation

Particulars	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Spawn supplied			
Oyster			
Button			
Milky			
Paddy straw			
Master spawn supplied	4453 bottles (890.6kg)	60.00/kg	53436.00
Culture supplied (no.)	18 slants	200.00/slant	3600.00
Straw mushroom	5kg	120.00/kg	600.00
Oyster mushroom	25kg	50.00/kg	1250.00
Training fee (Mushroom cultivation)	96numbers		9600.00
Training fee (Spawn production)	22numbers		8800.00
Project fee			16600
Total			93,886.00

Annual Report-AICRP-Mushroom 2019-20

4. Participation in seminar/symposia/workshop/kisan mela, etc

Sr. No.	seminar/symposia/workshop/kisan mela, etc	Date	Venue
1	Zonal Research Council Meeting	27 th April, 2019	RRTTS, Bhubaneswar
2	State Level Research Council Meeting	22-25 th May, 2019.	OUAT, Bhubaneswar
3	XXI Annual workshop on AICRP on Mushroom held at from	28-29 June, 2019	DMR, Solan (HP)
4	Mushroom Taxonomy	10-14 August, 2019	DMR, Solan (HP)

5. Visit of dignitaries

Sr. No.	Date	Dignitary visited
1	4.07.2019	Dr. V.P.Sharma, Director, ICAR-DMR, Solan, H.P.
2	19.12.2019	Dr. Rishu Sharma, Asst. Professor, AICRP on Mushroom, W.B.
3	26.12.2019	Dr. M.K.Biswas, Professor, Biswa Bharati, W.B.
4	23.12.2019	Dr. H.Singh, Assitant Professor, IGKV, Raipur
5	2.01.2020	Dr. Rishu Sharma, Asst. Professor, AICRP on Mushroom, W.B.
6	9.01.2020	Dr. R.Gopi, Scientist, Sugarcane Beeding Institute, Kunnur, Kerla

6. Visit of famers group, students, etc

Sr. No.	Date	Visitors	Number of visitors in group		
			Male	Female	Total
	1.4.2019 to 31.03.2020	A total number of 1432 visitors comprising of farmers, Govt. functionaries and students	1057	375	1432

7. Coverage in Mass Media

Sr. No.	Item	Number
	TV Programmes	3
	Radio Programme	-
	News paper coverage	1
	Popular articles	4
	Publication of leaflet/booklet	-
	Farmer scientist interface	2200
	Field day organized	Two
	Demonstrations organised	36

Items	Details (List may be given)
-------	-----------------------------

Annual Report-AICRP-Mushroom 2019-20

TV Programmes			1. N.Chinara and Dr. B.K.Pani-Commercial cultivation of mushroom (Phone-in-programme) in DD1 on 28.5.2019 2. N.Chinara-Mushroom cultivation in Zee Odisha on 31.08.2019-31.08.2019 3. N.Chinara and Dr.M.K.Mishra-Commercial mushroom cultivation in winter season in DD1 on 26.11.2019			
Field day organized			1. Organized at Banapur, Khordha comprising 50 farm women on 30.11.2019 2. Organised at Duburi, Jajpur comprising 100 farmers and farm women on 06.03.2020			
Demonstrations organised						
Sl.No.	Date	Venue	No. of participants	Male	Female	Composition of participants
1	6.4.2019	NRRI, Cuttack	30	27	3	Farmers from Cuttack district
2	31.05.2019	IMAGE, Bhubaneswar	30	30	0	Farmers from Khordha district
3	16.7.2019	OUAT, Bhubaneswar	20	18	2	Farmers from Kukudakhandi block, Ganjam
4	17.7.2019	OUAT, Bhubaneswar	20	18	2	Farmers from Kukudakhandi block
5	29.8.2019	OUAT, Bhubaneswar	20	5	15	Students of B.Sc(Microbiology)
6	5.9.2019	OUAT, Bhubaneswar	30	25	5	Farmers from Khordha district
7	18.9.2019	OUAT, Bhubaneswar	11	4	4	Staffs of Kishan call centre
8	19.9.2019	OUAT, Bhubaneswar	13	7	6	Staffs of Kishan call centre
9	21.9.2019	School of Horticulture	30	18	12	Farmers from Khordha district
10	2.10.2019	NRRI, Cuttack	30	28	2	Farmers from Khordha and Cuttack district
11	22.10.2019	OUAT, Bhubaneswar	50	40	10	Farmers of Kabisuryanagar, Ganjam
12	23.10.2019	RSETI, Kendrapara	20	0	20	SHG members of Kendrapara
13	16.11.2019	DDA, Soro	20	0	20	SHG members of Soro
14	19.11.2019	OUAT, Bhubaneswar	50	30	20	Farmers from West Bengal
15	20.11.2019	OUAT,	30	20	10	Farmers from

Annual Report-AICRP-Mushroom 2019-20

		Bhubaneswar				different districts of state
16	24.11.2019	Arilo, Jagatsinghapur	50	45	5	Farmers of Jagatsinghapur
17	25.11.2019	ICAR-IIWM, Bhubaneswar	30	27	3	Farmers from different districts of state
18	26.11.2019	OUAT, Bhubaneswar	40	40	0	Farmers of Angul district
19	2.12.2019	OUAT, Bhubaneswar	50	35	15	Students of BSc(Fo)
20	5.12.2019	OUAT, Bhubaneswar	40	15	25	BSc(Ag) students of different university
21	10.12.2019	DDH, Cuttack	40	0	40	SHG members of Cuttack
22	19.12.2019	OUAT, Bhubaneswar	50	30	20	Students of different states
23	19.12.2019	OUAT, Bhubaneswar	30	30	0	Farmers of Sonepur
24	7.1.2020	OUAT, Bhubaneswar	50	1	49	Farmers from Ranchi
25	21.1.2020	OUAT, Bhubaneswar	50	48	2	Farmers of Sukinda block
26	22.1.2020	OUAT, Bhubaneswar	50	32	18	Farmers of Udala block
27	27.1.2020	OUAT, Bhubaneswar	25	5	20	Polytechnic students, Ranital
28	14.2.2020	CIFA, Khordha	30	25	5	Farmers of Khordha district
29	17.2.2020	OUAT, Bhubaneswar	30	30	0	Farmers of Tangichowdwar
30	27.2.2020	OUAT, Bhubaneswar	30	20	10	Farmers under Ila Panda Foundation
31	28.2.2020	OUAT, Bhubaneswar	30	20	10	Farmers of Jagatsinghapur
32	28.2.2020	OUAT, Bhubaneswar	15	15	0	Different districts of Odisha
33	29.2.2020	OUAT, Bhubaneswar	20	0	20	Farmers of Rajas, Khordha
34	3.3.2020	CIFA, Khordha	30	25	5	Farmers of Khordha district
35	4.3.2020	OUAT, Bhubaneswar	8	3	5	Students of Raghunath Jew college, Cuttack
36	5.3.2020	NRRI, Cuttack	30	30	0	Farmers of Jagatsinghapur
Total			1162	746	383 (32%)	

Annual Report-AICRP-Mushroom 2019-20

1. Experiential Learning students :

	Boys	Girls	Total
ELP 421: “Straw mushroom and spawn production”, (0+20)	8	13	21

Photographs





Pune Centre

Different extension activities were undertaken by the scientists and staff working at AICRP on Mushroom, Pune Centre in order to promote and popularize the mushroom cultivation technology in Maharashtra state during 2019-20. These activities are as follows.

Table . One day training: Oyster and milky mushroom cultivation technology training

Date	Venue	No. of Participants	Male	Female	Remarks if any
05/04/2019	AICRPM, Pune	31	26	05	-
04/05/2019	AICRPM, Pune	35	30	05	-
01/06/2019	AICRPM, Pune	30	23	07	-
05/07/2019	AICRPM, Pune	26	18	08	PARIVAR Sanstha, Pune
06/07/2019	AICRPM, Pune	34	27	07	-
30/07/2019	KVK, Narayangaon, Pune	50	42	08	SC SP training
31/07/2019	AICRPM, Pune	50	40	10	SC SP training
03/08/2019	AICRPM, Pune	30	21	09	-
07/09/2019	AICRPM, Pune	41	29	12	-
05/10/2019	AICRPM, Pune	31	26	05	-
07/10/2019	Yerwada Open Jail, Pune	20	20	00	Yerwada Open Jail Prisoners, Pune
02/11/2019	AICRPM, Pune	20	17	03	-
07/12/2019	KVK, Narayangaon, Pune	64	53	11	KVK, Narayangaon, Pune
13/12/2019	AICRPM, Pune	21	13	08	-
04/01/2020	AICRPM, Pune	56	46	10	-
01/02/2020	AICRPM, Pune	34	27	07	-
05/02/2020	RAMETI, Pune	27	24	03	RAMETI, Pune
04/03/2020	Erandwana, Pune	100	00	100	Erandwana Club, Pune

Annual Report-AICRP-Mushroom 2019-20

07/03/2020	AICRPM, Pune	24	19	05	-
Total= 19		724	501	223	-

Table. Three-day training: Mushroom spawn production technology training

Date	Venue	No. of Participants	Male	Female	Remarks if any
08-10/04/2019	AICRPM, Pune	03	03	00	-
20-22/01/2020	AICRPM, Pune	05	04	01	-
Total = 02		08	07	01	-

Table. Five-day training: Button mushroom production technology training

Date	Venue	No. of Participants	Male	Female	Remarks if any
08-12/04/2019	AICRPM, Pune	10	06	04	-
20-24/01/2020	AICRPM, Pune	12	11	01	-
Total= 02		22	17	05	-

Long term training

Date	Venue	No. of Participants	Male	Female	Remarks if any
Nil					

TSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any
Nil					

Table. SCSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any
30/07/2019	KVK, Narayangaon, Pune	50	42	08	SC SP training
31/07/2019	AICRPM, Pune	50	40	10	SC SP training
Total=02		100	82	18	

Table. Coverage in mass media

Sr. No.	Activity	Number
1	Participation in Agril. Exhibitions	05
2	TV Programme	-

3	Radio Programmes	04
4	Farmersscientists exhibitions	05
5	News papers	07

Table. Important visitors

Sr. No.	Date	Dignitary visited
1	05.04.2019	Dr. S.D. Sawant, Hon. Vice Chancellor, Dr. BSKKV, Dapoli, Dist-Ratnagiri
2	17-08-2019	Dr. Amol Shinde, Additional PS to Minister of state of Agriculture, Government of India, New Delhi.
3	09-10-2019	Dr. S. R. Gadak, Director of Research, MPKV, Rahuri
4	13-10-2019	Mr. Chandrakant Kovalekar, Hon. Deputy Chief Minister, Goa and Dr. K. P. Viswanatha, Hon. Vice Chancellor, MPKV, Rahuri.
5	15-10-2020	Adv. Kolase Patil, Hon. Ex., Judge, High Court & Dr. K. P. Vishwanath, Hon. V. C., MPKV, visited to the stall of Mushroom in <i>Kharif</i> Agri-Tech Festival at A. C., Pune
6	21-10-2019	Dignitaries from Uzbekistan (21 Nos.)
7	21-11-2019	Mr. Victor Stephen from Nigeria
8	12-12-2019	Farmer's Group from Sudan
9	24-12-2019	Dr. Pankaj Mahale and Dr. Chaugule, Hon. Executive Council Member, MPKV, Rahuri
10	29-31-01-2020	Dr. V. P. Sharma, Hon. Director and Project Coordinator, ICAR - Directorate of Mushroom Research, Chambaghat, Solan

The technology of mushroom cultivation was also transferred by sending pamphlets by post as well as by participating in exhibitions and attending farmers' rallies organized by various agencies at different places.

Demonstrations:

Participated with live demonstrations in following programmes

1. Exhibited mushroom cultivation technology in *Kharif* Agri-Tech Fest-2019-20 at College of Agriculture, Pune on 15th October, 2020.
2. Exhibited mushroom cultivation technology to the farmers in Krishi Aadhar Sammelanw.e.f25 -26.10.2019 at MPKV,Rahuri.
3. Exhibited mushroom cultivation technology in Convocation ceremony at MPKV, Rahuri on 05th December, 2019.
4. Celebrated "National Mushroom Day" on 5th Jan, 2019. About 106 mushroom growers spawn producers from Maharashtra and Karnataka states participated in function.
5. Arranged live demonstrations / an exhibition during the visit of Hon. Agril. Minister, Mr. Dada Bhuseat A.C., Pune on 21st Feb, 2020.

Table. Exposure visit of Farmers

Sr. No.	State	State wise Number of farmers/ students	Gender-wise distribution	
			Male	Female
1.	Maharashtra	9356	7451	1905
2.	Gujrat	22	18	4
3.	Karnataka	67	67	-
4.	Uzbekistan	21	21	-
5.	Nigeria	03	03	-
6.	Sudan	15	15	
Total		9484	7575	1909

Table. Consultancy Provided

Sr. No.	Name and address of farmer	Type of mushroom grown	Production capacity
1	Navin Fresh Mushroom, Fursungi, Pune	Button	1 MT/day
2	Balaji Mushrooms, At/post-Nimbut, Tal - Baramati, Dist - Pune	Button	11 -12 MT/day
3	Vaishnavi HightechAgro., At-Ambethan, Post-Rajgurunagar, Tal - Khed, Dist – Pune	Button	1.5 MT/day
4	Syn Agro. Foods Pvt. Ltd., At- Aavalwadi, Post- manjari, Tal - Haveli, Dist - Pune	Button	0.7 MT/day

II) Consultancy /Guidance Provided during visit to the Centre / telephone

	All staff members	Consultancy /Guidance service provided to 2763 farmers
--	-------------------	--

Table. Spawn supply

Sr. No.	Mushroom Species	Spawn (MT)	Master spawn sold	Culture tubes sold
1	<i>Pleurotussajorcaju</i>	1.523	-	-
2	<i>Hipsizygusulmarius</i>	1.044	-	-
3	<i>Pleurotusflorida</i>	0.057	-	-
4	<i>Pleurotuseous</i>	0.031	-	-
	Total	2.655		

Table. Experiential learning

Sr. No.	Number of students	Gender wise distribution	
		Male	Female

1	28	18	10
---	----	----	----

Table. Participation in seminar/symposia/workshop, etc.

Sr. No.	Name of staff members	seminar/symposia/workshop/kisan mela, etc	Date	Venue
1	Dr. A.P. Gaikwad, Mrs. M.C. Dhavale and Shri. N.G. Desai	National Symposium on “Trends and Innovations in mushroom Production Technologies, Diversification, Processing and Consumption”	31 st Jan. to 2 nd Feb, 2019.	HAIC, R & D Centre, Murthal, Haryana
2	Dr.A. P. Gaikwad and Shri. N.G. Desai	Annual Workshop of AICRP on Mushroom	28-30 June, 2019	ICAR-Directorate of Mushroom Research, Solan (HP)
3	Dr. A.C. Jadhav	Mushroom Taxonomy	4-7 Aug, 2019	ICAR-DMR, Solan (HP)
4	Dr. A. C. Jadhav and Ms. M. C. Dhavale	Training programme on “Integrated farming system for Climate Smart Agriculture and Water Management”	18-19 Sept, 2019	College of Agriculture, Pune
5	Dr. A.C. Jadhav	National problems and constraints in fruit crops	14 th Nov to 4 th Dec, 2019	CAFT in Horticulture (Fruits), Dept. of Hort., MPKV, Rahuri

News paperclips



1) Trainings: Oyster & Milky Mushroom Cultivation Training Programme



Special Oyster Mushroom Cultivation Training Programme for the parents of disabled children



Special Oyster Mushroom Cultivation Training
Programme for SC-Sub Plan-
KVK, Narayangaon 31/07/2019

Annual Report-AICRP-Mushroom 2019-20



One of the Oyster Mushroom Cultivation Training Programmes conducted at AICRPM, Pune



Distribution of oyster mushroom growing kit to the participants at KVK, Narayangaon 31/07/2019



Special training for the women (About 100) regarding oyster mushroom cultivation on 04-03-2020 in Pune

1) Demonstration



Demonstration of oyster mushroom cultivation technology

2) Farm visits

Annual Report-AICRP-Mushroom 2019-20

	
Visit to the Oyster mushroom Farm of Shri. Sunil Rajguru at Madha, Dist – Solapur on 17-01-2020	Oyster Mushroom Farm-Walhekar Sushant, Alibaug, 24/09/2019
	
M/s. Navin Fresh Mushrooms Pvt. Ltd., Fursungi, Pune on 13.03.2019	Visit to Button Mushroom Project Errection site of Mr. Sambhajirao Mali, Peth vadgaon, Kolhapur on 27.02.2019

3) Visit of dignitaries

	
Hon. Dy. CM, Goa -Chandrakant Kavlekar, Dr. K.P. Vishwanatha, Hon. Vice Chancellor, MPKV, Rahuri, Dr. M.C. Varshneya, Hon. Ex. V. C., Anand Agril. Univ., Gujrat on 13.10.19	Adv. Kolase Patil, Hon. Ex., Judge, High Court & Dr. K. P. Vishwanath, Hon. V. C., MPKV, to the stall of Mushroom in Kharif Agri-Tech Festat A. C., Pune on 15-10-2019
Visit of Dr. V. P. Sharma, Hon. Director, DMR, Solan to various mushroom projects in Maharashtra on 30th and 31st January, 2020.	

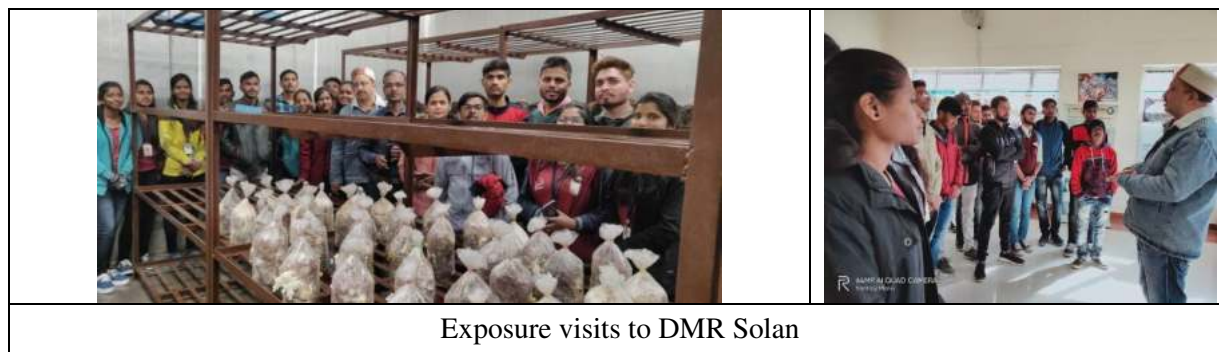
Annual Report-AICRP-Mushroom 2019-20

	
M/S Tirubati Balaji Agro Products Pvt. Ltd, Baramati, Dist - Pune	M/s. SynaAgro Foods Pvt. Ltd., Wagholi, Pune
	
Hind Mushrooms (Spawn production laboratory), Rajgurunagar, Dist -Pune	Vaishnavi Hi-Tech Agro, Ambethan, Tal-Khed, Dist - Pune
	
Guidance by Dr. Sharma sir to the ELP students of Mushroom module at AICRPM, Pune	Dr. Sharma sir observing the IVTs of Button mushroom at AICRPM, Pune
	
Dr. S.R. Gadakh, Director of Research, Dr. V.D. Shende, ADR, MPKV, Rahuri and Dr. V.S. Supe, ADR, RFRS, Ganeshkhind, Pune -09/10/2019	

	
Farmers group of Uzbekistan 21/10/2019	
	
Dr. M.B. Varbhuvan, DG, MCAER, Pune on 28.03.2019	Engineers group (15) of Sugar Industry from Sudan on 12/12/2019

4) Experiential Learning Programme

	
Compost preparation	
	
Button and oyster mushroom production	Preparation of mushroom recipes



Exposure visits to DMR Solan

National Mushroom Day Celebration on 05.01.2020



Dignitaries on the dias: Dr. P. N. Rasal, Asso. Dean, A.C., Pune; Dr. S. D. Masalkar, Principal, College of Horticulture, Pune and Dr. V. S. Supe, Asso. Director of Research, NARP, Pune.



Participants (106), who attended the mushroom day celebration



Students observing the stalls arranged by different firms



Working lunch to the participants

Raipur Centre

Sale of Pure culture, Mother spawn, sister spawn, spawned bags, fresh mushroom and mushroom processed products

Total Planting spawn sold	Mother spawn	Pure culture	Fresh Mushroom	Pickle	Spawned Bags
92.3 Quintals	1038 Bottles	1122 Tubes	1901Kg	50 Kg	578

Sale of Mushroom Spent Substrate enriched with bioinoculants: Rs. 3 Lakhs
Success stories

Mushroom and spawn production units successfully established and running in CG under the guidance and expertise of IGKV

Mushroom/Spawn Production Unit	Area	Production Capacity	Stakeholder
NorthStar Button Mushroom Unit	Koteshwar, Raipur	10 Quintals/day (Button Mushroom)	Shri Bajawa
Green Tech Agro Button Mushroom Farms	Kumhari, Durg	8 Quintals/day (Button Mushroom)	Shri Soni
Kakkad Button Mushroom Units	Siltara, Raipur	20 Quintals/day (Button Mushroom)	Shri Kakkad
Amrit Button Mushroom	Durg	25 Quintals/day (Button Mushroom)	Shri Gopal Aggrawal
Chhattisgarh Oyster Mushroom Farm	Tendua, Raipur	20 tonnes Spawn & 100 tonnes Oyster mushroom annually	Smt. Namrata Yadu
UKS Mushroom (Oyster)	Khairagarh	50 tonnes Oyster mushroom annually	Shri Janghel
Pro Health Mushroom	Koteshwar Raipur	30 tonnes Oyster Mushroom Spawn annually	Shri Vinod Naik
Mahanadi Farmer Producer Company	Kanker	25 tonnes annually oyster mushroom by women self help groups. They are also involved in other activities like pickle preparation from jackfruit, icecream preparation from custard apple pulp	-
Rajeev Lochan Agri Innovation FPO	Megha Dhamtari	45 tonnes spawn and more than 100 tonnes of oyster mushroom	-
Sewabhawan Hospital Jagdishpur	Jagdishpur	Marketing linkage of dried oyster mushroom to hospitals, Paddy straw mushroom grower	Mr. Tittus (4-5 lakhs annually)
Raj Mushroom Kisan Nidan Group	Pathiyapali, Basna	Open cultivation of paddy straw mushroom, and oyster and further marketing of mushrooms	Shri Rajendra Sahu 6 lakhs annually
AAmdi Mushroom	Dhamtari	25-30 Tonnes Oyster	-

Annual Report-AICRP-Mushroom 2019-20

growers Group		Mushroom annually	
Paddy straw mushroom Growers Group	Janjgir Champa, Raigarh, Kharsia, Bilaspur	100 Quintals of Volvariella per day (July to September)	

Trainings on Mushroom Cultivation conducted by IGKV Raipur in 2019-2020

Date	No of Days	Place	Total participants
01.04.2019 to 25.04.2019	25	IGKV Raipur	26
27.04.2019	1	IGKV Raipur	09
25.05.2019	1	IGKV Raipur	11
22.06.2019	1	IGKV Raipur	34
27.07.2019	1	IGKV Raipur	40
20.08.2019	1	College of Horticulture, Jagdalpur, IGKV	50
21.08.2019	1	KVK Jagalpur	27
22.08.2019	1	College of Horticulture, Jagdalpur, IGKV	50
23.08.2019	1	KVK Kanker	80
19.09.2019	1	Kalinga University, Atal Nagar Raipur	119
20.09.2019	1	IGNTU Amarkantak, M. P.	200
24.09.2019	1	Pt. Ravishankar Shukla University, NSS Foundation Day	-
25.09.2019	1	KVK Janjgeer Champa	40
26.09.2019	1	DES IGKV Raipur, Suraji Gram Yojna	56
27.09.2019	1	KVK Kanker	80
28.09.2019	1	IGKV Raipur	32
26.10.2019	1	IGKV Raipur	28
30.11.2019	1	IGKV Raipur	41
23.12.2019	1	IGKV Raipur (Mushroom day)	36
28.12.2019	1	IGKV Raipur	37
25.01.2020	1	IGKV Raipur	35
29.02.2020	1	IGKV Raipur	39

AICRP Mushroom Training under TSP Mushroom Production Techniques at Narayanpur and Durg Kantal Kanker

Date	Total
13.02.2020 to 15.02.2020 at Narayanpur	65
16.02.2020 to 18.02.2020 at Pujaripara, Kanker	76

AICRP Mushroom Training (SCSP Plan) 29.11.2019 to 01.12.2019 Mushroom Production Techniques at Bemetra

Date	Total
29.11.2019 to 01.12.2019 at Raipur	87
02.03.2020 to 06.03.2020 at Balod	69

ICAR SCSP Training 20.01.2020 to 23.01.2020 Mushroom Production Techniques

Date	Total
20.01.2020 to 23.01.2020 at Raipur	32

NHM Training Mushroom Production Techniques at Raipur

Date	Total
20.01.2020 to 23.01.2020 at Raipur	25
27.02.2020 to 28.02.2020 at Mainpat	83

STRY Training on Mushroom Cultivation

Date	Total
18.11.2019 to 23.11.2019 at Raipur	27

Kisan Mela, Rajyotsav, Farmer's Fair and Mushroom Day

- Participation in Rajyotsav 2019-20 (Mushroom stall with display and simultaneous Live demonstration for entire week)
- Participation in Five days Rashtriya Kisaan Mela 2019-20 (Mushroom stall with display and simultaneous Live demonstration for entire week)
- Participation in Three days flower show,
- Three days National Tribal Dance festival 2019-20
- Five days training on Mushroom cultivation in NSS state level camp to more than 1500 NSS Volunteers
- More than 1000 women and youth from all over Chhattisgarh trained in mushroom cultivation technology under Narwa Garwa, Ghurva Bari, and Bihan Yojna
- Training at KVKs on Mushroom Production Technology across Chhattisgarh
- Mushroom Day celebrated on 23.12.2019

Lectures delivered at different Universities on Entrepreneurship Development through Mushroom Cultivation

- Kalinga University, Raipur, CG
- OUAT Bhubhaneshwar, Orissa
- IGNTU, Amarkantak, M.P.
- Magadh University, Gaya, Bihar
- Vinoba Bhave University, Hazaribag, Jharkhand
- Bastar University, Jagdalpur, CG

Radio/TV Talks: 05

Seminar/Symposium/ Conferences:

Attended Seventh International Conference of IPS 2020

Glimpses of Training across Chhattisgarh

Annual Report-AICRP-Mushroom 2019-20



Awards and Recognitions



- Innovative Mushroom Grower Award by DMR to Rajendra Sahu from Pathiapali Basna
- Best Oral Presentations in International Conference IPS 2020 for the work on Termitomyces and Extension activities in Mushroom across CG

Success Stories

Saurabh Janghel of Chuikhadan, Rajnandgown,



Saurabh Janghel of Chuikhadan, Rajnandgown, has been growing mushroom for the past five years and his farm was visited by the Respected Director Dr. V. P. Sharma who was mighty impressed by his work. He was further nominated there itself for the Mushroom Grower Award to be distributed at Mushroom Mela in September 2020 at DMR Solan.

Women Self help groups of Kawardha (Mushroom Produce is marketed by Saurabh Janghel) September to February 2019-2020



S.N.	Name of the SHG	District	Production
1.	Radha Rani swa sahayata samuh	Rajanawagaon	100 kg/month
2.	Jai maa Durga swa sahayata samuh	Rajanawagaon	100 kg/month
3.	Jai maa mahamaya swa sahayata samuh	Rajanawagaon	100 kg/month
4.	Shakambari swa sahayata samuh	Rajanawagaon	100 kg/month
5.	Jai maa Laxmi swa sahayata samuh	Rajanawagaon	100 kg/month
6.	Sai Ram swa sahayata samuh	Rajanawagaon	100 kg/month
7.	Gauri kripa swa sahayata samuh	Rajanawagaon	100 kg/month
8.	Shivam swa sahayata samuh	Barpelatola	100 kg/month

Annual Report-AICRP-Mushroom 2019-20

9.	Maa Laxmi swa sahayata samuh	Barpelatola	100 kg/month
10.	Jai maa sharda swa sahayata samuh	Barpelatola	100 kg/month
11.	Gyan jyoti swa sahayata samuh	Barpelatola	100 kg/month
12.	Jai Maa Laxmi swa sahayata samuh	Dargawa	100 kg/month
13.	Jai maa laxmi swa sahayata samuh	Nawagaon	100 kg/month
14.	Jai maa Durga swa sahayata samuh	Nawagaon	100 kg/month
15.	Jai maa saraswati swa sahayata samuh	Nawagaon	100 kg/month
16.	Jai laxmi swa sahayata samuh	Rengakhar khurd	100 kg/month
17.	Jai Bhrat mata swa sahayata samuh	Rengakhar khurd	100 kg/month
18.	Jai Bhole swa sahayata samuh	Rengakhar khurd	100 kg/month
19.	Krishna swa sahayata samuh	Rengakhar khurd	100 kg/month
20.	Gulab swa sahayata samuh	Gangpur	100 kg/month
21.	Durga swa sahayata samuh	Gangpur	100 kg/month
22.	Jai maa saraswati swa sahayata samuh	Gangpur	100 kg/month

(KBS) Koya Bhim Sena (Village Khairkheda, Kanker) (Seasonal Income Rs. 1 Lakhs approx.)



Miss Neera Salam, Pujaripara, Durgkotal, Kanker



Seasonal Income Rs 80,000/-

Mr. Rameshwar Kunjam, Bardebhata, Kanker



Seasonal Income: Rs 40,000/- from Milky Mushroom (His other activities include Kadaknath Rearing and Hatchery Unit)

Amit Sahu, Kanker



Seasonal Income Rs. 2-2.5 Lakhs approx

Self Help Groups of Korea (Annual Income of Rs. 2.00 to 2.50 Lakhs in 2019-2020)



ELP Students (B. Sc Agriculture IV year students) (Profit of Rs 25,000/-)



Newspaper clippings

युवा उद्यमियों ने सीखे मशरूम उत्पादन के गुर

[illegible]

कृषि विश्वविद्यालय के छात्रों ने सीखी पैरा और दधिया मशरूम उगाने की तकनीक

महिलाओं ने जाना पैरा मशरूम उत्पादन का तरीके

[illegible]

कृषि महाविद्यालय में मशरूम उत्पादन

[illegible]

यणपुर

[illegible]



Ranchi Centre

Nauni Centre

Trainings

One day training

Three day training

Date	Venu	No. of Participants	Male	Fema	Remarks if any
16-19 Oct.2019	UHF, Nauni	13	7	6	Coorg anized the training prog for tribal farmers of HP

Long term training

Date	Venue	No. of Participants	Male	Fema	Remarks if any
11-17 March 2019	UHF, Nauni	12	11	1	Skill Development Training Prog. Sponsored by ICAR

SCSP Trainings

Date	Venu	No. of Participants	Male	Fema	Remarks if any
4-7	UHF,	20	16	4	

Annual Report-AICRP-Mushroom 2019-20

Dec.2019	Nauni				

3. Spawn supply and revenue generation

	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Spawn supplied			
Oyster			
Button			
Milky			
Paddy straw			
Master spawn supplied			
Culture supplied (no.)			
Total	3500 (Button an oyster spawn)	80	2,80,000

4. Participation in seminar/symposia/workshop/kisan mela, etc

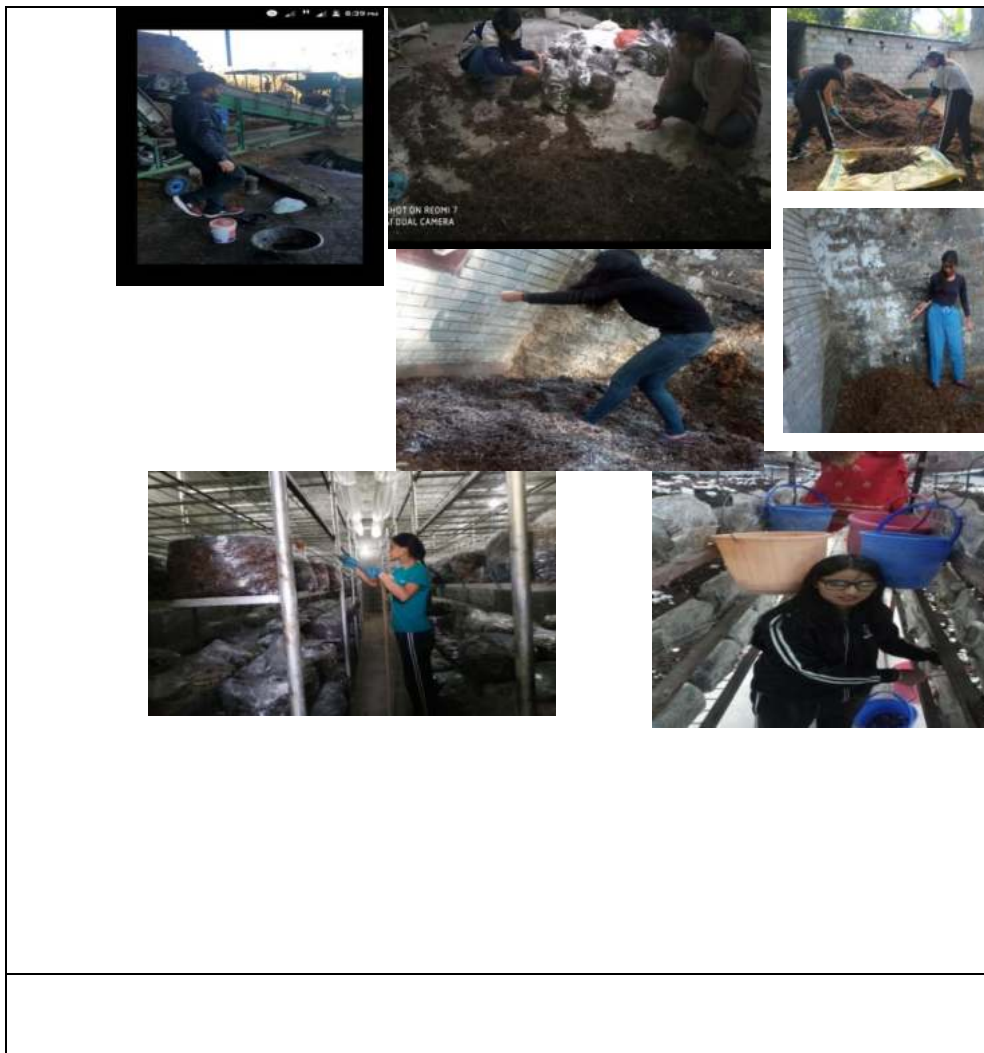
Sr. No.		Date	Venue
1	Dr Dharmesh Gupta attended 2 days workshop on "Package of practices of Fruit Crops"	18-19 Feb. 2020	UHF, Nauni.
2.	Dr Dharmesh Gupta attended 2 days XXI AICRP(Mushroom) workshop	28-29 June 2019	DMR, Chambaghat

7. Coverage in Mass Media

Sr. No.	Item	Number
	TV Programmes	
	Radio Programme	
	News paper coverage	
	Popular articles	2
	Publication of leaflet/booklet	
	Farmer scientist interface	
	Field day organized	1
	Demonstrations organised	

2. Experiential Learning students :

	Boys	Girls	Total
2019-20	16	12	28





Exposure visit of Farmers

Date	Number of farmers/students	Number of male participants	Number of female participants
9/12/19	25	13	12
29/12/20	20	20	-
30/12/20	20	20	-
5/2/20	31	7	24
11/2/20	24	19	5
12/2/20	25	25	-
14/2/20	25	25	-

Photographs of training and demonstrations

Annual Report-AICRP-Mushroom 2019-20





Mushroom Hunting



Training on Taxonomy of Mushrooms



Exposure visit of students from Agr.college,Pune

Murthal

Pusa Centre

Spawn Sold

Sl.No.	Type of Spawn	Spawn Sold (in quintal)	
		RPCAU	By farmers (Private Lab, financed by Bihar Gov. NHB /NHM/NABARD)
01	Oyster	72.00	1000.00
02	Milky	28.00	560.00
03	Button	35.00	850.00

Annual Report-AICRP-Mushroom 2019-20

Total	135.00	2410.00
Grand Total	2545.00	

2. Mother Spawn Supplied :5000 bottle (each 300 g.) mother spawn was supplied.

3. Training Conducted

Table 1. Off campus / on campus one day Mushroom cultivation training Programme

Sl. No.	Date	Venue	No. of Participants		Total	Remarks
			Male	Female		
1.	24.04.2019	CRPF Camp Momka Ghat	25	00	25	
2.	21.07.2019	Dumri, Kothia	27	50	77	
3.	04.08.2019	Thahra, Gopalpur, Samastipur	05	25	30	
4.	22.08.2019	Lautan, Dholi, Muzaffarpur	44	07	51	
5.	25.08.2019	Kusiyari, Kalyanpur, Samastipur	28	19	47	
6.	28.08.2019	Tedha and Milki, Khanpur, Samastipur	04	32	36	
7.	31.08.2019	Lautan, Muraul, Muzaffarpur	47	04	51	
8.	26.09.2019	Fulwaria, Garkhaa, Saran	17	04	21	
9.	26.12.2019	CRPF Camp Momka Ghat	26	00	26	
10.	31.12.2019	TCA, Dholi	21	32	53	
Total			244	173	417	

Table 2. One week / three days Mushroom cultivation training Programme

S. No.	Date	Venue	No. of Participants		Total	Remarks
			Male	Female		
1.	02-08 July, 2019	On Campus	02	23	25	
2.	04-10 July, 2019	On Campus	22	06	28	
3.	16-22 July, 2019	On Campus	30	11	41	
4.	17-23 Sept., 2019	On Campus	11	02	13	
5.	22-28 October, 2019	On Campus	27	30	57	
6.	03-09 Dec., 2019	On Campus	49	00	49	
7.	21-27 January, 2020	On Campus	27	05	32	
8.	04-10 February, 2020	On Campus	19	00	19	
9.	16-18 February, 2020	On Campus	27	198	225	SCSP & TSP (DMR, NBAIM & RPCAU)
10.	23-24 February, 2020	Palojori, Deoghar, Jharkhand	05	60	65	TSP, NBAIM
Total			219	355	554	

Table 3. Master trainer training programme

Sl. No.	Date	Venue	No. of Participants		Total	Remarks
			Male	Female		
1	11-25 June, 2019	On Campus	05	04	09	
2	02-16 August, 2019	On Campus	11	04	15	
3	21 Aug to 04 Sept. 19	On Campus	02	01	03	
4	16-30 January, 2020	On Campus	06	04	10	
Total			24	13	37	

Table 6. Entrepreneurship Development on Mushroom Production & Processing Technology training programme

Sl. No.	Date	Venue	No. of Participants		Total	Remarks
			Male	Female		
1	03 Feb., to 4 March, 20	On Campus	05	01	06	

Winter School organized

A winter school entitled "Income and Employment Generation among Youth through Mushroom Production Technology" to be organized from 05-25 November, 2019 at RPCAU, Pusa.

Mushroom Day Celebration

- Mushroom day celebration was organized on 23rd December, 2019. atMushroom Center, College of Basic Sciences and Humanities, RPCAU, Pusa.
- A total of 500 including 300 women were participated from Muzaffarpur, Vaishali, East & West Champaran, Sitamadhi, Saran and Seohar.

T.V. Talk :-

Name of the Scientist	Topic	Date	Radio talk or TV talk	Name of radio/ Doordarshan/ ETV
Dr. Dayaram	Button Mushroom production technology	18.12.2019	TV talk	Doordarshan, Patna
Dr. Dayaram	Mushroom production technology	02.09.2019	TV talk	ETV Bihar

Visitors

- Farmers –4200
- Student – 2500

VIPs visitors –

Annual Report-AICRP-Mushroom 2019-20

S.N.	Name & Post of VIP Dignitaries	Date
01	Dr. V.P. Sharma, Director, ICAR-DMR, Solan	26.09.2019
02	Dr. N. Sarawan Kumar, IAS, Secretary, Department of Agriculture, Govt. of Bihar	05.11.2019
03	Dr. Manjit Singh, Ex-Director, ICAR-DMR, Solan	24-25 November, 2019
04	Dr. P.S. Pandey, ADG (EP&HS), ICAR	25.11.2019
05	Dr. Prem Kumar, Hon'ble Minister of Agriculture, Govt. of Bihar.	07.12.2019
06	Sri Shyam Rajak, Hon'ble Minister of Industries, Govt. of Bihar	23.12.2019
07	Dr. Shwate Kamal, Principal Scientist, ICAR-DMR, Solan	16-18 Feb., 2020
08	Dr. Alok Srivastava, Director, ICAR-NBAIM, Mau, U.P.	16-18 Feb., 2020

Training schedule for Mushroom Production Technology (2020-21)

Sl. No.	Date	No. of Participants	Topics	Last date for submission of application
01	14-28 April, 2020	10	Mushroom Spawn Production Technology	Postponed
02	12-18 May, 2020	30	Milky Mushroom Production and Processing Technology	Postponed
03	03-09 June, 2020	30	Mushroom Cultivation and Processing Technology	Postponed
04	16-22 June, 2020	30	Mushroom Production and Processing Technology	18 May to 18 June, 2020
05	14-28 July, 2020	10	Master Trainers Training Programme	10 June to 10 July, 2020
06	17-31 August, 2020	10	Spawn Production Technology	13 July to 13 August, 2020
07	10 August- 10 September, 2020	05	Entrepreneurship Training Programme	06 July to 06 August, 2020
08	02-08 September, 2020	30	Mushroom Cultivation and Processing Technology	29 July to 29 August, 2020
09	15-21 September, 2020	30	Medicinal Mushroom Cultivation Technology	10 August to 11 September, 2020
10	25 September-01 October, 2020	30	Button Mushroom Cultivation Technology	21 August to 21 September, 2020
11	06-12 October, 2020	30	Button Mushroom Cultivation Technology	03 September to 03 October, 2020

Annual Report-AICRP-Mushroom 2019-20

12	17-23 October, 2020	35	Button Mushroom Cultivation Technology	14 September to 13 October, 2020
13	03-09 November, 2020	35	Mushroom Cultivation and Processing Technology	30 September to 31 October, 2020
14	01-15 December, 2020	10	Master Trainers Training Programme	28 November to 28 December, 2020
15	15-21 December, 2020	30	Medicinal Mushroom Cultivation Technology	11 November to 11 December, 2020
16	26 December-25 January, 2021	05	Entrepreneurship Training Programme	21 November to 21 December, 2020
17	15-30 January, 2021	10	Spawn Production Technology	11 December to 11 January, 2021
18	22-28 January, 2021	10	Products Development Technology	18 December to 18 January, 2021

Mushroom in News papers: -80 (April, 2019 to March, 2020)

क्रम	विषय	समाचार पत्र का नाम	तिथि	पृष्ठ संख्या
1.	मशरूम उत्पादन की वैज्ञानिक विधि सीखेंगे छात्र और ग्रामीण	दैनिक जागरण	08 अप्रैल, 2019	08
2.	मशरूम के उत्पादन की विवि करेगा पैकेजिंग व बिक्री	दैनिक जागरण	11 अप्रैल, 2019	08
3.	मशरूम से कम लागत में अधिक कमाई	प्रभात खबर	11 अप्रैल, 2019	09
4.	बेहतर पैदावार के लिए किसान वैज्ञानिक दृष्टिकोण से खेती करें तो आमदनी दोगुनी हो जाएगी : कुलपति	दैनिक भास्कर	11 अप्रैल, 2019	09
5.	मशरूम उत्पादन कर रोजगार व आमदनी बढ़ाएं : कुलपति	हिन्दुस्तान	11 अप्रैल, 2019	06
6.	मशरूम की खेती से महिलाएं होंगी आत्मनिर्भर	—	—	—
7.	ट्राईकोलोमा गिंगेसियम बना बटन का विकल्प : डॉ. दयाराम	प्रभात खबर	09 मई, 2019	02
8.	मशरूम से किसानों की दोगुनी होगी आय : डॉ. दयाराम	प्रभात खबर	25 मई, 2019	06
9.	विवि ने किया मशरूम प्रशिक्षण का वार्षिक कैलेंडर जारी	प्रभात खबर	06 जून, 2019	—
10.	किसी भी फसल के उत्पादन में उन्नतशील बीज का होता है अधिक महत्व : डॉ. हर्ष	दैनिक भास्कर	12 जून, 2019	12
11.	गरीबी व कुपोषण भगाने में मशरूम बेहतर	हिन्दुस्तान	12 जून, 2019	06
12.	मशरूम उत्पादन के क्षेत्र में स्पॉन निर्माण जटिल कार्य	प्रभात खबर	12 जून, 2019	05
13.	स्वस्थ रहने को प्रतिदिन करें मशरूम का उपयोग	दैनिक जागरण	13 जून, 2019	08
14.	मशरूम व्यवसाय रोजगार सृजन का स्रोत :डीआर	प्रभात खबर	26 जून, 2019	06
15.	मशरूम उत्पादन व बीज उत्पादन को दें बढ़ावा	हिन्दुस्तान	26 जून, 2019	06

Annual Report-AICRP-Mushroom 2019-20

16.	कम पूंजी लगाकर मशरूम की खेती कर बेहतर आय अर्जित कर सकते हैं लोग : डॉ. मिथिलेश	दैनिक भास्कर	26 जून, 2019	16
17.	औषधीय गुणों के साथ मशरूम में प्रोटीन की भरपूर मात्रा	दैनिक जागरण	3 जुलाई, 2019	02
18.	दूधिया मशरूम की खेती लाभदायक	हिन्दुस्तान	03 जुलाई, 2019	07
19.	राजेन्द्र दूधिया बटन मशरूम का बेहतर विकल्प : डॉ० कुमार	प्रभात खबर	03 जुलाई, 2019	07
20.	अत्यधिक गर्मी में भी किसान राजेन्द्र दूधिया मशरूम का उत्पादन कर दोगुना मुनाफा कमा सकते हैं: डॉ. मिथिलेश	दैनिक भास्कर	03 जुलाई, 2019	12
21.	मशरूम उत्पादन प्रशिक्षण शिविर का उद्घाटन	आज	03 जुलाई, 2019	07
22.	बहुरंगे बिहार के किसानों के दिन : डॉ मिथिलेश	प्रभात खबर	05 जुलाई, 2019	06
23.	मशरूम की खेती पर कार्यशाला	हिन्दुस्तान	05 जुलाई, 2019	06
24.	मशरूम के क्षेत्र में अभी अधिक प्रचार-प्रसार करने की है जरूरत, यह आय का अच्छा माध्यम : डॉ. मिथिलेश कुमार	दैनिक भास्कर	05 जुलाई, 2019	12
25.	प्रशिक्षण में प्रायोगिक वर्ग की भूमिका अहम : राकेश	प्रभात खबर	08 जुलाई, 2019	04
26.	मशरूम उत्पादन बेरोजगारी दूर करने का बेहतर विकल्प	दैनिक जागरण	09 जुलाई, 2019	06
27.	आय व रोजगार का बेहतर विकल्प है मशरूम:वीसी	हिन्दुस्तान	09 जुलाई, 2019	06
28.	जॉब प्रोवाइडर बनने की चेष्टा रखने की जरूरत : कुलपति	प्रभात खबर	09 जुलाई, 2019	06
29.	रोजगार के लिए इच्छाशक्ति का होना जरूरी : निदेशक	प्रभात खबर	11 जुलाई, 2019	02
30.	प्रशिक्षण से प्राप्त ज्ञान को दैनिक जीवन में उतारने की जरूरत : हर्ष	दैनिक भास्कर	11 जुलाई, 2019	—
31.	बदलते मौसम में मशरूम का उत्पादन सबसे बेहतर विकल्प	दैनिक जागरण	11 जुलाई, 2019	07
32.	मशरूम बन रहा ब्रांड, बढ़ रही इसकी डिमांड	हिन्दुस्तान	11 जुलाई, 2019	06
33.	मशरूम पौष्टिक व औषधीय गुणों से भरपूर	हिन्दुस्तान	17 जुलाई, 2019	06
34.	समाज की तकदीर बदल सकता है मशरूम : सिंह	प्रभात खबर	17 जुलाई, 2019	05
35.	मशरूम उत्पादन और प्रसंस्करण से जुड़कर छात्र गढ़ सकते अपना भविष्य	दैनिक भास्कर	17 जुलाई, 2019	14
36.	मशरूम उत्पादन रोजगार का बेहतर विकल्प	दैनिक जागरण	17 जुलाई, 2019	04
37.	कृषि के छात्रों ने मशरूम के उत्पादन पर की परिचर्चा	दैनिक भास्कर	22 जुलाई, 2019	14
38.	आमदनी बढ़ाने का सर्वोत्तम साधन है मशरूम	हिन्दुस्तान	22 जुलाई, 2019	07
39.	किसानों की आमदनी को दोगुना करने की दिशा में मशरूम उत्पादन का कारोबार होगा सबसे कारगर : डॉ. हर्ष कुमार	दैनिक भास्कर	23 जुलाई, 2019	12
40.	गरीबों का गाय, मशरूम व्यवसाय : अधिष्ठाता	प्रभात खबर	23 जुलाई, 2019	07
41.	गैस, कब्ज, बीपी व हृदय रोग में राहत पहुंचाता है मशरूम : डी आर	हिन्दुस्तान	03 अगस्त, 2019	04
42.	200 बैगों से शुरुआत, अब प्रतिमाह 60 क्विंटल उत्पादन	प्रभात खबर	03 अगस्त, 2019	08
43.	किसानों के लिए मशरूम व्यवसाय वरदान	हिन्दुस्तान	26 अगस्त, 2019	04
44.	मदर कल्चर पर आधारित मशरूम की उत्पादकता	प्रभात खबर	27 अगस्त, 2019	06

Annual Report-AICRP-Mushroom 2019-20

45.	समृद्धि का आधार बन सकता है मशरूम : डॉ. दयाराम	—	—	—
46.	बिहार की कृषि व्यवस्था को चौपट करने की साजिश : डॉ. सिंह	प्रभात खबर	04 सितम्बर, 2019	04
47.	मशरूम उत्पादन कम पड़े युवाओं के लिए स्वरोजगार का बेहतर साधन।	दैनिक भास्कर	19 सितम्बर, 2019	14
48.	रोजगार बढ़ाने में मशरूम बेहतर विकल्प : डीन	हिन्दुस्तान	19 सितम्बर, 2019	02
49.	मशरूम बीज उत्पादन संयंत्र लगा	हिन्दुस्तान	05 अक्टूबर, 2019	04
50.	मशरूम उत्पादन में बिहार ने देश में बनाई है एक अलग पहचान	दैनिक भास्कर	23 अक्टूबर, 2019	11
51.	मशरूम उत्पादन में बिहार की अलग पहचान : वीसी	हिन्दुस्तान	23 अक्टूबर, 2019	06
52.	मशरूम उत्पादन में होगी सूबे की पहचान	दैनिक जागरण	23 अक्टूबर, 2019	06
53.	विदेशों में भी चखे जा रहे मशरूम के व्यंजन : वीसी	प्रभात खबर	23 अक्टूबर, 2019	08
54.	छात्रों में मशरूम उत्पादन की बढ़ रही ललक : डॉ मिथिलेश	प्रभात खबर	29 अक्टूबर, 2019	07
55.	मशरूम में महिलाओं की बढ़ रही रुचि	हिन्दुस्तान	29 अक्टूबर, 2019	06
56.	जलवायु परिवर्तन किसानों के लिए चुनौती (डॉ. राजेन्द्र प्रसाद केन्द्रीय कृषि विवि में विंटर स्कूल कार्यक्रम का कृषि सचिव ने किया उद्घाटन)	दैनिक जागरण	06 नवंबर, 2019	04
57.	युवा किसानों के लिए 21 दिवसीय विंटर स्कूल प्रशिक्षण कार्यक्रम	आज	06 नवंबर, 2019	07
58.	जलवायु के अनुकूल करें कृषि शोध : सचिव	प्रभात खबर	06 नवंबर, 2019	02
59.	जलवायु परिवर्तन को ध्यान में रखते हुए बेहतर फसल विकसित करने की है जरूरत : सचिव	दैनिक भास्कर	06 नवंबर, 2019	16
60.	किसानों को उपलब्ध हो मौसम आधारित प्रभेद : सचिव	हिन्दुस्तान	06 नवंबर, 2019	04
61.	देश को दिशा देने का काम कर रहा विवि: कुलपति	प्रभात खबर	26 नवंबर, 2019	05
62.	राज्य में मशरूम ने रोजगार सृजन का दिया विकल्प : एडीजी	हिन्दुस्तान	26 नवंबर, 2019	04
63.	मशरूम ने रोजगार देने में राष्ट्रीय स्तर तक बनाई पहचान	हिन्दुस्तान	04 दिसम्बर, 2019	06
64.	देश स्तर पर ख्याति प्राप्त कर चुका है मशरूम	दैनिक जागरण	04 दिसम्बर, 2019	04
65.	अब सालो भर उगा सकते हैं मशरूम	हिन्दुस्तान	10 दिसम्बर, 2019	06
66.	मशरूम उत्पादन को मिलेगा उद्योग का दर्जा : श्याम रजक	प्रभात खबर	24 दिसम्बर, 2019	02
67.	मशरूम उत्पाद की पैकेजिंग, प्रोसेसिंग और मार्केटिंग पर अधिक ध्यान देने की जरूरत, इसमें रोजगार के अवसर हैं: श्याम रजक	दैनिक भास्कर	24 दिसम्बर, 2019	04
68.	सूबे के हर जिले में बनेंगे खादी पार्क: उद्योग मंत्री	दैनिक जागरण	24 दिसम्बर, 2019	04
69.	कृषि विवि में राष्ट्रीय मशरूम दिवस समारोह, मशरूम को उद्योग का दर्जा दिलाने की पहल का दिया आश्वासन	हिन्दुस्तान	24 दिसम्बर, 2019	08
70.	महिलाओं को बनाया जाएगा स्वावलंबी	दैनिक जागरण	01 जनवरी, 2020	07
71.	मशरूम बहुआयामी रोजगार का साधन: डॉ0 हर्ष	प्रभात खबर	22 जनवरी, 2020	06
72.	औषधीय गुणों से परिपूर्ण है मशरूम: डॉ0 हर्ष	हिन्दुस्तान	22 जनवरी, 2020	04
73.	कम लागत में स्वरोजगार को अपनाने का एक महत्वपूर्ण जरिया बन चुका है मशरूम: डॉ. हर्ष	दैनिक भास्कर	22 जनवरी, 2020	14

Annual Report-AICRP-Mushroom 2019-20

74.	रोजगार का है बेहतर विकल्प है मशरूम	हिन्दुस्तान	29 जनवरी, 2020	06
75.	बदलते मौसम में मशरूम उत्पादन बेहतर विकल्प	हिन्दुस्तान	05 फरवरी, 2020	06
76.	मशरूम बहुउद्देश्यीय व्यवसाय: मिथिलेश	प्रभात खबर	05 फरवरी, 2020	05
77.	मशरूम उत्पादन और प्रसंस्करण के क्षेत्र में बनाई है अलग पहचान	दैनिक भासकर	05 फरवरी, 2020	16
78.	मशरूम स्वरोजगार का बेहतर विकल्प	हिन्दुस्तान	11 फरवरी, 2020	06
79.	मशरूम से किसानों को मिलेगी आर्थिक सहायता	प्रभात खबर	11 फरवरी, 2020	05
80.	बिहार में सालोंभर होता है मशरूम का उत्पादन	दैनिक जागरण	11 फरवरी, 2020	03

GLIMPSES OF MUSHROOM PROGRAMMES

Mushroom Training Programme



Student Training Programme



SCSP Training Program



Kisan Mela 2020



Training in CRPF Camp



Product Development



Mushroom Haluwa



Mushroom Rawa

Winter School organized from November 05-25, 2019



Inauguration of Advance Center of Mushroom Research



Ludhiana Centre

Training programmes organized: Short duration/long duration/sponsored/in-service

Training organised	Venue	Date	Male		Female	
			SC/ BC	oth ers	SC/ BC	oth ers
Training course on cultivation and processing of tropical mushrooms for farmers and farm women	PAU, Ludhiana	07.05.2019-08.05.2019		60		
Mushroom training course for Horticulture supervisor trainees	PAU, Ludhiana	18.06.2019-19.06.2019		23		
Training course on mushrooms for farmers and farm women	PAU, Ludhiana	9.09.2019-13.09.2019		8		
Training course on integrated mushroom growing unit for HDO/KVK/DES scientists	PAU, Ludhiana	3-10-2019-4-10-2019		1		4
Training under ICAR-SC subplan	PAU, Ludhiana	22-10-2019	27		8	
Training program under STRY on mushroom cultivation	PAMETI, Ludhiana	4-11-2019 - 9-11-2019		15		
Training to scheduled castes on mushroom production, biofertilizers and natural vinegar under RKVY	Village Mankwal, Dist. Ludhiana	27-11-2019 - 29-11-2019	12		8	
Training to scheduled castes on mushroom production, biofertilizers and natural vinegar under RKVY	Village Ghatianwala Bodla, Dist. Fazilka	5-12-2019 - 7-12-2019	12		18	
Training to scheduled castes on mushroom production, biofertilizers and natural vinegar under RKVY	Village Ghatianwala Jattan, Dist. Fazilka	5-12-2019 - 7-12-2019	19		11	
Training course on Mushroom Grower under Entrepreneurship Development Programme SC/ST	PAU, Ludhiana	9-12-2019 - 13-12-2019		20		
Training to scheduled castes on mushroom production, biofertilizers and natural vinegar under RKVY	KVK Rauni, Dist. Patiala	17-12-2019 - 19-12-2019	24		16	
25 days training course on mushroom grower under PMKVY scheme	PAU, Ludhiana	9-12-2019 - 7-1-2020		17		3
One day training program of	PAU,	28.01.2020		35		

Annual Report-AICRP-Mushroom 2019-20

mushrooms for farmers and farm women under SC subplan	Ludhiana					
One day training program of mushrooms for farmers and farm women under SC subplan	PAU, Ludhiana	29.01.2020		35		
One day awareness camp organized by Department of Microbiology under ICAR-1	Village Dewatwal	27.02.2020		30		
One day awareness camp organized by Department of Microbiology under ICAR-1	Village Gidri	27.02.2020		30		
One day awareness camp organized by Department of Microbiology under ICAR-1	KVK Moga	02.03.2020		30		
3 days training program on mushrooms, beverages and biofertilizer production organized by Department of Microbiology under ICAR-1	Village Deewala, Dist. Ludhiana	09.03.2020, 11.03.2020 & 12.03.2020		36		
3 days training program on mushrooms, beverages and biofertilizer production organized by Department of Microbiology under ICAR-1	Village Bhagwanpura, Dist. Ludhiana	09.03.2020, 11.03.2020 & 12.03.2020		14		

Total trainings= 19

Exhibitions

Date	Particulars of Exhibition and the event	Place of Exhibition	Products exhibition	Display
27.05.19-28.05.19	Research and Extension specialist's workshop for Horticultural Crops	PAU, Ludhiana	Mushroom, vinegar, beverages and Biofertilizers	Live/ Charts
21.08.2019 - 22.08.2019	Research and Extension specialist's workshop for Rabi Crops	PAU, Ludhiana	Mushroom, vinegar, beverages and Biofertilizers	Live/ Charts
10.09.2019	Exhibition at Regional Kisan Mela	Ballawal Saunkhri	Mushroom, vinegar, beverages and Biofertilizers	Live/ Charts
10.09.2019	Exhibition at Regional Kisan Mela	Nag Kalan	Mushroom, vinegar, beverages and	Live/ Charts

Annual Report-AICRP-Mushroom 2019-20

			Biofertilizers	
13.09.2019	Exhibition at Regional Kisan Mela	Patiala	Mushroom, vinegar, beverages and Biofertilizers	Live/ Charts
17.09.2019	Exhibition at Regional Kisan Mela	Gurdaspur	Mushroom, vinegar, beverages and Biofertilizers	Live/ Charts
17.09.2019	Exhibition at Regional Kisan Mela	Faridkot	Mushroom, vinegar, beverages and Biofertilizers	Live/ Charts
21.09.2019 - 22.09.2019	Exhibition at Kisan Mela	PAU, Ludhiana	Mushroom, vinegar, beverages and Biofertilizers	Live/ Charts
20-10-2019	Exhibition at Food and Craft Mela	PAU, Ludhiana	Mushroom, vinegar, beverages and Biofertilizers	Live/Charts
23.01.2020 - 24.01.2020	Research and Extension specialist's workshop for Horticultural Crops	PAU, Ludhiana	Mushroom, vinegar, beverages and Biofertilizers	Live/ Charts
27.01.2020	Exhibition for PAU-Industry Interface	PAU, Ludhiana	Mushroom, vinegar, beverages and Biofertilizers	Live/ Charts
06.02.2020	Exhibition for Agri-business Incubators Conclave	PAU, Ludhiana	Mushroom, vinegar, beverages and Biofertilizers	Live/ Charts
24.02.2020 - 25.02.2020	Research and Extension specialist's workshop for Kharif Crops	PAU, Ludhiana	Mushroom, vinegar, beverages and Biofertilizers	Live/ Charts

Total No.=13

Lectures Delivered

Sr. No.	Event	Date	Venue
---------	-------	------	-------

Annual Report-AICRP-Mushroom 2019-20

1.	Lecture on cultivation of summer mushrooms in training course for organic growers	09.04.2019	Mushroom Farm, PAU, Ludhiana
2.	Lecture on utilization of paddy straw for mushroom cultivation	22.04.2019	CGC, Jhanjeri
3.	Lecture on mushroom production in Gardner's training course	21.05.2019	Mushroom Farm, PAU, Ludhiana
4.	Lecture on mushroom production in training program on Innovations in Agribusiness for better farmers' income.	27.05.2019	PAMETI, Ludhiana
5.	Lecture on mushroom cultivation in Refresher's course for Farm workers.	21.06.2019	Mushroom Farm, PAU, Ludhiana
6.	Lecture on mushroom cultivation to farmers from Kinnaur	29.08.2019	Mushroom Farm, PAU, Ludhiana
7.	Lecture on three months skill development integrated crop production training course for young farmers training class.	26.09.2019-27.09.2019	Skill Development Centre, PAU, Ludhiana
8.	Lecture on mushroom cultivation in Punjab in RAWE 401	02.08.2019	Examination Hall, PAU, Ludhiana
9.	Lecture on mushroom cultivation and its processing	07.08.2019	COAE, PAU, Ludhiana
10.	Options for livelihood for rural youth organized by PAMETI	28.08.2019	Mushroom Farm, PAU, Ludhiana
11.	Lecture on importance of mushrooms and spawn preparation in training cum exposure visit of participants from Kinnaur (HP)	29.08.2019	Mushroom Farm, PAU, Ludhiana
12.	Lecture on importance of cultivation of button and dhingri in training cum exposure visit of participants from Kinnaur (HP)	29.08.2019	Mushroom Farm, PAU, Ludhiana
13.	Lecture cum farm visit on mushroom cultivation on training program on "Options for livelihood for rural youths	28.08.2019	Mushroom Farm, PAU, Ludhiana
14.	Lecture on mushroom cultivation organized by Department of Fruit Science for training course on gardeners	29.08.2019	Mushroom Farm, PAU, Ludhiana
15.	Lecture on mushroom cultivation in post harvest management, value addition and marketing of Agril., Jort. and livestock production, 9-14 September, 2019 (PAMETI)	06.09.2019	PHPTC, Ludhiana
16.	Lecture on mushroom cultivation	9-10-2019	PHPTC, Ludhiana
17.	Lecture on preparation of paddy straw based compost for mushroom cultivation	9-10-2019	PAMETI, Ludhiana
18.	Lecture on mushroom cultivation	15-10-2019	PHPTC, Ludhiana
19.	Lecture on mushroom cultivation	22-10-2019	PHPTC, Ludhiana
20.	Lecture on mushroom cultivation	29-10-2019	PHPTC, Ludhiana
21.	Lecture on mushroom cultivation	5-11-2019	PHPTC, Ludhiana
22.	Lecture on mushroom cultivation	13-11-2019	PHPTC, Ludhiana
23.	Lecture on mushroom cultivation- A profitable enterprise (PAMETI)	16-11-2019	PAMETI, Ludhiana

Annual Report-AICRP-Mushroom 2019-20

24	Lecture on mushroom cultivation	19-11-2019	PHPTC, Ludhiana
25	Lecture on mushroom cultivation	26-11-2019	PHPTC, Ludhiana
26	Lecture on mushroom cultivation	3-12-2019	PHPTC, Ludhiana
27	Lecture on mushroom cultivation	10-12-2019	PHPTC, Ludhiana
28	Lecture on mushrooms in Agro-processing training	12-12-2019	PAU, Ludhiana
29	Lecture cum visit of farmers from Rajasthan organized by CIPHET	20-12-2019	PAU, Ludhiana
30	Lecture on mushroom cultivation in training course on sustainable agriculture practices for the farmers of Society for action in Community Health	23-12-2019	PAU, Ludhiana
31	Lecture on adequate use of clean agriculture waste in mushroom production in training course on Mushroom Grower	06.01.2020	KVK Handiaya, Barnala
32	Lecture on mushroom cultivation and postharvest handling in training course on Pack House Worker for farmers and farm women	10.02.2020	Skill Development Centre, PAU, Ludhiana
33	Lecture cum exposure visit by farmers of Jammu	29.01.2020	PAU, Ludhiana
34	Lecture cum exposure visit by farmers of Kullu	30.01.2020	PAU, Ludhiana
35	Lecture on shiitake cultivation in training course on Mushroom Grower organized by KVK Jalandhar (Noormahal)	04.02.2020	PAU, Ludhiana
36	Lecture on mushroom cultivation and technology in training course on Mushroom Grower organized by KVK Jalandhar (Noormahal)	04.02.2020	PAU, Ludhiana
37	Lecture and practical on mushroom production and marketing for skill development program on Agriculture Extension Service Provider	08.02.2020	PAU, Ludhiana
38	Lecture on mushrooms cum exposure visit in training course for farmers of Kathua	11.02.2020	PAU, Ludhiana
39	Lecture on technology for mushroom production and processing for training program viz. skill development program on Mechanization for postharvest operations sponsored by ANGRAU-IDP under World Bank NAHEP project	17.02.2020	PAU, Ludhiana
40	Lecture on mushrooms cum exposure visit in training course for farmers of Kashmir	21.02.2020	PAU, Ludhiana
41	Lecture on mushrooms cum exposure visit in training course for farmers of Jammu	27.02.2020	PAU, Ludhiana
42	Lecture on mushroom cultivation technology in three months young farmers training course	02.03.2020	PAU, Ludhiana
43	Lecture on mushrooms cum exposure visit in training course for farmers of Palampur	06.03.2020	PAU, Ludhiana

Total No.=43

T V Talk

Sr. No .	Topic	Name of Expert	Date of Recording/Tele cast/Broadcast	Location
1	Mushroom Cultivation in Punjab	Dr HS Sodhi	08.08.2019	Fastway TV Channel, Ludhiana

Annual Report-AICRP-Mushroom 2019-20

Total No. 01

Sale of Seed

Name of crop/variety	Quantity (kg)	Amount (Rs.)
Mushroom spawn/bags/mushrooms	4278 kg spawn, 5991 bags, 1620 kg mushrooms	8,03,790

Detail of VIPs visits conducted

Date	Place	Purpose	Name & address of dignitaries
10.04.2019	Mushroom Research Center, PAU	Visit	Dr. Jatinder Vir Yakhmi, Former Associate Directore of Physics (BARC)
09.07.2019	Visit to Sh. Kanwal Singh Chauhan Farms	Atterna, Sonipat	Higher Officials of PAU
24.10.2019	Mushroom Research Center, PAU	AICRP centre	Dr VP Sharma, Director, DMR, Solan
13.02.2020	Mushroom Research Center, PAU	AICRP centre	Dr VP Sharma, Director, DMR, Solan

Total number= 4

Visit of Mushroom Research Center		
01.04.2019	Visit of Mushroom Research Center, PAU by students from COA, Sri Karan Narendra Agricultural University, Jobner, Lalsot	40B, 16G, 3 faculty
10.04.2019	Visit of Mushroom Research Center, PAU by students from COA, Sri Karan Narendra Agricultural University, Jobner, Lalsot	57B, 49G, 8 faculty
28.05.2019	Visit of Mushroom Research Center, PAU by Research and Extension specialist's workshop for Hort. crops	Many
29.04.2019	Visit of Mushroom Research Center, PAU by students from SKS, College of Agriculture and Research station, Rajnandgaon, IGKV, Raipur	60, 4 faculty
02.05.2019	Visit of Mushroom Research Center, PAU by students from College of Agriculture and Research station, Bemetara	14B, 3G, 2 faculty
08.05.2019	Visit of Mushroom Research Center, PAU by students from College of Agriculture and Research station, Kanker, Chattisgarh	23B, 12 G, 4 faculty
13.06.2019	Visit of Mushroom Research Center, PAU by students from Lakshmi Bai Central Agricultural University, Jhansi	29B, 15G, 2 faculty
14.08.2019	Visit of Mushroom Research Center, PAU by students from Birsa Agricultural University, Kanke, Ranchi	18B, 26G, 2 faculty
20.08.2019	Visit of Mushroom Research Center, PAU by faculty from College of Agrciulture, Dehradun	6 faculty
06.09.2019	Visit of trainees from KVK Jalandhar	20, 1 faculty
19.09.2019	Visit of Mushroom Research Center, PAU by students from Agricultural College and Research Institue, Kilikulam, TNAU	111, 3 faculty
24.09.2019	Visit of Mushroom Research Center, PAU by students from Agriculture College& Research Institute, Vazhavachanur, Tamil Nadu	59, 2 faculty
3-10-2019	Visit of Mushroom Research Center, PAU by the students of Govt.	50 , 2

Annual Report-AICRP-Mushroom 2019-20

	Senior Secondary School Threke, Ludhiana	faculty
11-10-2019	Exposure visit of farmers from Jammu under Sadbhavana Project	25
15-10-2019	Visit of Mushroom Research Center, PAU by the students of COA, Waghai, Gujarat	35B, 15G, 3 faculty
21-10-2019	Visit of Mushroom Research Center, PAU by the students of Ramnivas Sharda CoA, Chattisgarh	10B, 05G, 2 faculty
4-11-2019	Exposure visit of farmers from Srinagar	70
7-11-2019	Visit of Mushroom Research Center, PAU by the students of Govt. Senior Secondary Smart School, Ludhiana	50, 2 faculty
8-11-2019	Visit of Mushroom Research Center, PAU by the students of PCTE biotechnology department, Ludhiana	40
13-11-2019	Visit of Mushroom Research Center, PAU by the students of Uttar Banga Krishi Viswavidyalaya	51, 3 faculty
15-11-2019	Exposure visit of trainees from KVK Bathinda under Arya Project	30M, 5 W
19-11-2019	Visit of Mushroom Research Center, PAU by the students of COA, Padannakad, KAU, Kerala	16B, 37G, 4 faculty
20-11-2019	Exposure visit of trainees from KVK Sangrur	19M, 1 W
26-11-2019	Visit of Mushroom Research Center, PAU by the students of COA, UAS Bangalore	32B, 19G, 4 faculty
29-11-2019	Exposure visit of farmers from Kashmir	16
4-12-2019	Exposure visit of farmers from Gujarat	25
6-12-2019	Exposure visit of farmers from Department of Floriculture, PAU	10
10-12-2019	Visit of Mushroom Research Center, PAU by the students of SN Public school, Ludhiana	61
12-12-2019	Exposure visit of farmers from Badgam, Srinagar	34
17-12-2019	Visit of Mushroom Research Center, PAU by the students of COA, Bheemarayangudi, UAS, Raichur	46
19-12-2019	Visit of Mushroom Research Center, PAU by the students of Govt. Sr. Sec. School, Chandbaja, Faridkot	30
23-12-2019	Visit of Mushroom Research Center, PAU by the students of Govt. Sr. Sec. School, Mulanpur, Dist FGS	30
01.01.2020	Visit of Mushroom Research Center, PAU by the farmers of Dist Kupwara by advisory board for development of Kisans	15
18.01.2020	Visit of Mushroom Research Center, PAU by the students of Govt. Sen. Sr. Sec. School, Sande Hasan, Ferozepur	75B, 3 faculty
26.01.2020	Visit of Mushroom Research Center, PAU by the students of Sher-e-Kashmir University of Agricultural Sciences & Technology	63, 3 faculty
04.02.2020	Exposure visit of trainees from KVK Jalandhar (Noormahal)	20, 1 faculty
04.02.2020	Visit of Mushroom Research Center, PAU by the farmers from Ganganagar under ATMA project	42, 2 faculty
06.02.2020	Visit of Mushroom Research Center, PAU by the farmers from Budgam	50
11.02.2020	Visit of Mushroom Research Center, PAU by the farmers from Budgam	40W
25.02.2020	Visit of Mushroom Research Center, PAU by the students of KVM School, Ludhiana	45, 2 faculty

Total number= 40

Participation in Seminar/Conference/Workshop/Symposia (State/National/International level)

Sr.	Programme and title	Organizing/	Date and	Name of
-----	---------------------	-------------	----------	---------

Annual Report-AICRP-Mushroom 2019-20

No		sponsoring agency	Venue	scientists
1.	Research and Extension specialist's workshop for Horticultural Crops	State Deptt. of Hort. and PAU, Ludhiana	27-28.05.18 PAU, Ludhiana	Drs HS Sodhi, PP Sahota, S Kapoor, GS Kocher, Keshani Shivani Sharma
2.	XXIth Annual Workshop AICRP on Mushrooms at MPUAT, Udaipur	DMR, Solan and MPUAT, Udaipur	28.06.2019- 29.06.2019	Dr HS Sodhi Dr Shivani Sharma
3.	3-days workshop on Capacity Enhancement for organizing training program on agricultural extension for International participants	National Institute of Agricultural Extension Management (MANAGE), Hyderabad	29.07.19- 31.07.2019 Hyderabad	Drs Priya Katyal, Shivani Sharma
4.	Training on taxonomy of mushrooms	ICAR DMR-Solan	10.08.2019- 14.08.2019, DMR Solan	Dr Shivani Sharma
5.	Nobel Laureate Series	PAU, Ludhiana	12.09.2019	Drs HS Sodhi, PP Sahota, S Kapoor, GS Kocher, Priya Katyal, Keshani, Shivani Sharma
6.	Mentoring session of PABI-Agripreneurship Orientation and Incubation trainings	PAU, Ludhiana	12.09.2019- 05.11.2019	Dr HS Sodhi
7.	Progressive Punjab Investors Summit	Punjab Bureau of Investment Promotion, ISB Mohali Campus	06.12.2019	Dr Shivani Sharma
8.	Research and Extension specialist's workshop for Horticultural Crops	HAIC Agro R & D Centre, Murthal	23.01.2020 – 24.01.2020	Dr GS Kochar Dr Shivani Sharma Dr Gagandeep Kaur

Total No : 8

ELP students: Total-21; Boys-11; Girls-10

Annual Report-AICRP-Mushroom 2019-20

Eleven trainings and four demonstrations/visit/lecture were conducted on mushroom cultivation which included farmers, entrepreneurs etc. Trainings were oriented towards spawn production, mushroom cultivation and postharvest management. Spawn was also provided to Farmers, entrepreneurs, KVK's etc. Total spawn supplied (including mother spawn) was 656.4 kg. Total revenue generated –Rs. 86,258/-

1. Trainings (One day)

S. No.	Activity	Duration	No. of Participants
1.			
2.	Oyster mushroom cultivation	22.04.19	29 (Female:17; Male:12)
3.	Training on Oyster Mushroom cultivation	16.05.19	8 (Female: 2; Male:6)
4.	Training on Oyster Mushroom cultivation	19.06.19	11 (Female: 8; Male: 3)
5.	Training on Oyster Mushroom cultivation	23.07.19	6 (Female: 3; Male: 3)
6.	Training on Oyster Mushroom cultivation	27.09.19	8 (Female:1; Male:7)
7.	Training on Oyster Mushroom cultivation	11.10.19	15 (Female:15)
8.	Training on Oyster Mushroom cultivation	29.10.19	9 (Female: 3; Male: 6)
9.	Training on Oyster Mushroom cultivation	06.12.19	16 (Female: 7; Male: 9)
10.	Training on Oyster Mushroom cultivation	09.12.19	12 (Female: 5; Male: 7)
11.	Training on Oyster Mushroom cultivation	22.01.19	3 (Female: 2; Male:1)

Demonstrations/Field day/Lectures etc.

S. No.	Activity	Duration	No. of Participants
1.	Short method of composting (Button mushroom cultivation)	14.02.2020	13 (Female: 11; Male: 2)
2.	Oyster Mushroom cultivation	14.02.2020	22 (Female:7; Male: 15)
3.	Lecture on Button mushroom cultivation (ASCI organised by KVK, RiBhoi)	13.02.2020	Many
4.	Lecture on Shiitake mushroom cultivation (ASCI organised by KVK, RiBhoi)	14.02.2020	Many

Long term training

Date	Venue	No.	of	Male	Female	Remarks if
------	-------	-----	----	------	--------	------------

Annual Report-AICRP-Mushroom 2019-20

		Participants			any
17.09.19 to 23.09.19 (7 days)	ICAR, Umiam	5 (Male: 5)	5	0	Training on Spawn production (Under AICRP on mushroom and ABI)

3. Spawn supply and revenue generation

	Quantity (kg)	Revenue generated
Spawn supplied	656.4 kg	
Culture supplied (no.)	13	
Total Revenue		Rs. 86,258

4. Participation in seminar/symposia/workshop/kisan mela, etc

1. Baiswar P. 2019. Evaluation of Oyster Mushroom (*Pleurotus* sp.) strains in Meghalaya. (In) International Symposium on Agri Skills for convergence in research, industry and livelihood (ACRIL) from 28 Nov to 1 Dec, 2019 at Kalyani, West Bengal.
2. Baiswar P. 2020. Hyperparasites in managing plant pathogens: status and future prospects (invited lecture) during 7th International conference of Indian Phytopathological Society “Phytopathology in achieving UN Sustainable goals” from 16-20 January 2020 at IARI, New Delhi
3. Participation in brain storming session “Global vs Indian scenario of Mushroom production: Future challenges” held on 29 June, 2019 at DMR, Solan, H.P.

5. Visit of dignitaries

Sr. No.	Date	Dignitary visited
1.	30.05.2019	Director, DMR, Solan

IIHR Bangalore

Trainings, demonstrations, etc

- Conducted 3 entrepreneurial trainings on mushroom spawn production on May 2nd to May 4th and Sept 19-21, 2019 and 03rd to 5th Jan, 2020 & 3 entrepreneurial trainings on mushroom cultivation on May 6nd to May 10th and Sept 23-27, 2019 and 7rd to 11th Jan, 2020 and trained 110 people (Fig 1).
- Conducted Entrepreneurship Development training on Shiitake and King Oyster Mushroom cultivation organized at ICAR-IIHR from 23rd to 25th Jan 2020. 21 entrepreneurs attended the 3 days course.
- Under AICRP SCSP fund, 1day mushroom awareness program followed by 2 days hands on training on mushroom cultivation and production of mushroom value added products was conducted for the 20 selected SC women of Suradenapura village (Fig 2a). Later 20 RTF bags to each trained women were given (Total 400 bags/month) monthly basis continuously for six months (Fig 2b) to grow mushrooms at home as kitchen garden activity to enhance nutrition of daily diet.

- A one day hands on training on mushroom cultivation was conducted for the SC men and women of Cheluru village of Gubbi Taluk and 25 trainees participated in the program (Fig 3).
- Technical guidance for establishment of ICAR-IIHR model based mechanized spawn lab and supply of ICAR-IIHR designed spawn machinery to Ramakrishna Mission, Saragachi (Fig 4), W.B, KVK Ranchi, Jharkhand and RAU, Samastipur, Bihar.
- Technical guidance given for establishment of ICAR-IIHR based mechanized Ready to fruit (RTF) bag production unit at Ramakrishna Mission, Shivannahalli, Annekal, Karnataka and the NGO, Peoples Trust at Rajankunte, Bangalore rural (Fig 5).
- Conducted National mushroom day celebration on 23.12.2019 at primary school, Peoples trust NGO, Sriramanahalli, Rajankunte (Fig 6).
- Standardized commercial cultivation of *P. tuberigium* and *P. eryngii* (Fig 7).
- Developed and commercialized Solar powered tricycle for mushroom vending (Fig 8)
- Established new mushroom incubation centre (Fig 9)
- Participated and put MUSHROOM AICRP ICAR-IIHR centre stall at NHF 2020 held on 5-8 Feb 2020 at Bangalore.

WOMEN EMPOWERMENT

900 Ready to fruit (RTF) bags were sold to rural and urban women to grow mushrooms at home as kitchen garden activity to enhance nutrition of daily diet.

Newspaper articles coverage (Fig 10)

Sl. No	Title of the article	Newspaper	Date of publication
1	Make Room for Mushrooms	Deccan Herald	14-09-2019
2	Tribal women spark states mushroom revolution	Deccan Herald	01-02-2020
3	Mushroom rasam likely to be included in midday meals at Karnataka government schools	The New Indian Express	01-02-2020
4	Move to include mushrooms in school menu	Deccan Chronicle	01-02-2020
5	Shiitake mushroom cultivation	Vijay Karnataka (Kannada)	19-02-2020
6	Mushrooms in horticulture fair 2020	Vijay Karnataka	07-02-2020
7	Mushrooms for entrepreneurship	Prajavani (Kannada)	
8	Outside mushroom chambers for growing mushrooms (Kannada)	Vijay Karnataka	18-05-2019
9	Outside mushroom chambers for growing mushrooms (Kannada)	Prajavani	25-06-2019
10	Outside mushroom chambers for growing mushrooms (Telgu)	Sakshi	28-05-19
11	Outside mushroom chambers for growing mushrooms (Malyalam)	Matrubhoomi	28-06-2019
12	Mushroom spawn machinery	Hindustaan	01-10-2019

	(Hindi)		
13	Mushroom bag production inaugurated	Arunachal Times	13-06-19
14	Mushroom nutrition for every home	Telgu Sakshi	07-01-2020



Fig 1. Entrepreneurial training on spawn production and Mushroom cultivation at ICAR-IIHR



Fig 2a. EMPOWERMENT OF SC WOMEN UNDER AICRP SCSP FUND THROUGH MUSHROOM TECHNOLOGY AT VILLAGE SURDENPURA IN RAJANKUNTE, BANGALORE RURAL

Fig 2b. AICRP SCSP ACTIVITIES (TRAINING & BAG DISTRIBUTION AND MUSHROOM GROWN BAGS)

	
Mushroom awareness program	Training on mushroom value addition
	
Supply of 20 RTF bags to selected 20 SC families (6 months)	



Mushroom grown on SC women houses



Fig 3. EMPOWERMENT OF WOMEN THROUGH MUSHROOM TRAINING

Fig 4. ESTABLISHMENT OF MECHANIZED SPAWN LAB UNDER ICAR-IIHR GUIDANCE

Establishment of mechanized Energy efficient spawn lab at Ramakrishna Mission, Saragachi, W.B.



Fig5. TRAINING AT RAMAKRISHNA MISSION, SHIVANAHALLI, ANNEKAL



Women undergoing training



Distribution of Mushroom RTF bags by Dr. Aiyappan, Ex. DG, ICAR



Women carrying RTF bags



**Fig 6. NATIONAL MUSHROOM DAY CELEBRATION AT PRIMARY SCHOOL
PEOPLES TRUST NGO, SRIRAMANAHALLI, RAJANKUNTE**

Fig7a: Commercial cultivation technology of wild new edible mushroom *Pleurotus tuber-regium* collected from Tripura mushroom



Fig7b: Commercial cultivation technology of *Pleurotus eryngii* (King oyster mushroom)





Fig 8: Solar powered tricycle for mushroom vending



Fig 9: New mushroom incubation centre established at ICAR-IIHR campus

Fig 10. Newspaper articles coverage during 2019-20



Manipur Centre

1. Trainings

One day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
1 June 2019	Singhat Village, Churachanpur District.	63	31	32	
23 December 2019	State Level Mushroom Exhibition, Mushroom Day and Kisan Diwas	275	110	165	
29 May, 2019	Progressive Mushroom Growers and Agripreneurs Meet	18	17	1	
Total		356	158	198	

Three day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
28-30 May, 2019	ICAR Manipur Centre Imphal, Lamphelpat	17	13	4	
26- 28 August, 2019	ICAR Manipur Centre Imphal, Lamphelpat	13	8	5	
06-08 January, 2020	Koirengei, Imphal West	15	15	0	

Annual Report-AICRP-Mushroom 2019-20

06-08 February, 2020	ICAR Manipur Centre Imphal, Lamphelpat	34	10	24	
06-08 February, 2020	ICAR Manipur Centre Imphal, Lamphelpat	5	1	4	
27-29 February 2020	ICAR Manipur Centre Imphal, Lamphelpat	47	21	26	
02-04 March, 2020	ICAR Manipur Centre Imphal, Lamphelpat	68	36	32	
Total		199	104	95	

Five day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
NIL					

Long term training

Date	Venue	No. of Participants	Male	Female	Remarks if any
03 Oct -19 November 2019	ICAR Manipur Centre Imphal, Lamphelpat	12	10	2	

TSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any
NIL					

SCSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any
12-14 August 2019	Sawombung Village Imphal East	29	3	26	
25-27 November 2019	ICAR Manipur Centre Imphal, Lamphelpat	33	16	17	
Total		62	19	43	

2. Consultancy Provided

Sr. no.	Name and address of farmer	Type of mushroom grown	Production capacity
1.	Hee Yai Mushroom	<i>P. sajor caju</i> , <i>P membranatus</i> , <i>P. florida</i> , <i>P. oystratus</i> , <i>Hypsizygus ulmarius</i> , <i>P. flabellatus</i>	22700 kg
2.	Leima Mushroom	<i>P. sajor caju</i> , <i>P membranatus</i> ,	7300 kg

Annual Report-AICRP-Mushroom 2019-20

		<i>P. florida, P. oysteratus, Hypsizygus ulmarius, P. flabellatus, P. Sapidus.</i>	
3.	Jamini Mushroom	<i>P. sajor caju, P membranatus, P. florida, P. oysteratus, Hypsizygus ulmarius</i>	12500 kg
4.	Binita Mushroom	<i>P. sajor caju, P membranatus, P. florida, P. oysteratus, Hypsizygus ulmarius</i>	10000 kg
5.	Green Biotech Ecosolutions Pvt. Ltd.	<i>P. sajor caju, P membranatus, P. florida, P. oysteratus, Hypsizygus ulmarius, P. flabellatus</i>	4100 kg
6.	Integrated Mushroom Association	Mushroom spawn	750 kg
7.	M/s Pureiromba Enterprises, Imphal East	<i>P. oysteratus, Hypsizygus ulmarius</i>	1300 kg
8.	RNBA, Imphal West	Mushroom spawn	1050 kg
9.	Rama Foundation, Imphal West	<i>P. sajor caju, P membranatus, P. florida, P. oysteratus, Hypsizygus ulmarius</i>	8700 kg
10.	Universal Mushroom Club, Imphal West	<i>P. sajor caju, P membranatus, P. florida, P. oysteratus, Hypsizygus ulmarius</i>	7000 kg
11.	Nupi Tengbang Lup, imphal West	<i>P. sajor caju, P. oysteratus</i>	4500 kg
12.	M/s Sana Leibak Mushroom Farm, Imphal West	<i>P. sajor caju, P. oysteratus, Hypsizygus ulmarius</i>	9500 kg
13.	Sidayai Chengum Producer Company Limited (CIN: U01100MN2016PTC013508)	<i>P. sajor caju, P membranatus, P. florida, P. oysteratus, Hypsizygus ulmarius, P. flabellatus</i>	9150 kg
14.	M/s Salai Agro Products Pvt. Ltd., Imphal West	Shiitake mushroom	14500 kg

3. Spawn supply and revenue generation

	Quantity (kg) Produced	Quantity (kg) Sold	Rate (Rs/kg)	Revenue generated
Spawn supplied				
Oyster	2997 kg	799 kg	100	79900.00
Button	40 kg	20 kg	150	3000.00
Shiitake	65 kg	40 kg	600	24000.00
Paddy straw	25 kg	10 kg	100	1000.00
Master spawn supplied	45 kg	20 kg	500	10000.00
Culture supplied (no.)	89	10	500	5000.00

Annual Report-AICRP-Mushroom 2019-20

Total				122900.00
--------------	--	--	--	------------------

4. Participation in seminar/symposia/workshop/kisan mela, etc

Sr. No.	Seminar/symposia/workshop/kisan mela, etc	Date	Venue
	VIBRANT NORTH EAST 2019	19-21 June, 2019	CAU, Imphal
1.	National Symposium on “Enhancing Farm Income through Sustainable Plant Health Management”	06-08 Nov, 2019	ICAR Research complex for NEH Region, Umiam
2.	International Plant Protection Congress (IPPC 2019)	10-14 November, 2019	Hyderabad
3.	State Level Mushroom Exhibition, Mushroom Day and Kisan Diwas	23 December, 2019	ICAR Research Complex for NEH Region, Manipur Centre, Imphal
4.	7 th International Conference on “Phytopathology in Achieving UN Sustainable Development Goals”	16-20 January, 2020	ICAR-IARI, New Delhi

5. Visit of dignitaries

Sr. No.	Date	Dignitary visited
1.	28 to 29, May 2019	Dr. V. P. Sharma, Director, ICAR-Directorate of Mushroom Research, Solan
2.	20-21, August, 2019	Dr. S. N. Puri, Chairman QRT (ICAR Research Complex for NEH Region, Umiam, Meghalaya) and Former Vice Chancellor, CAU, Imphal
3.	20 August, 2019	Dr P.K. Mishra, Member, QRT (ICAR Research Complex for NEH Region, Umiam, Meghalaya) and Former Director, ICAR-IIWSC, Dehradun
4.	20-21, August, 2019	Dr K P Mohapatra, Member Secretary, QRT, ICAR Research Complex for NEH Region, Umiam, Meghalaya
5.	20-21, August, 2019	Dr. N. Prakash, Director, ICAR Research Complex for NEH Region, Umiam, Meghalaya

6. Visit of famers group, students, etc

Sr. No.	Date	Visitors	Number of visitors in group		
			Male	Female	Total
1.	26.09.2019	Farmers Trainees (KVK Imphal West)	5	9	14
2.	29.09.2019	Farmers Self-help group (KVK Imphal East)	0	17	17
3.	07.10.2019	Farmers group from Ukhrul district, Manipur	4	0	4
4.	09.10.2019	Farmers group from Imphal West, district, Manipur	0	5	5
5.	15.10.2019	Farmers group from Bishnupur district, Manipur	5	4	9
6.	21.10.2019	Farmers group from Tamenglong district, Manipur	3	5	8
7.	25.11.2019	Farmers group from Churachandpur district, Manipur	16	17	33
Total			33	57	90

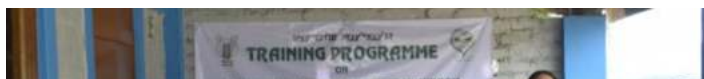
7. Coverage in Mass Media

Sr. No.	Item	Number
1.	TV Programmes	2
2.	Radio Programme	2
3.	News paper coverage	8
4.	Popular articles	2
5.	Publication of leaflet/booklet	1
6.	Farmer scientist interface	6
7.	Field day organized	5
8.	Demonstrations organised	6

Items	Details (List may be given)
TV Programmes	1. Mushroom Cultivation in Manipur (in Hindi) 2. Mushroom Cultivation in Manipur (in Manipuri)
Radio Programme	1. Prospectus of Mushroom cultivation in Manipur 2. Nutritional Properties of mushrooms
News paper coverage	1. Training programmes on mushroom cultivation (7 number of coverage) 2. State Level Mushroom Exhibition, Mushroom Day and Kisan Diwas
Farmer scientist interface	1. Farmer Scientist Interactions and Interfaces on Mushroom cultivation and processing of mushrooms (6 numbers)
Field day organized	1. Five number of field days on mushroom cultivations for the famers of hill and valley districts of Manipur
Demonstrations organised	1. Six demonstrations on scientific cultivation of mushrooms in different districts

1. Experiential Learning students :

Date	Boys	Girls	Total
26- 28 August, 2019	13	8	5
6-8 February, 2020	5	1	4
27-29 February, 2020	21	26	47





Glimpses of trainings and demonstration programmes



State Level Mushroom Exhibition and National Mushroom Day Organized at ICAR Manipur Centre, Imphal

Visit of Dr. V. P. Sharma and Dr. S. N. Puri to Mushroom Laboratory and mushroom unit ICAR RC NEH, Manipur Centre

ICAR Research Complex for NEH Region, Manipur Centre organized the 'State Level Mushroom Exhibition' and 'National Mushroom Day-2019' on 23 December, 2019. The function was graced by Dr. A.K. Tripathi, Director, ATARI Zone VI, Guwahati, Assam as Chief Guest; Dr. R.K. Saha, Director Directorate of Extension, CAU, Imphal; Smt. Kh. Sayakiran Devi, Director Horticulture, Department of Horticulture and Soil Conservation, Govt of Manipur as Guest of Honour; Shri K. Kipgen, Former Director Department of Horticulture and Soil Conservation, Shri N. Premananda Singh, Mission Director (MIDH) as special guests. Dr. Narendra Prakash, Joint Director, ICAR, Manipur Centre was the president of the function. The National Mushroom Day 2019 was celebrated on the theme 'Mushrooms as Nutraceuticals'. The dignitaries emphasized on the importance of mushroom cultivation in North Eastern Region, with special reference to the Manipur state. A state level mushroom exhibition was the major attraction of this celebration. A total of 20 entrepreneurs from valley and hill districts of Manipur who are beneficiaries of ICAR Manipur Centre exhibited their products, technologies and innovation in this exhibition.

Annual Report-AICRP-Mushroom 2019-20

Mushrooms species like Oyster (*Pleurotus* spp), Elm (*Hypsizygus ulmarius*), Shiitake (*Lentinula edodes*), Cordyceps (*Cordyceps militaris*), King Oyster (*Pleurotus eryngii*) were exhibited by the growers in the exhibition. Different value added products like mushroom cookies, mushroom noodles, mushroom drinks, mushroom pickle, dry mushroom, mushroom powder, mushroom papad, mushroom momos, mushroom samosa, mushroom pokora etc. were the major attraction in the exhibition. This is first State Level Mushroom Exhibition of its kind organized to showcase the mushroom production technologies.

Three best exhibitors were given prize on this occasion. A total of 275 farmers, entrepreneurs and growers from all over the state participated in the event.



State Level Mushroom Exhibition and National Mushroom Day at ICAR Research Complex for NEH Region, Manipur Centre, Imphal

Progressive Mushroom Growers and Agripreneurs Meet

ICAR Research Complex for NEH Region, Manipur Centre organized a Progressive Mushroom Growers and Agripreneurs Meet on 29th May, 2019. Dr. V. P. Sharma, Director, ICAR-Directorate of Mushroom Research, Solan, H.P. graced the function as Chief Guest. The participants actively participated in the meaningful interaction and discussion on problems, prospects, issues and strategies for improving the mushroom production in the state. Issues like quality spawn production unit, group based marketing strategy, dedicated programme on shiitake mushroom, diversification of mushroom, mushroom processing and mushroom based agripreneurship development were prioritized. The event was organized under the aegis of All India Coordinated Research Project on Mushroom and ICAR-Agribusiness Incubation Centre. All total 18 progressive mushroom growers and entrepreneurs participated in the said meet.



Progressive Mushroom Growers and Agripreneurs Meet at ICAR, Manipur Centre

Nagaland Centre

Palampur Centre

Pantnagar Centre

1. Trainings

One day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
18.11.2019	Patwadangar	25	22	3	
Total		25	22	3	



One day training and demonstration of Oyster mushroom cultivation in Patwadangar dt November 18-2019

Annual Report-AICRP-Mushroom 2019-20

Three day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
03.08.2019 to 05.08.2019	MRTC	28	-	28	
14.08.2019 to 16.08.2019	UIRDPR	55	-	55	
13.02.2020 to 15.02.2020	MRTC	24	-	24	
Total		107		107	



MRTC, dated 03.08.2019 to 05.08.2019



Uttarakhand Institute of Rural Development & Panchyati Raj Rudarpur U.S. Nagar (U.K), dated 14.08.2019 to 16.08.2019



MRTC, 13.02.2020 to 15.02.2020

Five day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
9.08.2019 - 13.08.2020	MRTC	25	22	3	
11.09.2019 - 14.09.2019	MRTC	28	26	2	
13.11.2019 to 16.11.2019	MRTC	30	21	9	
7.01.2020 - 11.01.2020	MRTC	30	22	8	
21.01.2020 - 24.01.2020	MRTC	20	20	-	
Total		133	111	22	

1



9.08.2019 to 13.08.2020

Annual Report-AICRP-Mushroom 2019-20



TSP Demonstration

Date	Venue
5.04.2019	Blocks Chakrata, Dehradun
12.05.2019	Block Kalsi, Dehradun



SCSP Trainings and Mushroom day

Date	Venue	No. of Participants	Male	Female	Remarks if any
18.10.19 to 22.10.2019	MRTC	17	-	17	SCSP Trainings
23.12.2019	Banusa	52	35	17	Mushroom day
Total		69	35	34	

Annual Report-AICRP-Mushroom 2019-20



2. Consultancy Provided: NA

Sr. no.	Name and address of farmer	Type of mushroom grown	Production capacity
---------	----------------------------	------------------------	---------------------

3. Spawn supply and revenue generation

Spawn supplied	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Oyster	699 kg	110/-	76,890.00
Button	1480 kg	110/-	162800.00
Milky	7 kg	110/-	770.00
Master spawn supplied	23 Bottles	300/- Bottle	6900.00
Culture supplied (no.)	9 Tubes	1000/- Tube	9000.00
Compost	122 Qtl	780/-	95160.00
		Total	351520.00

4. Participation in seminar/symposia/workshop/kisan mela, mushroom day etc

Sr. No.	seminar/symposia/workshop/kisanmela, etc	Date	Venue
1	Kisanmela	March 3-6, 2020	Pantnagar
2	Kisanmela	Sept 27-30, 2019	Pantnagar
3	Annual workshop of AICRP Mushroom	June 28-29, 2018-19	Solan
4	Training on mushroom taxonomy	August 10-14, 2019	Solan



5. Visit of dignitaries

Sr. No.	Date	Name of Visitor	Dignitary visited
1	18.07. 2019	Dr. H.C Pokhriyal	Professor University of Delhi
2	11.10.2019	IAS officers	IAS from all States of India
3	08.02.2020	Dr. R.S Tolia Academy of Uttarakhand Administration Nainital	PCS officers, Uttarakhand

Annual Report-AICRP-Mushroom 2019-20

	
MRTC Visit by Dr. HC Pokhriyal, University of Delhi	
	
MRTC visit by IAS	
	
Visit of Newly Selected 48 PCS Officers from Dr. RS Tolia Academy of Uttarakhand Administration Nainital	

6. Visit of famers group, students, etc

Sr. No.	Date	Number of visitors in group			Place
		Male	Female	Total	
1	30.07.2019	27	-	27	Haldwani (Uttarakhand)
2	30.07.2019	02	20	22	Gujrat
3	30.08.2019	19	-	19	Sitarganj (Uttarakhand)
4	03.09.2019	28	-	28	Gajipur (UP)
5	14.09.2019	45	15	60	Institute of Agriculture science UniversintyJhasi (U.P)
6	14.09.2019	5	5	10	DugaddaPauri (Utarakhand)
7	19.09.2019	-	29	29	Sitarganj (Uttarakhand)
8	14.11.2019	39	-	39	Gorakhpur (UP)
9	04.12.2019	13	13	26	Khatima (Uttaralhand)
10	04.12.2019	17	-	17	Parag dairy (Uttarakhand)
11	10.01.2020	35	-	35	Eta (UP)
12	13.01.2020	26	19	45	Gujrat
13	19.01.2020	34	-	34	Mirzapur (UP)
14	23.01.2020	-	175	175	Kichha

Annual Report-AICRP-Mushroom 2019-20

15	10.02.2020	2	14	16	Rudarpur (Uttarakhand)
16	18.02.2020	16	15	1	MRTC, Pantnagar
17	19.02.2020	14	-	14	Rudrapur (Uttarakhand)
18	19.02.2020	20	4	24	Barinaag (UP)
TOTAL		342	309	621	

		
1. Haldwani, 30.07.2019	2. Gujrat, 30.07.2019	3. Sitarganj, 30.08.2019
		
4. Gajipur (UP), 03.09.2019	5. Jhasi (U.P), 14.09.2019	6. Dugadda, 14.09.2019
		
7. Sitarganj (Uttarakhand), 19.09.2019,	8. Gorakhpur (UP), 14.11.2019	9. Khatima, 04.12.2019,
		
10. Parag dairy (Uttarakhand), 04.12.2019	11. Eta (UP), 10.01.2020	12. Gujrat, 13.01.2020
		
13. Mirzapur (UP), 19.01.2020	14. Kichha, 23.01.2020	15. Rudarpur (Uttarakhand), 10.02.2020

Annual Report-AICRP-Mushroom 2019-20

		
16. MRTC, 18.02.2020	17. Rudarpur, 19.02.2020	18. Barinaag (UP), 19.02.2020
		
Dated: 19.02.2020 Male 14 Add: Basti (UP)	Dated: 27.02.2020 Male 22 Female 20 Add: Risikesh Nainital	Dated: 28.02.2020 Female 55 Add: UIRD Rudarpur

7. Coverage in Mass Media

Sr. No.	Item	Number
1	TV Programmes	-
2	Radio Programme	-
3	News paper coverage	2
4	Popular articles	-
5	Publication of leaflet/booklet	-
6	Farmer scientist interface	-
7	Field day organized	1
8	Demonstrations organized	3

Items	Details (List may be given)
News paper coverage	 11:50 *सि.सि. 15.8 Udhm-Singh-Nagar Hindustan Hindi ... हिन्दुस्तान Dec 01 Uttarakhand Udhm-Singh Page 8 कृषिमंत्री नजर परतीक किसानों को आमदनी बढ़ाने को जागरूक कर रहे डॉ. मिश्रा  रुद्रपुर/काशीरुद्रपुर महंगी दवा जाइये भूल, कैसर से लड़गा शिटाके मशरूम Dated 4.12.2020, Hindustan Dated 24.02.2020 Dinik Jagran
Field day organized	Mushroom day dated 23.12.2019
Demonstrations organized	05.04.2019 at Block Chakrata, Dehradun 12.05.2019 at Block Kalshi, Dehradun 18.11.2019 at Patwadangar, Nainital

Annual Report-AICRP-Mushroom 2019-20

3. Experiential Learning students :

Name of Course	Boys	Girls	Total
APP381 - Mushroom Cultivation	46	48	96

Pasighat Centre

Ranchi Centre

Sikkim Centre

1. Trainings

One day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
23 December, 2019	ICAR-NOFRI, Tadong, Gangtok	119	66	53	
06 th March, 2020	ICAR-NOFRI, Tadong, Gangtok	50	28	22	

Three day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
24-26 th June, 2019	ICAR-NOFRI, Tadong, Gangtok	15	12	3	
04-07 December, 2019	ICAR-NOFRI, Tadong, Gangtok	13	13	-	
05-09 th February, 2020	ICAR-NOFRI, Tadong, Gangtok	20	20	-	

Five day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
17-21 st June, 2019	ICAR-NOFRI, Tadong, Gangtok	26	22	4	

Annual Report-AICRP-Mushroom 2019-20

Long term training

Date	Venue	No. of Participants	Male	Female	Remarks if any
April 24-May 24, 2019	ICAR-NOFRI, Tadong, Gangtok	21	10	11	
July 22- August 5, 2019	ICAR-NOFRI, Tadong, Gangtok	27	-	27	
26 th February- March 11, 2020	ICAR-NOFRI, Tadong, Gangtok	20	6	14	

2. Consultancy Provided

Sr. no.	Name and address of farmer	Type of mushroom grown	Production capacity
1.	Hari Maya Pradhan, Pakyong, East Sikkim	Oyster mushroom	Upto 10 tonns/year
2.	Omnath Sharma, Ranka, East Sikkim	Oyster mushroom	Upto 20 tonns/year
3.	Makha Framer's Club, Makha East Sikkim	Oyster mushroom	Started recently

3. Spawn supply and revenue generation

	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Spawn supplied			
Oyster	300 kg	Rs 120/kg	Rs 36000.00
Total			Rs 36000.00

4. Participation in seminar/symposia/workshop/kisan mela, etc

Sr. No.	Workshop	Date	Venue
1.	“Global vs Indian Scenario of Mushroom Production: future Challenges”	June 29 th , 2019	ICAR-DMR, Solan

5. Visit of dignitaries

Sr. No.	Date	Dignitary visited
1.	13.02.2020	Sh Loknath Sharma, Hon'ble Agriculture Minister, Sikkim Govt.
2.	21.06.2020	Dr. S.N. Puri, Chairman, QRT Team along with other members of QRT.

6. Visit of famers group, students, etc

Sr. No.	Date	Visitors	Number of visitors in group		
			Male	Female	Total
1.	06.03.2020	Students of Class X of Manjushri School, Temi Tarku, South Sikkim	28	22	50

Annual Report-AICRP-Mushroom 2019-20

2.	06.03.2020	BSc. Ag Students from Greenlands School, Kurnool, Andhra Pradesh	6	14	20
3.	29.02.2020	Famers cum trainee of ASCI training programme	8	12	20
4.	06.02.2020	Farmers of Narayangaon, Pune , Maharashtra	20	-	20
5.	06.12.2019	Farmers of I-concept initiative, Odisha	13	-	13
6.	31.07.2019	Krishi Sakhis, RMDD, Govt. of Sikkim	-	27	27
7.	25.06.2019	Progressive farmers of Dima, Hasao, Haflang	15		15
8.	18.06.2019	Officials and farmers of VANAMATI, RAMETI, Nagpur, Maharashtra	22	4	26
9.	03.09.2019	Officials of Agriculture Department, Peren, Nagaland	10	2	12
10.	11.09.2019	Farmers of NEH states sponsored by Assam Rifles	18	-	18
11	26.04.2019	Farmers of Anjaw district, Arunachal Pradesh	8	-	8
12	30.04.2019	Farmers of Wadvani, Maharashtra	27	-	27
13	10.05.2019	Staff and Officers of Watershed Division of Thetyer Division, Uttarakhand	12	-	12
14	13.05.2019	Staff of ATMA, Dindori, MP	7	-	7
15	17.05.2019	Farmers of Harischandrapur II, Malda, West Bengal	5	-	5
16	27.06.2019	Officials and progressive farmers of Bihar Rural Livelihood promotions Society	25	2	27
17	31.05.2019	Students of Tripura University	26	27	53
18	30.09.2019	Students of Uttar Banga Krishi Viswavidyalaya, West bengal	12	5	17

7. Coverage in Mass Media

#	Item	Number
	TV Programmes	
	Radio Programme	
	News paper coverage	1
	Popular articles	1
	Publication of leaflet/booklet	
	Farmer scientist interface	
	Field day organized	1
	Demonstrations organised	20

Items	Details (List may be given)
TV Programmes	
Radio Programme	
News paper coverage	1. National Mushroom Day on Decmber 23, 2019
Farmer scientist interface	

Annual Report-AICRP-Mushroom 2019-20

Field day organized	1. National Mushroom Day organised on Mushrooms as Nutraceuticals
Demonstrations organised	1. Practical demonstration of oyster mushroom production techniques during 30 day training on Organic Farming for newly recruited Agriculture Development Officers (ADO), Horticulture Development Officers (HDO) and Watershed Development Officers (WDO), Government of Sikkim on 06.05.2019. 2. Practical demonstration of oyster mushroom spawn production techniques during 30 day training on Organic Farming for newly recruited Agriculture Development Officers (ADO), Horticulture Development Officers (HDO) and Watershed Development Officers (WDO), Government of Sikkim on 16.05.2019 3. Practical demonstration of mushroom and mushroom spawn production techniques during the 15 day training program on Organic Farming for SRLM Krishi Sakhis of Rural Management and Development Department, Govt. of Sikkim during July 22- August 5, 2019. 4. Demonstration of “Mushroom production techniques during Skill training programme on “ Organic grower” on February 29, 2020 under Agricultural Skill Council of India. 5. Practical demonstration of mushroom and mushroom spawn production techniques during the 15 day training program on Agricultural practices in Hilly Regions for B.Sc. students of Greenlands School on 06.03.2020



Training activities for students of school and B.Sc. (Ag)

Annual Report-AICRP-Mushroom 2019-20



Visit of Sh. Loknath Sharma, Hon'ble Agriculture Minister, Sikkim



Awareness cum training for inmates of prison, Sikkim featured on ICAR webpage



National Mushroom Day on December 23, 2019



Training activities for mushroom growers

Udaipur Centre

Vellayani Centre

1. Trainings

One day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
5.11.2019	College of Agriculture, Vellayani	24		24	Kudumbashree Unit for empowerment of women
19.2.2020	College of Agriculture, Vellayani	27	2	25	
28.2.2020	College of Agriculture, Vellayani	25	14	11	
29.2.2020	Mitraniketan , Vellanad	20	10	10	New trends in mushroom cultivation technology

Two day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
29 and 30 th May 2019	College of Agriculture, Vellayani	36	15	21	

SCSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any
16.01.2020 to 17.01.2020	College of Agriculture, Vellayani	26		26	Social empowerment and women

Annual Report-AICRP-Mushroom 2019-20

					development through trainings by providing inputs for mushroom cultivation.
30.01.2020 to 31.01.2020	College of Agriculture, Vellayani	21	1	20	Provided inputs for mushroom cultivation
20.02.2020	Kuttichal Krishibhavan	30	6	24	Provided inputs for mushroom cultivation
27.2.2020	Peringamala Krishibhavan	20	3	17	Provided inputs for mushroom cultivation

2. Consultancy Provided

Sr. no.	Name and address of farmer	Type of mushroom grown	Production capacity
1.	Gokul Srinivas	Milky Mushroom	900 kg
2.	Usha , Piravam	Oyster and milky mushroom	3t
3	Abhilash	Oyster	900kg
4	Jayaprakash	Oyster mushroom	

3. Spawn supply and revenue generation

	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Spawn supplied		124	
Oyster	650	124	80600
Button			
Milky	146	124	18104
Paddy straw			
Master spawn supplied			
Culture supplied (no.)	1	200	200
coirpith	92	10	920
Mushroom	21 kg		5250
Total			105074

4. Participation in seminar/symposia/workshop/kisan mela, etc- Nil

EXHIBITIONS

Sl No	Venue	Date	Remarks
1	Vellayani kayal fest	20.11.2019	AICRP on mushroom's participated in exhibitions for the popularisation of mushroom cultivation
2	Holy Innocent Public School , Varkala school	27.11.2019 and 28.11.2019	
3.	Govt High School , Venganoor	26.12.2019	

Visit of famers group, students, etc

Sr. No.	Date	Visitors	Number of visitors in group		
			Male	Female	Total
1.	4-1-2020	Students from Govt Vhss , Venganoor	15	25	40

Coverage in Mass Media

S. No.	Item	Number
	TV Programmes	1
	Radio Programme	
	News paper coverage	
	Popular articles	
	Publication of leaflet/booklet	
	Farmer scientist interface	
	Field day organized	
	Demonstrations organised	

Items	Details (List may be given)
TV Programmes	1. As a documentary on KAU website on spawn preparation and mushroom bed preparation 2. 3. ...
Radio Programme	1. 2. 3. ...
News paper coverage	1. 2. 3. ...
Farmer scientist interface	1. 2. 3. ...
Field day organized	1. Conducted Mushroom day Celebration on December 23 2. 3. ...
Demonstrations organised	1. As part of RAWE program demonstrations were conducted on mushroom cultivation at different parts of Thiruvananthapuram at 20 different panchayath . This was attended by 400 farmers 2. 3. ...

Hisar Centre

Coimbatore Centre

Extension Activities

1. Trainings

One day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
05.04.2019	Dept. of Plant Pathology, TNAU, Coimbatore	27	18	9	Farmers/entrepreneurs
05.05.2019	Dept. of Plant Pathology, TNAU, Coimbatore	31	19	12	Farmers/entrepreneurs
28.05.2019	Vellmadai village- NSS students and farmers	47	16	31	Farmers
05.06.2019	Dept. of Plant Pathology, TNAU, Coimbatore	23	17	6	Farmers/entrepreneurs
05.07.2019	Dept. of Plant Pathology, TNAU, Coimbatore	47	37	10	Farmers/entrepreneurs
06.08.2019	Dept. of Plant Pathology, TNAU, Coimbatore	47	37	10	Farmers/entrepreneurs
05.09.2019	Dept. of Plant Pathology, TNAU, Coimbatore	44	36	8	Farmers/entrepreneurs
23.09.2019	Kerala club, coimbatore	32	-	32	Woman group
30.9.2019	Dept. of Plant Pathology, TNAU, Coimbatore	7	7	-	Agri.officers, Maldives
05.10.2019	Dept. of Plant Pathology, TNAU, Coimbatore	30	19	11	Farmers/entrepreneurs
14.10.2019	Central prison, Coimbatore (Oyster mushroom)	50	50	-	Prisoners
22.10.2019	CAG pride, Coimbatore	60	45	15	NABARD officials
23.10.2019	Central prison, Coimbatore (Milky mushroom)	3	3	-	Prisoners
05.11.2019	Dept. of Plant Pathology, TNAU,	70	49	21	Farmers/entrepreneurs

Annual Report-AICRP-Mushroom 2019-20

	Coimbatore				
05.12 2019	Dept. of Plant Pathology, , TNAU, Coimbatore	49	39	10	Farmers/entrepreneurs
06.01 2020	Dept. of Plant Pathology, ,TNAU, Coimbatore	105	37	68	Farmers/entrepreneurs
05.02 2020	Dept. of Plant Pathology, TNAU, Coimbatore	78	55	23	Farmers/entrepreneurs
05.03 2020	Dept. of Plant Pathology, TNAU, Coimbatore	87	63	24	Farmers/entrepreneurs

Three day training

Date	Venue	No. of Participants	Male	Female	Remarks if any

Five day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
24.06.2019 to 28.06.2019	Dept. of Plant Pathology, TNAU, Coimbatore	9	9	-	Farmers/entrepreneurs
16.07.2019 to 20.07.2019	Dept. of Plant Pathology, TNAU, Coimbatore	2	-	2	Sultan Qaboos university, oman
28.08.2019 to 30.08.2019	Dept. of Plant Pathology, TNAU, Coimbatore	7	7	-	Farmers/entrepreneurs
21.10.2019 to 25.10.2019	Dept. of Plant Pathology, TNAU, Coimbatore	10	8	2	Farmers/entrepreneurs
27.01.2020 to 31.01.2020	Dept. of Plant Pathology, TNAU, Coimbatore	8	6	2	Farmers/entrepreneurs
16.03.2020 to 20.03.2020	Dept. of Plant Pathology, TNAU, Coimbatore	8	6	2	Farmers/entrepreneurs

Long term training

Date	Venue	No. of Participants	Male	Female	Remarks if any

TSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any

Annual Report-AICRP-Mushroom 2019-20

--	--	--	--	--	--

SCSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any
31.10.2019	FC&RI, Mettupalayam, Karamadai block, Coimbatore dt	40	36	4	SC Farmers
21.12.2019	Dept. of Plant Pathology, TNAU, Coimbatore	60	45	15	SC Youth
20.02.2020	Dept. of Plant Pathology, TNAU, Coimbatore	65	-	65	SC self help group

2. Consultancy Provided

Sr. no.	Name and address of farmer	Type of mushroom grown	Production capacity

3. Spawn supply and revenue generation

	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Spawn supplied			
Oyster	1687	133.3	2,24,877
Button			
Milky	305	133.3	40656
Paddy straw			
Master spawn supplied	41.1	250	10275
Culture supplied (no.)	1	10000	10000
Total	2033 kg +1 (culture tube)		2,85,808

4. Participation in seminar/symposia/workshop/Kisan mela, etc

Sr. No.	Seminar/symposia/workshop/kisan mela, etc	Date	Venue
1	National seminar on Rise of Mushrooms : Retreads to Humanity	30.09.2019	TNAU, Coimbatore
2	National workshop: Mushroom Series I	1.10.2019	TNAU, Coimbatore
3	International workshop on transboundary pest management	4-5, March,2020	TNAU, Coimbatore

5. Visit of dignitaries

Sr. No.	Date	Dignitary visited
1	24.04.2019	Dr.V.P Sharma, Director, Directorate of Mushroom Research,

Annual Report-AICRP-Mushroom 2019-20

		Solan
2	05.07.2019	Paul Selvam,Devadoss, Chairman, INAGMA, Malaysia
2	02.12.2019	Dr.Thamarai Selvi, Vice Chancellor, Thiruvallur university
3	18.12.2019	Dr.Jalali, Executive Director of Research, HAU, Haryana
4	14.02.2020	Dr.Srimathi, Ravichandran Dean, University of Jaffna

6. Visit of famers group, students, etc

Sr. No.	Date	Visitors	Number of visitors in group		
			Male	Female	Total
1	28.06.2019	Imayam Institute of Agrl& & Techn.Thuraiyur	30	47	77
2	11.07.2019	Vidhya vikasini Hr.Sec.school, Tirupur	55	65	120
3	16.07.2019	Vanavarayar Institutute of Agriculture, Pollachi	55	54	109
4	22.07.2019	Namazhvar college of Agrl.& Technology			44
5	14.08.2019	Karur velalar college, Karur	30	22	52
6	26.08.2019	Blue bird Mat. Hr.Sec.school, Palladam	40	66	106
7	27.08.2019	NGP School, Kalapatti	50	52	102
8	05.09.2019	Bharathi Mat.Hr.Sec.School, Coimbatore	-	8	8
9	09.09.2019	Quest International school, Avinashi	20	55	75
10	26.09.2019	Corp. Higher Sec. school, Coimbatore	-	29	29
11	14.10.2019	VLB Janakiammal college, Coimbatore	40	63	103
12	08.11.2019	Vivegam Mat.Hr.sec. school, Dharapurum	53	-	53
13	13.11.2019	Vivegam Mat.Hr.sec. school, Dharapurum	49	-	49
14	15.11.2019	AVP Trust Hr.Sec.School, Tirupur	36	60	96
15	22.11.2019	GKD Mat.Hr.Sec.school, Coimbatore	100	79	179
16	25.11.2019	SIARD, Thakkalam,Arakonam, Vellore	40	10	50
17	03.12.2019	Farmers Association, Cuddalore	19	-	19
18	12.12.2019	Maharishi International school, Coimbatore	20	44	64
19	12.12.2019	Telanagana Agricultural university, Telangana	10	7	17
20	18.12.2019	National model Mat. Hr.Sec.school, Coimbatore	45	58	103
21	19.12.2019	National model Mat. Hr.Sec.school, Coimbatore			97

Annual Report-AICRP-Mushroom 2019-20

22	20.12.2019	Chinmaya vidyalaya school,Cbe	30	49	79
23	24.01.2020	CCMA Govt. Hr.Sec.School, Cbe	30	42	72
24	30.01.2020	Govt. Boys Hr.Sec.school, Erode	30	-	30
25	12.02.2020	Alvas college, Karnataka	10	31	41
26	19.02.2020	Viveknanada college of Arts & Science	20	29	49
27	06.03.2020	Erode Arts & Science college , Erode	15	46	61
28	09.03.2020	Loyola college, Manvi, Karnataka			43
Farmers					
29	10.09.2019	ATMU Project, Gujarat	24	-	24
30	15.10.2019	Farmers from DWDA, Erode	102	-	102
31	17.11.2019	Farmers from Kurumathur, Kannur	33	-	33
32	21.11.2019	Farmers from Kallaserry, Kerala	52	-	52
33	04.12.2019	Farmers from Magudanchavadi, salem	42	-	42

7. Coverage in Mass Media

Sr. No.	Item	Number
1	TV Programmes	-
2	Radio Programme	4
3	News paper coverage	5
4	Popular articles	-
5	Publication of leaflet/booklet	2
6	Farmer scientist interface	1
7	Field day organized	-
8	Demonstrations organised	7

Items	Details (List may be given)
TV Programmes	-
Radio Programme	1. Mushroom cultivation: Prospects, Problems and solutions - 13.06.2019 2. Programme coverage and broadcast on Training on Mushroom cultivation to SC farmers on 30.10.2019 3. One day training programme - Interaction with farmers broadcasted - 5.12.2019 4. Mushroom day interaction with farmers broadcasted - 23.12.2019
News paper coverage	1. Indian Express dt 02.10.2019 Mushrooms the way to prosperity 2. Dinamani(Tamil) dt.3.10.2019- Message on Rise of mushrooms as retreats for humanity 3. Thozhil malar(June,2019 Tamil) Making money from home through mushroom cultivation 4. Hindu (Tamil) 1.10.2019 on National seminar on mushrooms published in on 5. Dinamalar(Tamil) dt.4.10.2019 on establishment of mushroom park at TNAU, Coimbatore
Farmer scientist	1. Organized meet with 7 farmers, 6 scientists, 12 students on current

Annual Report-AICRP-Mushroom 2019-20

interface	scenario of mushroom production and problems faced by farmers - 23.12.2019
Field day organized	-
Demonstrations organised	1. Vellamadai village, Coimbatore through NSS students on 23.05.2019 2. ATMA project , Gujarat on 10.09.2019 3. Farmers from Magudanchavadi, salem -4.12.2019 4. Kerala club, coimbatore-23.09.2019 5. Farmeers Association, cuddalore.2.12.2019 6. Central Prison- 14.10.2019 7. Central prison :23.10.2019

4. Experiential Learning students :

	Boys	Girls	Total
EXP 401. Commercial Mushroom and spawn production (0+5)	30	10	40

8. Field visit: Major Pest and Disease Interventions

- Oyster Mushroom farm: Sudden outbreak of Cecid fly damage was observed in oyster mushroom beds at Maga mushroom Farm, Kovaipudur. About 32% yield loss was observed. Higher pest infestation was observed in climate controlled cropping house than normal thatched cropping house. Cultural practices along with residue free insecticides were recommended for warding off the pest and the farm is free of pest incidence
- Milky mushroom : Incidence of mite (*Tarsonemus indicus*) was observed in milky mushroom farm on beds and caused 35 % yield loss at second harvest stage. Cultural practices along with residue free insecticides were recommended for warding off the pest and the farm is free of pest incidence

PHOTOGRAPHS

ONE DAY TRAINING ON MUSHROOM CULTIVATION



FIVE DAYS ADVANCED SKILL ORIENTED TRAINING ON SPAWN AND MUSHROOM PRODUCTION



Participants preparing media



Trainees learning tissue culture



Certificate distribution by Registrar, TNAU, Cbe



Certificate distribution by Director (CPPS), TNAU, Cbe

TRAINING TO SCHOOL CHILDREN/ COLLEGE STUDENTS



TRAINING ON OYSTER MUSHROOM CULTIVATION TO FARMERS



**Training to farmers (Woman) from
Thirupathisaram**



Training to ATMA farmers from Salem



Training to farmers from Erode



Training to Dept. officials

TRAINING TO INTERNATIONAL STUDENTS- SULTAN QUABOOS UNIVERSITY, OMAN



TRAINING ON MUSHROOM CULTIVATION TO OFFICIALS FROM MALDIVES



MUSHROOM DAY AT TNAU, COIMBATORE ON 23.12.2019



Interaction with growers nad radio recording



Team of scientists and farmers

SC SUB PLAN - I -SC FARMERS OF KARAMADAI BLOCK HELD AT FC&RI, METTUPALAYAM ON 31.10.2019



Inuagural function of SC subplan programme-



Dignitaries -Registrar, Director (CCPS),

Karamadai block



Farmers learning oyster mushroom bed preparation

Dean(Forestry) ADA Prof & Head (Pl.Path.) and (Horticulture)



Farmers viewing exhibition on mushroom



Input distribution to Karamadai block Sc farmers



Team of Karamadai SC farmers

SC SUB PLAN -II TO SC YOUTH HELD AT TNAU, COIMBATORE ON 21.12.2019



SCyouth learning tissue culture techniques



SCyouth learning spawn production techniques



View of exhibition arranged for SC youth



SC youth interested in value added products



Distribution of certificate & inputs by Director (CPPS)



Team of Sc youth trained at TNAU, Coimbatore centre

SUB PLAN -III TO SC WOMAN SELF HELP GROUP AT TNAU, COIMBATORE 20.02.2020



Addressing the SC woman self help group on nutritive values of mushrooms



SC woman SHG involved in mushroom bed preparation



Director CPPS addressing the gathering



Distribution of inputs to SHG's



A view of SHG participants



SHG's with their inputs

**NATIONAL SEMINAR ON RISE OF MUSHROOMS: RETREATS TO HUMANITY
30.09.2019**

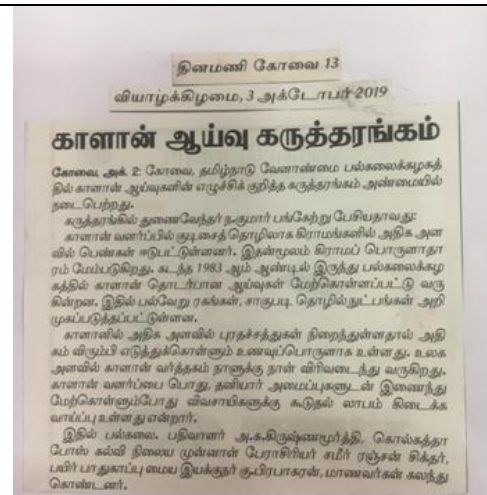


**NATIONAL WORKSHOP ON MUSHROOM SERIES I HELD AT TNAU, COIMBATORE ON
1.10.2019**

Annual Report-AICRP-Mushroom 2019-20



NEWS PAPER CLIPPINGS



VISIT OF IMPORTANT DIGNITARIES

Annual Report-AICRP-Mushroom 2019-20



**Dr.V.P.Sharma, Director , DMR, Solan
(24.04.2019)**



Director (DMR) with Vice chancellor (TNAU)



**Dr.Thamariselvi, Vice chancellor, Thiruvallur
(university) 02.12.2020**



**Dr.L.Jalali,Executive Director of Research
(HAU)
(18.12.2019)**

DEMONSTRATIONS ON MUSHROOM CULTIVATION



**Demonstration to woman folk at Kerala club,
Coimbatore**



**Demonstration at vellmadai village young
children showing interest**

EXPERIENTIAL LEARNING STUDENTS - MUSHROOM SPAWN PRODUCTION



Spawn preparation



Students preparing mushroom Bed



Students preparing Spawn for compost making



Team of Experiential learning students

FIELD PROBLEMS SOLVED - CECID FLY DAMAGE (35 % LOSS) IN OYSTER MUSHROOM FARM



Cecid fly damaged beds (35 % loss encountered)



Orange coloured growth indicating the multiplication of maggots (1000's of maggots in a single affected area)

FIELD PROBLEM SOLVED- MITES DAMAGE (30% LOSS) IN MILKY MUSHROOM



Jammu Centre

1. Trainings

One day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
23-02-2019	MRTC, SKUAST-J	38	24	14	Training for volunteers of Nehru Yuva Kendra
27-01-2020	MRTC, SKUAST-J	28	24	04	Training for students of ASCI
20-02-2020	MRTC, SKUAST-J	18	14	04	Training for students of Deptt. of Botany, Jammu University

Two days training

Date	Venue	No. of Participants	Male	Female	Remarks if any
13-14 Feb., 2020	MRTC, SKUAST-J and Directorate of Extension, SKUAST-J, Jammu	35	29	06	Training for field officers of Deptt. of Agriculture, Govt. of J&K in collaboration with SAMETI.

Long term training

Date	Venue	No. of Participants	Male	Female	Remarks if any
October, 2019 (12 days)	MRTC, SKUAST-J	21	21	Nil	Organized for jawans and JCOs of Tiger Artillery Brigade
November,	MRTC,	18	18	Nil	Organized for

Annual Report-AICRP-Mushroom 2019-20

2019 (12 days)	SKUAST-J				jawans and JCOs of Tiger Artillery Brigade
-------------------	----------	--	--	--	--

SCSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any
1	MRTC, SKUAST-J	50	22	28	Conducted by DMR Solan in collaboration with SKUAST-J
2	MRTC, SKUAST-J	50	41	09	Conducted by DMR Solan in collaboration with SKUAST-J
3	MRTC, SKUAST-J	40	31	09	Conducted in collaboration with KVK Jammu
4	KVK Samba	40	26	14	Conducted in collaboration with KVK Samba
5	KVK Kathua	40	36	04	Conducted in collaboration with KVK Kathua

2. Consultancy Provided

Sr. no.	Name and address of farmer	Type of mushroom grown	Production capacity
1	Bharat Singh R/o Jambal	Button, Oyster	30 quintals
2	Saroop Singh R/o Korga	Button, Oyster,	40 quintals
3	Parvesh R/o Kapoorpur	Button, Oyster	20 quintals
4	Tarsem Lal R/o Bali Chak	Button, Oyster	40 quintals
5	Pawan Kumar R/o Shibu Chak	Button, Oyster	20 quintals
6	Ram Pyara R/o Chak Shian	Button, Oyster	30 quintals
7	Aditya Sharma R/o Sidhra	Oyster	30 quintals

3. Spawn supply and revenue generation

	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Spawn supplied			
Oyster/Button	14 qt	100/-	1,40,000/-
Ready to fruit mushroom bags	700	100/-	70,000/-
Total			2,00,000/-

4. Participation in seminar/symposia/workshop/kisan mela, etc

Sr. No.	seminar/symposia/workshop/kisan mela, etc	Date	Venue
1	5 th J&K Agriculture Science Congress	14-16 th Oct., 2019	SKUAST-J, Jammu

5. Visit of dignitaries

Sr. No.	Date	Dignitary visited
1	25-09-2019	Dr. K.S. Risam, Hon'ble Vice Chancellor, SKUAST-J, Jammu
2	26-09-2019	Dr. J.P Sharma, Director Research, SKUAST-J, Jammu
3	24-02-2020	Dr. D.P. Abrol, Dean, Faculty of Agriculture, SKUAST-J, Jammu
4	24-02-2020	Dr. K.S. Risam, Director Extension SKUAST-J, Jammu
5	24-02-2020	Prof. R.K. Gupta, Hon'ble Vice Chancellor, SKUAST-J, Jammu

Annual Report-AICRP-Mushroom 2019-20

6. Visit of famers group, students etc

Sr. No.	Date	Visitors	Number of visitors in group		
			Male	Female	Total
1	26-09-2019	Farmers from Distt. Kangra (H.P)	25	Nil	25
2	23-10-2019	Volunteers of Nehru Yuva Kendra, Jammu	24	14	38
3	08-11-2019	NCC cadets 2 J&K Bn	140	Nil	140
4	13-11-2019	Farmers of Budgam District	34	Nil	34
5	24-12-2019	Students of APS Jammu	18	23	41
6	26-12-2019	Farmers of Ramgarh	25	30	55
7	27-12-2019	Farmers of Poonch	88	Nil	88
8	30-12-2019	Farmers of Ramnagar, Udhampur	45	Nil	45
9	30-12-2019	Farmers of Tikri	24	06	30
10	15-01-2020	Farmers of Vijaypur and Ramgarh	30	20	50
11	16-01-2020	Farmers of Samba	31	10	41
12	17-01-2020	Farmers of Jammu, Reasi and Udhampur under MIDH	38	Nil	38
13	17-01-2020	Farmers of Jhallas, Poonch	30	Nil	30
14	21-01-2020	Farmers of Kaghote, Ramnagar	50	Nil	50
15	24-01-2020	Farmers of Ramban	50	Nil	50
16	27-01-2020	Trainees of ASCI (Mushrooms)	24	04	28`
17	27-01-2020	Students of SKUAST-K	43	46	89
18	29-01-2020	Farmers of Mendhar, Poonch	22	Nil	22
19	31-01-2020	Farmers of Reasi	50	Nil	50
20	06-02-2020	Farmers of Kishtwar	70	Nil	70
21	11-02-2020	Farmers of Ramban	50	Nil	50
22	14-02-2020	Farmers of Ramnagar	35	Nil	35
23	18-02-2020	Farmers of Doda	27	Nil	27
24	20-02-2020	Students of Deptt. Of Botany, Jammu University	14	04	18
25	25-02-2020	Trainees of ITI, Samba	12	04	16
26	25-02-2020	Farmers from Dharmari, Reasi	60	Nil	60
27	26-02-2020	Farmers from Budgam	34	Nil	34
28	02-03-2020	Farmers from Poonch	50	Nil	50
29	02-03-2020	Farmers from Samba	34	16	50
30	03-03-2020	Farmers from Samba	41	15	56
31	07-03-2020	Farmers from Udhampur	20	Nil	20
32	12-03-2020	Farmers from Dharmari, Reasi	21	Nil	21
Total			1259	192	1451

7. Coverage in Mass Media

Sr. No.	Item	Number
1	TV Programmes	1
2	Radio Programme	6
3	News paper coverage	7
4	Publication of leaflet/booklet	2
5	Farmer scientist interface	10

6	Demonstrations organised	10
---	--------------------------	----

Item	Details
TV Programmes	1. Programme on Mushroom Cultivation in Jammu telecasted by DD Kisan
Radio Programme	1. Programmes on Mushroom cultivation telecasted by Akashvani Jammu and Erstwhlie Radio Kashmir Jammu under the programmes Kisan Vani and Phone in Rayein
News paper coverage	1. News of training programmes conducted by the centre widely covered in the Jammu edition of newspapers viz. State Times, Dainik Jagaran, State Times and Early Times.
Farmer scientist interface	During visits of farmers to the centre and during training programmes farmer scientists interfaces were held
Demonstrations organised	1. Demonstrations organized by KVK Rajouri, KVK Kathua and KVK Jammu in collaboration with AICRP on Mushroom.

1. Experiential Learning students :

	Boys	Girls	Total
Mushroom Cultivation and Spawn Production	2	24	26

Photographs

[illegible]

Annual Report-AICRP-Mushroom 2019-20



Srinagar centre

- ✓ **Conducted 3 Skill Development training programmes of 30 days duration each on “Mushroom Production Technology”, “Mushroom Growers” and Women Entrepreneurship on Mushroom Production Technology” w.e.f 03 Feb., to 03 March, 2020.**
- ✓ **Conducted 4 need based training programmes for rural youth and women folk covering Button and Dhingri Mushroom Cultivation**



- 03 mushroom units of 50-100 trays were established in three districts of Bandipora, Baramulla & Srinagar of the valley under the technical guidance of Mushroom Research and Training Centre.

Annual Report-AICRP-Mushroom 2019-20

Exposure visit of Farmers

1	Lecture on Mushroom Production Practice	07-02-2018	6 Groups	530 Farmers	Deptt. Of Agri. Kmr
---	---	------------	----------	-------------	---------------------



Spawn and master culture of button & dhingri mushroom (More than 2000) were supplied among different line Departments, KVKs and to progressive growers during 2019-2020

Experiential learning

- Number of student . B.Sc Horticulture 42



Jorhat centre

1. Trainings

One day training

Date	Venue	No.	of	Male	Female	Remarks	if
------	-------	-----	----	------	--------	---------	----

Annual Report-AICRP-Mushroom 2019-20

		Participants			any
06.09.19	Holongapar, Jorhat	25	11	14	
24.09.19	Nakachari Morongial gaon, Mariani	20	9	11	

2. Consultancy Provided

Sr. no.	Name and address of farmer	Type of mushroom grown	Production capacity
1.	S.Borkotoky	Oyster	50 q/year
2.	T.Gogoi	Oyster	20 q/year
3.	Rohini Mech	Oyster	90-100 q/year
4.	Boloram Gogoi	Oyster	60-70 q/year
5.	Runu Gogoi	Oyster	100 q/year
6.	Bhaskar Sarmah	Trained for spawn production.	

3. Spawn supply and revenue generation

	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Spawn supplied			
Oyster	450 kg	100/kg	45,000.00
Button			
Milky			
Paddy straw			
Master spawn supplied			
Culture supplied (no.)			
Total			

4. Participation in seminar/symposia/workshop/kisan mela, etc

Sr. No.	seminar/symposia/workshop/kisan mela, etc	Date	Venue
1.	Participated in Kisan Mela organized at RARS, AAU, Titabar and SRS, AAU, Buralikson	06.10.19 and 16.10.19	RARS, Titabar and SRS, Buralikson

7. Coverage in Mass Media

Sr. No.	Item	Number
	TV Programmes	
	Radio Programme	
	News paper coverage	
	Popular articles	
	Publication of leaflet/booklet	
	Farmer scientist interface	At both the Kisan Melas participated.
	Field day organized	

Annual Report-AICRP-Mushroom 2019-20

	Demonstrations organised	
--	--------------------------	--

Mizoram Centre

Extension Activities

1. Trainings

Three day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
26th Feb to 28 Feb, 2020	ICAR RC NEH Region Mizoram Centre, Kolasib	38	6	32	

2. Consultancy Provided

Sr. no.	Name and address of farmer	Type of mushroom grown	Production capacity
1	Sanghmingthanga, Daikawn, Kolasib	Oyster	7.5-10 Kg
2	Vanlalchhuanmi, Electric veng	Oyster	5 Kg
3	Vanlalhruaia, Thingdawl	Oyster	5 Kg
4	P.C Lalchhuangkima, Bilkawthir	Oyster	5 Kg

3. Spawn supply and revenue generation

	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Spawn supplied	220	100/Kg	22000
Oyster			
Master spawn supplied			
Culture supplied (no.)			
Total			

6. Visit of famers group, students, etc

Sr. No.	Date	Visitors	Number of visitors in group		
			Male	Female	Total
1	17/02/2020	Thingdawl Farmers Society			

7. Coverage in Mass Media

Sr. No.	Item	Number
	TV Programmes	
	Radio Programme	

Annual Report-AICRP-Mushroom 2019-20

	News paper coverage	2
	Popular articles	
	Publication of leaflet/booklet	
	Farmer scientist interface	
	Field day organized	
	Demonstrations organised	

1. Experiential Learning students :Nil

2. Publications-Nil

PERSONNELIA

Sr. No.	AICRP Centre	Name of staff	Designation	Email and phone
1	ICAR RC NEH Region Mizoram Centre, Kolasib	Mr. Sunil Kumar Sunani	Scientist (Plant Pathology)	sunilkumarsunani12@gmail.com 7008002355
2	ICAR RC NEH Region Mizoram Centre, Kolasib	Dr. VishambharDayal	Scientist (Horticulture)	vishambhar5009@gmail.com 8303637509



Three days training programme on “Oyster Mushroom Cultivation: A Potential Enterprise to Double Farmers’ Income” was conducted during 26th to 28th February, 2020 under AICRP on Mushroom at ICAR-RC-NEH, Mizoram Centre, Kolasib.

Port Blair Centre

1. Training

One day awareness training conducted

Date of training	Venue	Number of participants	Number of male participants	Number of female participants
04-07-2019 Mushroom production and Organic kitchen	Garacharma	25	0	25

Three day training conducted

Date of training	Venue	Number of participants	Number of male participants	Number of female participants
15-17.07.2019 Mushroom cultivation for food security of Island farming community	Humfrigungj	24	02	22
06-08..08.2019 Role of mushroom cultivation in Integrated farming system	Swaraj Dweep	22	06	16
17-19.03.2021 Art & Science in mushroom & spawn production technology	Collinpur	21	03	18

Ten day training conducted

Date of training	Venue	Number of participants	Number of male participants	Number of female participants
-------------------------	--------------	-------------------------------	------------------------------------	--------------------------------------

Annual Report-AICRP-Mushroom 2019-20

17.01.2020 to 26.01.2020 Entrepreneurship development through mushroom & spawn production	KVK, Sippighat	20	0	20
---	-------------------	----	---	----

2. Consultancy Provided

Name of Firm	Type of mushroom cultivated	Production capacity per annum
M/ Mahaalasa Agro Products	Oyster mushroom and spawn production	50 kg of mushroom per month 200 spawn per month
Ladies Farmer producing mushroom	Oyster mushroom	30 kg of mushroom per month
M/Eywa mushroom	Oyster mushroom	150 kg of mushroom per month

3. Spawn supply and revenue generation

Spawn supplied	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Oyster (CIARI Mushroom varieties (<i>Peurotus spp.</i>))	110	200	22000/-
Button	-	-	-
Milky	-	-	-
Paddy straw	-	-	-
Master spawn supplied	4	300	1200/-
Culture supplied (no.)	-	-	-
Total	114	-	23200/-

4. Participation in seminar/symposia/workshop/kisan mela, etc

Sr. No.	seminar/symposia/workshop/kisan mela, etc	Date	Venue
1	Azad Hind mela	30.12.2019 to 04.02.2020	Gram Panchyat Chouldari at Bacharapahad

5. Visit of dignitaries

Sr. No.	Date	Dignitary visited
1.	25.02.2020 to 26.02.2020	Dr. V.P. Sharma, Director, ICAR-Directorate of Mushroom Research Chanmbaghat, Solan HP)
2	13.03.2020	DGM, NABARD

6. Visit of famers group, students, etc

Sr. No.	Date	Visitors	Number of visitors in group		
			Male	Female	Total
1	16.03.20	Scheduled Caste Progressive farmers from Tamil Nadu	20	0	20

7. Coverage in Mass Media

Sr. No.	Item	Number
1	TV Programmes	1
2	Radio Programme	-
3	News paper coverage	2
4	Popular articles	-
5	Publication of leaflet/booklet	-
6	Farmer scientist interface	-
7	Field day organized	-
8	Demonstrations organised	2

Items	Details (List may be given)
TV Programmes	1. Dweepo me Oyster mushroom ki kheti
Radio Programme	-
News paper coverage	1. Mushroom cultivation for food security of Island farming community 2. Art & Science in mushroom & spawn production technology
Farmer scientist interface	-
Field day organized	-
Demonstrations organised	1. Utilization of Agro waste for oyster mushroom production 2. Evaluation & performance of different strain of Oyster Mushroom (<i>Pleurotus</i> sp.) in Island condition.

Photographs

Mushroom cultivation for food security of Island farming community
--



Role of mushroom cultivation in Integrated farming system



Art & Science in mushroom & spawn production technology



Entrepreneurship development through mushroom & spawn production



Publications

Book Chapters

Sr. No.	Details
1	K.Sakthivel, B.Gangaiah, R.K. Gautam, V.K. Pandey, P.K. Singh and K. Venkatesh.2019. Mushroom Cultivation in Andaman & Nicobar Island-Present and Future Prospects. In: A.S. Krishnamoorthy, S. Nakkeeran, G. Thirubhuvanamala, P. Latha, K. Angappan, M.Muthamilan and K. Prabakar (Eds).Mushrooms-Rise of Research and Retreats for Humanity. Department of Plant Pathology, Centre for Plant Protection Studies. Tamil Nadu Agricultural University Coimbatore-641003, PP. 154-163. ISBN: 978-93-5391-742-5.

Other Activity

New Entrepreneur of oyster mushroom cultivation in Port Blair -Eywa Mushrooms, Nayagaon:

Mr. Chandan Biswas, a young businessman along with his wife visited ICAR-CIARI, Port Blair during August 2018 and met Dr. K. Sakthivel & Dr. Vivek Kumar Pandey to have technical knowledge of mushroom cultivation and its feasibility and in A& N islands. He was advised that there is good scope for oyster mushroom cultivation in islands, and both ICAR-CIARI and Department of Agriculture are supporting the farmers and entrepreneurs for oyster mushroom cultivation. He was also advised to meet Dr.NituSindhu who was recently supported by ICAR-CIARI and Department of Agriculture through NHM mission. With full enthusiasm and technical support, he took up the oyster mushroom cultivation venture in his home roof top at Nayagaon by creating permanent facility in the name “Eywa mushroom” in September 2018 by taking spawn materials from ICAR-CIARI, Port Blair and Department of Agriculture and later marketed in name “Eywa Mushrooms”. At present the firm “Eywa mushroom” has capacity to hold 350 bags per cycle and able to produce 5- 10 kg of mushrooms per day with the net income of Rs. 40-50,000/- per month. He also informed that he is now purchasing spawn from Mahalasa agro products, one of the key spawn production entrepreneur developed by ICAR-CIARI in the islands. In addition he is also supported by Department of Agriculture and ICAR-CIARI, Port Blair. Now **Mr. Chandan Biswas** submitted the funding proposal to Department of Agriculture with the support of ICAR-CIARI, Port Blair for further expansion of his business.



Eywa Mushrooms Production Unit

Demonstration

The mother spawns of three strains of *Pleurotus* sp. Viz., CIARI-Mushroom 1, CIARI-Mushroom 2 & CIARI-Mushroom 3 has been evaluated at farmer field under OFT for selection of best strain under Island condition. Out of four strain maximum production has been recorded in CIARI- Mushroom 1 (850g/ kg of Wet substrate) followed by CIARI- Mushroom 2 (780g/ kg of Wet substrate). CIARI-Mushroom 1 showed early fruit body production (11 days) then other tested strains.



Almora Centre

Long term training

Date	Venue	No. of Participants	Male	Female	Remarks if any
Feb. 01-May 20, 2019.	ICAR-VPKAS, Almora	01	--	01	Hands on training on Mushroom Cultivation and Management

SCSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any
15.02.2020	ICAR-VPKAS, Almora	15	15	0	Oyster mushroom cultivation
06.03.2020	ICAR-VPKAS, Almora	25	25	0	Oyster mushroom cultivation

3. Spawn supply and revenue generation

	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Spawn supplied			
Oyster	320	100	32000
Button	160	100	16000
Milky/Macrocybe	34	100	3400
Paddy straw	--	--	--
Master spawn supplied	--	--	--
Culture supplied (no.)	--	--	--
Total	514		51,400.00

4. Participation in seminar/symposia/workshop/kisanmela, etc

Sr. No.	seminar/symposia/workshop/kisanmela, etc	Date	Venue
---------	--	------	-------

Annual Report-AICRP-Mushroom 2019-20

1.	Training on Mushroom Taxonomy	Aug. 10-14, 2019	ICAR-DMR, Solan
2.	AICRP on Mushroom workshop and brain storming session	28-29 June, 2019	ICAR-DMR, Solan

7. Coverage in Mass Media

Sr. No.	Item	Number
	TV Programmes	01
	Radio Programme	02
	News paper coverage	02
	Popular articles	02
	Publication of leaflet/booklet	02
	Farmer scientist interface	01
	Field day organized	--
	Demonstrations organised	02

Items	Details (List may be given)
TV Programmes	1. Mushroom farming in the mountain region. DD Kisan. 2. 3.
Radio Programme	1. Button mushroom kikhetihetu compost kanirman. All India Radio. Almora 2. Dhingri mushroom kikheti. All India Radio. Almora 3.
News paper coverage	1. Naukarikalobhchodkar mushroom kobanayaaaykajariya. 2019. Amar Ujala. 15 July. 2. Naukari ne bhatakaya, mushroom ne thahraya. 2019 3.
Farmer scientist interface	1. 2. 3.
Field day organized	1. 2. 3.
Demonstrations organised	1. Laid down demonstration trial of <i>Macrocybegigantea</i> at village Pokhri, Almora 2. Laid down demonstration trial of <i>Macrocybegigantea</i> at Someshwar, Almora 3. Demonstrated button mushroom cultivation to progressive farmers of NEH during Nov. 15-19, 2019

Photographs



अमरउजाला अल्मोड़ा-वागेश्वर amarpunjabi.com कैथल, मेरठ, 15

नौकरी का लोभ छोड़कर मशरूम को बनाया आय का जरिया

लमगाड़ा ठाट गांव के 27 वर्षीय मनोज बने किसानों और युवाओं के प्रेरणा स्रोत, इंडिया मार्ट में भी ऑनलाइन व्यापार किया शुरु

अनिल खत्री

मशरूम का उत्पादन और समय

अल्मोड़ा: मशरूम का उत्पादन करने वाले मनोज बने किसानों और युवाओं के प्रेरणा स्रोत, इंडिया मार्ट में भी ऑनलाइन व्यापार किया शुरु। मनोज का कहना है कि मशरूम का उत्पादन करने में 15 से 20 दिनों का समय लगता है।

मनोज का कहना है कि मशरूम का उत्पादन करने में 15 से 20 दिनों का समय लगता है।

मनोज का कहना है कि मशरूम का उत्पादन करने में 15 से 20 दिनों का समय लगता है।

Meerut Centre

Trainings
One day training

Annual Report-AICRP-Mushroom 2019-20

Date	Venue	No. of Participants	Male	Female	Remarks if any
26.11.19	Mushroom Lab SVPUAT, Meerut	30	30	-	-
11.12.19	do	20	20	-	-
23.12.19	do	50	40	10	On national mushroom day
28.01.20	do	30	30	-	Muzaffarnagar
07.02.20	do	30	30	-	Aligarh
13.02.20	do	15	-	-	Bulandshahar
26.02.20	do	25	25	-	G.B.Nagar
10.01.20	do	12	12	-	Meerut (U.P.)

Three day training : 06

Date	Venue	No. of Participants	Male	Female	Remarks if any
19-21 aug 2019	Mushroom lab svpuat Meerut	12	12	-	UGrawe programme
26-28 aug 2019	Mushroom lab svpuat Meerut	12	12	-	Ugrawe programme
02-04 sept2019	Mushroom lab svpuat Meerut	12	12	-	Ugrawe programme
11-13sept2019	Mushroom lab svpuat Meerut	12	12	-	Ugrawe programme
17-19 sept2019	Mushroom lab svpuat Meerut	12	12	-	Ugrawe programme
21-23 sept2019	Mushroom lab svpuat Meerut	12	12	-	Ugrawe programme
07-10 Oct1990	Manyuk mushroom farm Garh Hapur	12	20	-	Organized by KVK Hapur

SCSP Trainings: 01

Date	Venue	No. of Participants	Male	Female	Remarks if any
22.08.19	Mushroom Lab SVPUAT, Meerut	50	46	04	
04.09.19	Mushroom Lab SVPUAT, Meerut	50	48	02	

1. Consultancy Provided: na

Sr. no.	Name and address of farmer	Type of mushroom grown	Production capacity
01	Vikash Tyagi	Button	90qt.
02	Jagdeep Singh	Oyster, Milky	30qt.
03	Jitendra Singh	Oyster	05qt.

Annual Report-AICRP-Mushroom 2019-20

2. Spawn supply and revenue generation

	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Spawn supplied			
Oyster	200.0	80.0	16000.00
Button	-	-	
Milky	-	-	
Paddy straw	-	-	
Master spawn supplied	-	-	
Culture supplied (no.)	02	120	240
Total	-	-	16240

4. Participation in seminar/symposia/workshop/kisan mela, etc

Sr. No.	seminar/symposia/workshop/kisan mela, etc	Date	Venue
01	KISAN Mela	08-10-2019	SVPUAT Meerut
02	State workshop of KVK in U.P.	-07-2019	NDUAT FAIZABAD
03	National Workshop of KVK	28-02-2019 To 01-03-2019	IARI New Delhi
04	National Workshop of AICRP on Mushroom	28 - 29.05.19	DMR Solan

5. Visit of dignitaries

Sr. No.	Date	Dignitary visited
01	29.11.219	Sri Lakhan Singh Rajput Agr State Minister U.P.
02	18.08.19	Dr Bijendra Singh D.G.UPCAR LUCKNOW
03	04.09.19	Dr R.K. Mittal V.C. SVPUAT Meerut

3. Visit of famers group, students, etc

Sr. No.	Date	Visitors	Number of visitors in group		
			Male	Female	Total
01	11.12.19	Farmers from Sonipat (HRY)	12	-	12
02	13.02.20	Farmers from Almora (UK)	13	-	13
03	13.03.20	Farmers from Dehradun (UK)	15	-	15

4. Coverage in Mass Media

Sr. No.	Item	Number
	TV Programmes	03
	Radio Programme	01
	News paper coverage	02
	Popular articles	03
	Publication of leaflet/booklet	02
	Farmer scientist interface	04
	Field day organized	02
	Demonstrations organised	50

Annual Report-AICRP-Mushroom 2019-20

Items	Details (List may be given)
TV Programmes	1. Programme-hello kisan Date- 28-12-2019 Topic- mushroom Place- dd kisan New Delhi 2. Programme. hello kisan Date-28-05-2019 Topic- mushroom Place- dd kisan New Delhi 3. Programme hello kisan Date- 18-01-2019 Topic- mushroom Place- dd kisan new Delhi
Radio Programme	1. Programme-Varta. Date- 03-10-2019. Topic- fasal avshesh prabandhan me mushroom prabandhan Place-Aakashvani Najibabad
News paper coverage	1. Krishi vividhikaran apnaye kisan. 05.09.19 , Amar Ujal 2. Har vyakti rahna chahta h svasth : Kulpati. 24.12.19, Dainik Jagaran
Farmer scientist interface	1.Date- 04.03.20 Place- KVK Rampur Participants- 30 2. Date- 12.01.20 Place. KVK Moradabad Participants-35 3.Date-20.01.20 Place- KVK amroha Participants- 30 4.Date-24.12.19 Place -KvkGautam buddh nagar Participants-35
Field day organized	1. KVK Gautam Budh Nagar 01
Demonstrations organized	Total: 70 1. KVK Saharanpur -10 2.KVv Gautam Budh Nagar -10 3. KVv Ghaziabad-10

Annual Report-AICRP-Mushroom 2019-20

	4.Kvk Meerut-10 5 KvkMoradabad -10 6 KvkBijnore -10 7kvk Buland sahar -10
--	--

3. Experiential Learning students :

	Boys	Girls	Total
I batch	21	-	21
II batch	19	-	19

Photographs



Tripura centre

Kalyani centre

Extension Activities

1. Trainings

One day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
15.09.2019	Village Jaguli	25	14	11	Participants were very enthusiastic and very motivated to take up the mushroom cultivation
22.10.2019	Village Haringhatta	29	17	13	do

Three day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
14.12. 2019 to 16.12.2019	Agriculture Technology Centre	25	17	08	

Five day training

Date	Venue	No. of Participants	Male	Female	Remarks if any
Nil					

Long term training

Date	Venue	No. of Participants	Male	Female	Remarks if any
Nil					

Annual Report-AICRP-Mushroom 2019-20

--	--	--	--	--	--

TSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any

SCSP Trainings

Date	Venue	No. of Participants	Male	Female	Remarks if any
Could not be conducted due to lockdown precautions					

2. Consultancy Provided

Sr. no.	Name and address of farmer	Type of mushroom grown	Production capacity
1.	Mr. Tarak Das	Oyster, Milky	1000 kg
2	MPG e business Pvt Ltd, Burdwan	Oyster	600-800 Kg

Annual Report-AICRP-Mushroom 2019-20

3. Spawn supply and revenue generation

	Quantity (kg)	Rate (Rs/kg)	Revenue generated
Spawn supplied			
Oyster	600 Kg	under process	Specifically for distribution during the demonstrations
Button	-		
Milky	-		
Paddy straw	-		
Master spawn supplied	10	do	
Culture supplied (no.)	5		
Total			

As such right now in our state, the amount of mushroom production as informed by Deptt of Horticulture is negligible so could not get data from all districts .

Districts	Spawn Production	Mushroom
Nadia	= 180 Kgs/yr (approx.)	2.7tonnes by 60 farmers/ day
24 N Paragnas	= 140 kgs/yr(approx.)	1.7 tonnes by 40 farmers/day
24 S Paragnas	= 140 Kgs/yr(approx.)	1.7 tonnes by 40 farmers/day
Kolkata	= 170 kgs/yr (approx.)	2.5 tonnes by 60 farmers/day
Malda	= 120 kgs/yr (approx.)	1.7 tonnes by 60 farmers/day
Jalpaiguri	= 180 kgs/yr(approx.)	4.2 tonnes by 200 farmers /day

4. Participation in seminar/symposia/workshop/kisan mela, etc

Sr. No.	seminar/symposia/workshop/kisan mela, etc	Date	Venue
1	Participated in Plant Pathology International Conference, held at National Agricultural Complex,	Jan 16-20 , 2020	New Delhi,
2	International Conference Crop and Weed Science Society	Nov- 18-20, 2019	West Bengal

5. Visit of dignitaries

Sr. No.	Date	Dignitary visited
1	13.11.2019	Vice Chancellor , BCKV
2	27.11.2019	ISKON trust local Head
3	10.01.2020	Director, DMR, Solan

6. Visit of famers group, students, etc

Sr. No.	Date	Visitors	Number of visitors in group		
			Male	Female	Total
1	16.11.2019	Local Farmers	12	5	17
2	12.12.2019	SBI training participants	18	6	24
3	05.01. 2020	Local farmers	22	7	29

7. Coverage in Mass Media

Sr. No.	Item	Number
---------	------	--------

Annual Report-AICRP-Mushroom 2019-20

	TV Programmes	-
	Radio Programme	-
	News paper coverage	-
	Popular articles	1
	Publication of leaflet/booklet	1
	Farmer scientist interface	7
	Field day organized	1
	Demonstrations organised	5

Annual Report-AICRP-Mushroom 2019-20

Items	Details (List may be given)
TV Programmes	1.
Radio Programme	1.
News paper coverage	1.
Farmer scientist interface	1. Farmers keep visiting the Mushroom Lab for consultation (Approx. 50) and were given details of cultivation and precautions while producing mushrooms suitable for their region.
Field day organized	1. Annual Mushroom Day was organized on 23 rd Dec, 2019, local farmers and students were given demonstration on mushroom cultivation. Their feedback was very positive and many of them have started mushroom growing in their houses following the instruction and becoming self- reliant.
Demonstrations organised	1. Local farmers visited the university and were demonstrated Mushroom cultivation, 12.11.2019 2. Attended and a Mushroom stall was put during the National Workshop cum Krishi Samridhhi Mela at KVK Sargachhi, Murshidabad (WB) on 10 th Jan, 2020 3. Training and mushroom lectures were delivered to ELP students under the NAHEP at Odisha Agricultural University, Bhubneshwar on 18- 20 th December 2019 and 2 nd -4 th Jan, 2020

7. Experiential Learning students:

	Boys	Girls	Total
The students registered under the Experimental learning were trained in mushroom cultivation.	32	12	44

Photographs

Annual Report-AICRP-Mushroom 2019-20



7. PUBLICATIONS

Bhubaneswar Centre

Research article:

- Anamita Sen, Arabinda Dhal, N. Chinara and P. Dhal.2020. Assessment of various nutritional media, temperature and colour on growth behavior of Blue oyster mushroom in Odisha, India. *International Journal of Current Microbiology and Applied Sciences*. 9(3):842:847.

Popular articles:

- Chinara, N.2019. “Cultivation of milky mushroom”. *Krishijagran*, 6(3) (June), pp.38-40.
- Chinara, N.2019. “Paddy straw mushroom: partially compost method”. *Krishijagran*, 12(3) (December), pp.32-33.
- Chinara, N. 2020. “Diseases of Cauliflower and their management”. *Krishijagran*, 4(2) (February), pp.38-41.

Paper presented in seminars/symposia:

- N. Chinara, M. K. Mishra and G. Biswal. 2019. Women empowerment through mushroom cultivation training”. National Seminar on “Role of women in Agricultural Production and Marketing” at OUAT, Bhubaneswar from 8-9th January, 2019, pp.20.

Thesis guided:

- Bioefficiency of *Pleurotus ostreatus* on different substrates (Plant Pathology)
- Bioefficiency of *Pleurotus eous* in different substrates and method of cultivation (Plant Pathology)
- Effect of quick freezing and edible coating on paddy straw mushroom. (Agl. Engineering)

Pune Centre

Research Papers

- Balgude, Y.S. and A.P. Gaikwad. 2019. Integrated management of blast of rice. *International Journal of Chemical Studies*, 7(1): 1557-1563.
- Balgude, Y.S., C.R. Kshirsagar and A.P.Gaikwad. 2019. Evaluation on the Efficacy of Modern Fungicides against Blast and Sheath Rot of Rice. *Int.J.Curr.Microbiol.App.Sci.*, 8(03): 83-88.
- Khade, R. S., A. C. Jadhav, M.C. Dhavale and A. P. Gaikwad. 2019. Evaluation of different supplementations on growth and yield of elm oyster (*Hypsizygus ulmarius*) mushroom. *Int.J.Curr.Microbiol.App.Sci.*, 11(08):
- Khade,R. S., A. C. Jadhav, M.C. Dhavale and A. P. Gaikwad. 2019. Analysis of proximate constituents of elm oyster (*Hypsizygus ulmarius*) mushroom due to substrate supplementation. *Contemporary Res. in India*, 9(4):

Popular articles:

- A.P. Gaikwad, A.C. Jadhav and M.C. Dhavale. 2019. *Alimbi cheaaharatil mahatva*. Nov, 2019.

Book Chapters:

- Bhalerao V. K., **A. P. Gaikwad**, C. D. Deokar and K. S. Raghuwanshi (2019). The Mystical world of Mushrooms: In “Advancing Frontiers in Mycology and Mycotechnology”, ed by Satyanarayana, T., Deshmukh S. K., and Deshpande, M. V.. Publ. by Springer Nature, Heidelberg, Germany, pp: 1-52.
- Gaikwad, A. P. (2020). Scrutinised the chapter on Mushroom production technology in Book on “Agricultural ScienceTechnology” for 12th standard, published by Balbharati, Gov. of Maharashtra.

Thesis guided:

- Dr. A. P. Gaikwad guiding M.Sc. student on Estimation of losses caused by seed discolouration of paddy in Western Maharashtra.
- Dr. A. C. Jadhav Guiding two M.Sc. students for PG research work on Evaluation of different supplementations on growth and yield of elm oyster (*Hypsizygus ulmarius*) mushroom and Influence of enriched spent mushroom substrate on growth and yield of Radish crop.

Academic activities

- Dr. A. P. Gaikwad teaching AEL-PATH-486-Mushroom Production (credits:0+20=20) and H-PATH-364-Mushroom cultivation (credits:0+01=01)
- Course No. Path 503 - Plant Bacteriology (credits:2+1=3) Course No. AEL-PATH-486-Mushroom Production (credits:0+20=20)
- Dr. A. C. Jadhav teaching MICRO - 502 –Microbial physiology & Metabolism (credits:3+1=4), MICRO-505- Microbial Biotechnology (credits:2+1=3) and AEL-PATH-486-Mushroom Production

Nauni Centre

Thesis Guided:

- M.Sc theses on Utilization of spent mushroom substrate for button mushroom compost preparation by Ms. Abha Thakur and Studies on cultivation of shiitake mushroom by Mr. Kushager Bhardwaj.

Academic activities:

- Undergraduate Courses on Mushroom cultivation ELH-415 (0+10), Fundamentals of plant pathology PPP-211 (2+1) and Industrial Training in mushroom RHW-421 (0+3).
- Post graduate Courses on Mushroom Production Technology PP-517 (2+1), Principles of plant pathology PP-504 (3+0), Principles of plant disease management PP-506 (2+1), Master's seminar PP-591(1+0) and Doctoral seminar PP-691(1+0).

Pusa Centre

Popular articles: Nil

Paper presented in seminars/symposia: Nil

Ranchi Centre

Popular Articles: Nil

Technology Transfer: Nil

Workshop/ Seminar/Symposium/Training Attended: Nil

Udaipur Centre

Research papers: Nil

Popular articles: Nil

Technical bulletin: Nil

Paper presented in seminars/symposia: Nil

Thesis Guided: Nil

Academic activities: Nil

News paper articles: Nil

Coimbatore Centre

Research papers:

- K. Priya, G. Thiribhuvanamala, A.Kamalakannan and A.S Krishnamoorthy.2019. Antimicrobial Activity of Biomolecules from Mushroom Fungi against *Colletotrichum capsici* (Syd.) Butler and Bisby, the Fruit Rot Pathogen of Chilli *Intl.J.of Current and Applied Microbiology*.8(2): 1172-1186.
- K.Sakthivel, G.Thiribhuvanamala, S.Madhavan and V.Prakasam.2019 Substrate induced lignolytic enzyme secretion for maximising the yield of Black Poplar mushroom, *Agrocybe aegerita* under subtropical condition. *Journal of Mycology and Plant Pathology* , 49(2):17-176.

Books:

- A.S. Krishnamoorthy S. Nakkeeran G. Thiribhuvanamala M. Karthikeyan ,P.latha .2019. MUSHROOMS Rise of Research and Retreats for Humanity, Kumaran Computers, Coimbatore (ISBN: 978-93-5391-742-5) 323 p.
- A.S. Krishnamoorthy S. Nakkeeran G. Thiribhuvanamala Dr. M. Karthikeyan , P.Latha .2019 Mushrooms the network of knowledge. Kumaran Computers, Coimbatore ISBN: 978-93-5391-956-6) 76p.

Book Chapters:

- G.Thiribhuvanamala, A.S Krishnamoorthy and K. Angappan Macrobasidiomycetes mediated bio-remediation in mitigating environmental pollution In: MUSHROOMS Rise of Research and Retreats for Humanity (Eds.Krishnamoorthy et al., Kumaran Computers, Coimbatore) PP: 98 -116(ISBN: 978-93-5391-742-5).
- Priya.K, Thiribhuvanamala.G, Kamalakannan A, Haripriya. S Krishnamoorthy A.S and Priyanka. S.2019 Biomolecules from *Ganoderma lucidum* against plant pathogens In: MUSHROOMS Rise of Research and Retreats for Humanity (Eds.Krishnamoorthy et al., Kumaran Computers, Coimbatore) pp:72-97 (ISBN: 978-93-5391-742-5).
- Kiran kumar N, Jothi R, Krishnamoorthy A S, Thiribhuvanamala G and Kamalakannan A2019. Recent trends in liquid spawn production technology of *Volvariella volvacea* (Bulliard Fries) Singer In: MUSHROOMS Rise of Research and Retreats for Humanity (Eds.Krishnamoorthy et al., Kumaran Computers, Coimbatore) pp:190-217 (ISBN: 978-93-5391-742-5).
- Krishnamoorthy, A. S., Sangeetha, C. and Nandinidevi S .2019. Mushroom Biomolecules in Crop Protection In: MUSHROOMS Rise of Research and Retreats for Humanity (Eds.Krishnamoorthy et al., Kumaran Computers, Coimbatore) PP: 1-17 (ISBN: 978-93-5391-742-5).

Paper presented in seminars/symposia: Nil

Thesis Guided /Academic activities/Students research work:

M.Sc. (Agri.) Plant Pathology

- Characterization of antimicrobial compounds from mushroom fungi and medicinal plants against *Colletotrichum capsici*, an inciting agent of chilli anthracnose.
- Morphostructural changes due to antimicrobial metabolite from *Ganoderma lucidum* against *Colletotrichum gloeosporioides* causing anthracnose of Mango.

Teaching courses handled:

Under Graduate

Teaching courses EXP 401, Commercial spawn and mushroom production (0+5), PAT 222, Introductory Plant Pathology (1+1), PAT 302, Diseases of field crops and their management and PAT 251, Fundamentals of Plant Pathology, Nematology and disease management

Barapani

Research articles:

- Princejayasimha P, Baiswar P, Rajesh Kumar, Majumder D and Sandip Patra. 2019. Molecular characterization of *Sclerotium* spp. in Meghalaya. *Journal of Eco-Friendly Agriculture*. 14(2): 61-62.
- R. Laloo, Baiswar P, Majumder D and D.M. Firake. 2019. Host plant resistance against *Rhizoctonia solani* AG 1-IB causing foliar blight of soybean in Meghalaya. *Journal of Eco-Friendly Agriculture*. 14(2): 63-68.
- Kaleeswaran G, Firake D.M., Behere GT, Challa G, Sanjukta RK and Baiswar P. 2019. Insecticidal potential of traditionally important plant, *Zanthoxylum armatum* DC (Rutaceae) against cabbage butterfly, *Pieris brassicae* (Linnaeus). *Indian Journal of Traditional Knowledge*, 18(2): 304-311.

International/National Symposium Presented/attended/organized

- Baiswar P. 2019. Evaluation of Oyster Mushroom (*Pleurotus* sp.) strains in Meghalaya. (In) International Symposium on Agri Skills for convergence in research, industry and livelihood (ACRIL) from 28 Nov to 1 Dec, 2019 at Kalyani, West Bengal.
- Baiswar P. 2020. Hyperparasites in managing plant pathogens: status and future prospects (invited lecture) during 7th International conference of Indian Phytopathological Society “Phytopathology in achieving UN Sustainable goals” from 16-20 January 2020 at IARI, New Delhi.

Books:

- Das A, Layek J, Babu S, Ramkrushna GI, Baiswar P, Krishnappa R, Devi MT, Kumar M and Prakash N. 2019. Package of practices for organic production of important crops in NEH Region of India. ICAR Research Complex for NEH Region, Umiam. pp. 228 ISBN: 978-93-5382-944-5.
- 2. Baiswar P, Tasvina R. Borah, Akoijam R. Singh, Shweta Singh, D. M. Firake and Sandip Patra (Eds). 2019. Book of abstracts and Souvenir (pp. 137). National Symposium on Enhancing Farm Income through Sustainable Plant Health Management held at ICAR Research Complex for NEH Region, Umiam, Meghalaya during 6-8th November 2019.

Jorhat (Assam)

Participation in seminar/symposia/workshop/kisan mela, etc

- Participated in Kisan Mela organized at RARS, AAU, Titabar and SRS, AAU, Buralikson from 06.10.19 and 16.10.19.

Thesis Guided:

- M.Sc. Degree completed on *Fungus nematode interaction and management of root rot of Patchouli and Enhancing biocontrol potential of Trichoderma viride with micronutrients against Colletotrichum capsici*.
- Ph.D. Degree completed on *Standardization of mass multiplication technique for Cordyceps bassiana and study on its medicinal use*.
- Guiding 4 M.Sc. and 2 Ph.D. students are pursuing their research works at present.

Academic activities:

- Two 3 credit and one 2 credit courses at M.Sc.level.
- One 3 credit and one 2 credit courses at Ph.D.level.

Ludhiana

Research Papers:

- Harpreet Kaur, S Kapoor and S Sharma (2019) Correlating lignocellulose converting enzymes, substrate utilization and biological efficiency of *Pleurotus eryngii* strains grown on different agricultural residues. *Indian J. Hort.* 76(2) : 305-311.

- Gagandeep Kaur, A Kalia and HS Sodhi (2019) Size controlled, time-efficient biosynthesis of silver nanoparticles from *Pleurotus florida* using ultra-violet, visible range and microwave radiations. *Inorganic and Nano-Metal Chemistry*. <https://doi.org/10.1080/24701556.2019.1661466.1-7>
- Ashok K. Dhakad, M Ikram, S Sharma, S Khan, VV Pandey and A Singh (2019) Biological, nutritional and therapeutic significance of *Moringa oleifera* Lam. *Phytotherapy Research* 33: 2870-2903.
- Samandeep Kaur, S Sharma and HS Sodhi (2019) Enzyme estimation based on bacterial interactions with *Pleurotus* spp. *Mush. Res.* 28(2): 129-137
- Amanpreet Kaur and HS Sodhi (2018) Morphological and biochemical characterization of wild mushrooms from sub mountainous region of Punjab state. *Journal of Agricultural Engineering and Food Technology* 5 (3): 118-121

Popular Articles:

- S Kapoor, S Sharma and HS Sodhi (2019) Garm rutt dian khumban di kasht. *Horticulture Newsletter* 15(II): 11-12.
- S Sharma, S Kapoor and HS Sodhi (2020) Cultivation of winter mushrooms and their nutritional value. *Progressive Farming* 56 (1): 20-21.
- S Sharma, S Kapoor and HS Sodhi (2020) Sard rutt dian khumban de poshtik tatt ate kasht vidhi. *Chang Kheti* 56(1): 19-20.

Book Chapter:

- Shivani Sharma (2020) Pharmacological importance of *Lentinus edodes* (Berk.) Pegler and its bioactive compounds. *Ethnobotany and Biochemistry of Medicinal Plants*, Discovery Publishing House Pvt. Ltd., New Delhi (India).

Thesis Guided:

- Amanpreet Kaur (2019). Collection, identification and domestication of wild edible Agaricales from Punjab. Punjab Agricultural University, Ph.D. Thesis
- Biosorption of electronic waste through microbial cultures: A Bioremediation technology. Punjab Agricultural University, M.Sc. Thesis.
- Karanpreet Singh (2019). *Calocybe indica* strain evaluation for lignocellulolytic enzymes in relation to mushroom yield. Punjab Agricultural University, M.Sc. Thesis.
- Balwinder Singh (2020). Potential screening of *Agaricus bisporus* strains and casing variables for improving the yield potential of mushrooms. Punjab Agricultural University, M.Sc. Thesis.

Nagaland

Book Chapters: Nil

Popular articles: Nil

Technical bulletins: Nil

Folders: Nil

Paper presented in seminars/symposia: Nil

Srinagar

Research articles: Nil

Paper presented in seminars/symposia: Nil

Bangalore

Popular articles:

- Meera Pandey, Chandrashekara C. and G. Senthil Kumaran, 2019. Bele tyajyadinda aahara uthpadane (Kannada). *Krishi Jagarane*, p: 22-25, 2019.

Technical bulletins:

- 'Ayajinde mrayeacho machi thama ma Haiyiyaa akkupu' (Production technology of edible and medicinal mushrooms). Published Technical Bulletin in Arunachal Pradesh Idu Mishmi Language.
- B, Hanumanthegowda, B. Narayanaswamy, P. Nandeesh, Chandrashekar C. Jayanthi mala, Sunjatha Naayar and Karolina Ratinakumari, 2020, Raitha snehi krishi yojanegala kaipidi, Technical Bulletin No. TB 01. 2020, 68pp.

Hisar

Popular article: Nil

Papers presented in the symposium: Nil

Academic activities: Nil

Jammu

Research papers:

- Gupta, S., Kumar, S., Summuna, B and Singh, R. 2020. Management of contaminants in mushroom spawn prepared using different substrates and supplements. *Indian Journal of Agricultural Sciences* (Accepted).

Leaflet/booklet/folders/Technical bulletin

- Technical Bulletin on Jammu Sambhaag mein doodhiya mushroom kee kheti compiled by Sachin Gupta, Anil Gupta, Ranbir Singh and Arvind Isher. Division of Plant Pathology, SKUAST-J, Jammu.
- Experiential learning training manual on Mushroom cultivation and Spawn production compiled by Sachin Gupta, Anil Gupta, Varsha Gupta and Ranbir Singh. Division of Plant Pathology, SKUAST-J, Jammu

Paper presented in seminars/symposia:

- Presented the paper entitled “Influence of different substrates on nutritional and antinutritional factors of *Macrocybe gigantea*” presented during the 5th J&K Agriculture Science Congress held at SKUAST-J, Jammu from 14th to 16th October, 2019.

Thesis Guided:

- M.Sc. thesis entitled “*Evaluation and Standardization of Horse Dung Manure Based Compost Formulation for Button Mushroom Cultivation*” submitted by Roohi Jaan (J-17-M-509) to Faculty of Postgraduate Studies under the supervision of Dr. Sachin Gupta.

Academic activities:

- Taught PG course PATH- 516 on Mushroom Cultivation (2 + 1) and UG course ELP on Mushroom Cultivation and spawn production (0+10)

Pantnagar

Research papers:

- Prerna Dobhal and Mishra, S.K. 2019. Cultural Study of Fire-fang Isolates of Mushroom Compost. *International Journal of Pure and Applied Bioscience*, **7** (3): 335-340.
- Kumar V, Mishra SK and Kaur Manjeet. 2019. Effect of different media, temperature and pH on radial mycelial growth of *Lentinula edodes* strain Le-17-04. *Journal of Pharmacognosy and Phytochemistry*, **8** (1): 345-348.

Paper presented in seminars/symposia:

- Sholyavei and Mishra S.K. 2020. Yield evaluation of Lion's mane mushroom. Abstract in souvenir. An International Conference on Biotechnological Interventions for Societal Development in Bio Sangam, Department of Biotechnology, MNNIT, Allahabad. Feb 21-23, 2020. P43.

Thesis Guided: M.Sc. Thesis

- Studies on Feasibility of Spawn Production through Basidiospores of *Pleurotussajaor-caju*(Fr.) Singer

Academic activities:

- APP 517 Mushroom Production Technology
- Village Attachment Programme

Patent: 01

- Application successfully accepted for patenting "An Efficient Method for Spawn Production of Oyster mushroom. Application no. 202011000959 dated Jan 9, 2020

Pasighat

Popular articles: Nil

Technical bulletins/ Training manual: Nil

Folders: Nil

Sikkim

Research papers:

- Singh Shweta, Avasthe Ravi Kant, Raj Chandramani, Kapoor Chandan, Sangay, Lepcha Sangay Chuzem. 2019. Spent mushroom substrate- a multifaceted utility for organic agriculture. Accepted for CAU Farm Magazine, 10 (1).

Book Chapter:

- Singh Shweta, Raj Chandramani, Lepcha Sangay Chuzem and Chhetri Kala. 2019. Organic oyster mushroom production techniques. Training manual on Organic Farming in Sikkim. Avasthe R.K. and Yadav Ashish (Eds.). 2019. Published by ICAR- National Organic Farming Research Institute (Formerly ICAR Research Complex for NEH Region, Sikkim Centre, Tadong-737102, Gangtok, Sikkim, India. Pp 337-342. (SKM/TM/2019/01).
- Singh Shweta, Raj Chandramani, Kapoor Chandan, Chhetri Kala and Lepcha Sangay Chuzem. 2019. Oyster mushroom spawn production techniques. Training manual on Organic Farming in Sikkim. Avasthe R.K. and Yadav Ashish (Eds.). 2019. Published by ICAR- National Organic Farming Research Institute (Formerly ICAR Research Complex for NEH Region, Sikkim Centre, Tadong-737102, Gangtok, Sikkim, India. Pp 343-351 (SKM/TM/2019/01).

Meerut

Research Paper :

- Tarun Kumar, Samsher singh, Suresh Chand, Gopal Singh and Vaishali, 2019. Nutritional content of different pretreated mushroom (*P. florida*) powder. *International J. Agri. Engg.*, **12**(2):256-260.
- Vinay Kumar, Gopal Singh, Satpal Singh, J.P. Kannaujia, Naimesh Kumar and Anil Dohere. 2019. Effect of different inorganic and organic additives on spawn growth of two strains (CI-17-04 and CI-17-08) of milky mushroom. *Journal of Pharmacogynosity and Phytochemistry*, **8**(4):2716-2719.
- Ashish Kuma,r Gopal Singh and Prashant Mishra. 2019. Compartive Study of effect of casing material on the production of milky Mushroom. *Journal of Plant Development Science*, **11**(10):621-624.
- Sandeep Kumar, Gopal Singh, Ramji Singh, Prashant Mishra, S.K. Sachan and R.S. Sengar. 2020. Effect of different cereals flour additives on sporophores production of oyster mushroom. *International J. Chemical Studies*, **8**(1):698-701.

Popular articles:

- Satpal Singh, Gopal singh, Prashant Mishra and Ramesh singh 2020. Achha svasth chahiye to mushroom khaiye. Madhya bharat krishak bharat patrika. Pp. 21.
- Satpal Singh, Gopal Singh and Sandeep Kumar 2020. Mushroom ke Poshakiya Mahatv. Pp. 30-32.
- Satpal Singh, Gopal Singh 2019. Dhaan ki Pual Jalaye nahi, Mushroom uga kar Dhan Kamaye. Pp. 5-6.
- Sandeep Kumar Gopal Singh, Mahandar Partap Gautam, Jaskaran Singh, Vivek Kumar Trivedi and Devashis Golui 2019. Aadhunik Taknik se kare Dhingri Mushroom Ki kheti. *Krishi Lakshya*, 2(5):Pp12-13.

Leaflet/booklet/folders/Technical bulletin

- Mushroom utpadan path pradarshak. Tech bulletin, SVPUAT, Meerut.
- Mushroom ki unnat kheti. Leaflet, SVPUAT, Meerut.

Thesis guided :

- Vinay Kumar 2019. Effect of inorganic and organic additives on spawn production of milky mushroom. MSc. Thesis. Pp:67.
- Jai Prakash Kannaujia 2019. Studies on spawn quality and major fungal disease management of oyster mushroom. Ph.D. Thesis. Pp : 141.
- Sandeep Kumar 2020. Studies on effect of Different non Chemical Additives and botanicals on production of Oyster Mushroom. Ph. D. Thesis. Pp. Thesis submitted.

Academic activities :

- Taught two courses on Mushroom Production Technology PP-517 and Experiential Learning on Mushroom, AEL-312.

Almora centre

Book Chapter:

- Diseases of mushroom and their management 2019. In: Integrated pest management in major crops. Stanley J, Mishra KK, Subbanna ARNS, Rajashekara H and Pattanayak A. (Eds.). ICAR-VPKAS, Almora. pp. 116-129.

Popular articles:

- Mishra, K.K., Mishra, P.K. and Stanley, J. 2019. Mushroom Poisoning. *Indian Farmers Digest*, 52(6): 32-36.
- Mishra, K.K. and Rajashekara, H. 2020. Button mushroom ke kavak janitrogva prabandhan. *Kisan Bharti*, 51 (4): 35-37.

Leaflet/booklet/folders/Technical bulletin:

- Mishra K.K., J. Stanley, Rajashekara H., ARNS Subbanna and A. Pattanayak. 2019. Parvatiya ksetron me button mushroom ki kheti. 121/2019. ICAR-VPKAS, Almora.
- Mishra K.K., J. Stanley, Rajashekara H., ARNS Subbanna and A. Pattanayak. 2019. Dhingri mushroom utpadan takniki. 120/2019. ICAR-VPKAS, Almora.

HAIC, Murthal Centre

Kalyani Centre

Manipur Centre

Popular articles

- Sharma S K, Roy S S, Ansari M A, Singh T B, Ningombam A, Singh Th S and Prakash N. 2019. Mushroom Production technology: A Component of organic farming. In: Training manual on soil health management for organic farming and good agriculture practices in NEH Region., ICAR Research Complex for NEH Region, Manipur Centre, Lamphelpat, Imphal-795004 (India), pp. 48-59.
- Sharma S K, Roy S S, Ansari M A, Ningombam A, Bhuvaneshwari S, Singh D, Saraswat P K, Singh Th S, Devi Y P and Prakash N. 2019. Mushroom Cultivation: A profitable venture. In: Souvenir of state level farmers fair on Bridging Lab to Land gap for doubling farmers' income, December 20-23, 2019, ICAR Research Complex for NEH Region, Manipur Centre, Lamphelpat, Imphal-795004 (India), pp 33-44.

Leaflet/booklet/folders/Technical bulletin:

- Booklet on scientific mushroom cultivation

Mizoram Centre

Port Blair Centre:

Book Chapter:

- K.Sakthivel, B.Gangaiah, R.K. Gautam, V.K. Pandey, P.K. Singh and K. Venkatesh. 2019. Mushroom Cultivation in Andaman & Nicobar Island-Present and Future Prospects. In: A.S. Krishnamoorthy, S. Nakkeeran, G. Thirubhuvanamala, P. Latha, K. Angappan, M.Muthamilan and K. Prabakar (Eds). Mushrooms-Rise of Research and Retreats for Humanity. Department of Plant Pathology, Centre for Plant Protection Studies. Tamil Nadu Agricultural University Coimbatore-641003, PP. 154-163. ISBN: 978-93-5391-742-5.

Raipur Centre

Tripura Centre

Vellayani Centre

Thesis Guided:

- Standardisation of biomedicinal enrichment in edible oyster mushroom *Pleurotus* spp.
- Strain improvement of *Calocybe* spp through interspecific hybridization.

Academic activities:

- Conducting UG classes and PG classes (M.Sc. and Ph.D.).
- MSc- Mycology, Mushroom production technology.
- Ph.D.- Advanced Mycology.

8. PERSONNELIA

Staff position at various AICMIP Centres during 2019-20

Sl.No	AICRP Centre	Name of staff	Designation	Email and Phone
A. ICAR Institute based Coordinating Centre				
1.	ICAR-RC for NEH Region, Umiam 793 103, Meghalaya	Dr Pankaj Baiswar	Sr. Scientist, Plant Pathology	pbaiswar@yahoo.com 9436107733
2.	ICAR Sikkim Centre, Tadong, Gangtok-737102	Dr. Shweta Singh	Scientist, Plant Pathology	shwetabac@gmail.com 9472532608
3.	ICAR-RC-NEH, Arunachal Pradesh, Basar-791101	Dr Raghuvver Singh	Scientist, Plant Pathology	singhraghuveer@gmail.com 9774315749
4.	ICAR-RC-NEH, Nagaland, Jharnapani, Medziphema - 797 106	Dr.Aabon W Yanthan	Scientist (Hort.)	aabon.iari@gmail.com 9718852675
5.	ICAR-RC-NEH, Mizoram, Kolasib 796 081, Mizoram	Sunil Kumar Sunani	Scientist (Plant Pathology)	sunilkumarsunani12@gmail.com 9668369379
6.	ICAR-RC-NEH, Manipur, Lamphelpat, Imphal - 795 004	Dr. Susheel Kumar Sharma	Scientist (Plant Pathology)	susheelsharma19@gmail.com 8729974401
7.	ICAR-RC-NEH, Tripura, Lembucherra, Tripura West, Pin-799210	Dr. Lopamudra Sahoo	Scientist (Plant Pathology)	lucy2311@gmail.com 8974580427
8.	ICAR –RC-ER, Research Centre, Plandu, Ranchi 834010 (Jharkhand)	Dr. Pradip Kumar Sarkar	Scientist (Agroforestry)	pradipsarkar.tripura@gmail.com 8603819864
9.	ICAR-Central Island Agri. Res. Institute, Port Blair (Andaman & Nicobar Island)	Dr. Vivek Kumar Pandey	Subject Matter Specialist (Plant Protection)	vpandey84@gmail.com 9434268051
10.	ICAR-Indian Institute of Horticultural Research, Bangalore	Dr. Chandrashekara C	Scientist (Plant Pathology)	Chandrashekara.C@icar.gov.in 9557935569
B. SAU based Coordinating Centre				
1	Dept. of Plant Pathology, Centre for Plant Protection studies, Tamil Nadu Agricultural University, Coimbatore - 641 003	Dr.G.Thiribhuvanaml Dr.P.Muthulakshmi Dr.T.Raguchander,	Assoc.Professor (Plant Path.) Assoc.Professor (Plant Path.) Prof and Head	ragumala2000@gmail.com 9629496555
2.	Centre for Tropical Mushroom Research and Training, Dept. of Plant Pathology, Orissa Agricultural University, Bhubaneswar, Orissa	Dr. M.K.Mishra Sri Niranjana Chinara	Professor & OIC Asst Professor	aicrpbbsr@gmail.com 9437115119
3.	Dept. of Plant Pathology, College of Agriculture, CCS Haryana Agricultural Univ., Hisar - 124 005	Dr. Satish Kumar	Asst. Professor (Plant Pathology)	skmehta2006@gmail.com 9466730216
4.	Department of Microbiology, College of Basic Sciences and Humanities, Punjab Agricultural University, Ludhiana – 144 001.	Dr. H. S. Sodhi Dr Shivani Sharma Kewal Singh Vipin Baroot Gurpreet Singh Shinder Kaur	Sr. Mycologist Asst. Mycologist Sr. Laboratory Asstt. Fieldman Typist cum clerk Beldar	drhssodhi@rediffmail.com 9414513682

5.	Mushroom Research and Training Centre, G.B. Pant University of Agri. & Tech., Pantnagar – 263 145 (Uttarakhand)	Dr SK Mishra Smt. Ranu Singh Mr. Sarvesh Kumar Mr. Dev Kumar	PI & Senior Research Officer Technical Asstt. Field Asstt. (Retd) Beldar	pi.aicrpmushroom@gmail.com 9410405616
6.	Dept of Plant Pathology, CoHF, CAU, Pasighat – 791 102 (Arunachal Pradesh)	Dr. RC Shakywar	Assistant Professor	rcshakywar@gmail.com 9402477033
7.	AICRP on Mushroom, College of Agriculture, MPKV, Pune-411 005 (MS)	Dr. A.P. Gaikwad Dr. AC Jadhav Mrs. M.C. Dhavale Shri. N. G. Desai Shri. S.C. Pawar	Mycologist Jr. Mycologist Jr. Res. Asstt. Agril. Asstt LDC typist	mushroompune@rediffmail.com 9850459448
8.	Mushroom Research Laboratory, Dept. of Plant Pathology, IGKV, Raipur – 492 006 (Chhattisgarh)	Dr. C. S. Shukla Dr. Harvinder Singh Shri B. L. Sinha Smt. Surji Bai Yadav	Mycologist Asst. Mycologist Field Ext Officer Peon (Beldar)	cshukla60@gmail.com 9893950649
9.	Department of Microbiology, Faculty of Basic Sciences and Humanities, RPCAU, Pusa (Samastipur) - 848 125 (Bihar)	Dr. Dayaram	Professor	raudayaram@gmail.com 9430464088
10.	Dept. of Plant Pathology, Rajasthan Collage of Agriculture, Maharana Pratap University of Agric. & Tech., Udaipur – 313 001 (Rajasthan)	Dr. S. S. Sharma Mrs. Kala Nath Mr. A Kumar Nagda Mr. Nathu Singh Mr. Kishan Singh Rajput	Professor Field Supervisor Lab Assistant Clerk Grade-II (Retired on 28.02.2019) Beldar	sharmass112@gmail.com 7073105583
11.	Department of Plant Pathology CoA, Vellayani – 695 522 Thiruvananthapuram, (Kerala)	Dr. Heera G. Dr. Deepa Rani	Asst. Professor Farm Officer	susha.thara@kau.in 9387813940
12.	CSK HPKV, Palampur (HP)	Dr. Arun Kumar Sud	Professor	arunsud7217@gmail.com
C. State Govt based Coordinating Centres				
1.	Haryana Agro Industrial Corporation R & D Centre, Murthal, Sonapat (Haryana)	Dr. Ajay Yadav	Scientist	Drajaysingh2@gmail.com 9467825549
D Cooperating centres				
1.	Mushroom Research & Production Unit, Department of Mycology and Plant Pathology, Dr. Y.S. Parmar Univ. of Horticulture and Forestry, Nauni – 173 230, Solan (HP)	Dr. Dharmesh Gupta Dr. Savita Jandaik	Pr. Scientist Scientist	dkguhf@rediffmail.com 9418030489
2.	ICAR-VPKAS Almora, 263 601, Uttarakhand	Dr. KK Mishra	Pr. Scientist	mishrakpatho@gmail.com 9997887519
3.	Division of Plant Pathology, Faculty of Agriculture, SKUAST-J, Main Campus Chatha, Jammu (J&K)-180 005	Dr Sachin Gupta	Assoc. Prof.	sachinmoni@gmail.com 9419160299
4.	Mushroom Research and Training Centre, Division of Plant Pathology, SKUAST-	Dr Tariq Ahmad Sofi	Assistant Professor	tariqsofi1@gmail.com 9419444019

	Kashmir, Shalimar, PIN 191121, Kashmir			
5.	Dept of Plant Pathology, Assam Agricultural University, Jorhat-785013, District Jorhat, Assam	Dr. Dilip Kumar Sarmah	Principal Scientist	Sarmah.dilip@gmail.com 9954444547
6.	Dept. of plant Pathology, SVBPU&T, Meerut (UP)- 250110	Dr Gopal Singh	Professor	singh_gopal2009@rediffmail.com 9412465255
7.	Dept. of Plant Pathology, Faculty of Agriculture, Bidhan Chandra Krishi Vishwavidyalaya, Mohanpur (WB)- 741 252	Dr (Ms) Rishu Sharma	Assist. Prof.	rrishu.sharma90@gmail.com 9419295531 8697282866
8.	Deptt. Of Plant Pathology, SD Agricultural University Sardar, Krushinagar – 385506 (Gujrat)	Dr. K.K. Patel	Associate Prof.	Drkkpatel59@gmail.com 9998815195
9.	Dept. of Plant Pathology, SV Agriculture College, Tirupati- 517 502	Dr.Sharda J. Lakshmi	Prof. (Dept. of plant Pathology)	headpathsvac@gmail.com 9912840878

9. BUDGET / RELEASED 2019-20

Centre	Recuriing Contingency (Rs. Lakh)				NEH		TSP		SC Sub Plan		Non-Recurring Contingency (Rs. Lakh)		Total (Rs. Lakh)	
	Estt. Charges		Contingency including TA								Equipments and Works			
	a	b	a	b	a	b	a	b	a	b	a	b	a	b
PAU, Ludhiana	53.50	53.50	2.20	2.20	--	--	--	--	4.00	4.00	--	--	59.70	59.70
TNAU, Coimbatore	32.00	32.00	2.30	2.30	--	--	--	--	3.00	3.00	--	--	37.30	37.30
MPKV, Pune	40.83	40.83	2.60	2.60	--	--	--	--	1.00	1.00	--	--	44.43	44.43
GBPUA&T, Pantnagar	30.00	30.00	1.50	1.50	--	--	--	--	3.00	3.00	--	--	34.50	34.50
IGKVV, Raipur	35.00	35.00	2.60	2.60	--	--	4.00	4.00	8.00	8.00	--	--	49.60	49.60
MPUAT, Udaipur	35.00	35.00	2.80	2.80	--	--	2.00	2.00	6.00	6.00	--	--	45.80	45.80
KAU, Kerala	10.50	10.50	2.10	2.10	--	--	--	--	1.00	1.00	--	--	13.60	13.60
HAU, Hisar	9.00	9.00	1.00	1.00	--	--	--	--	3.00	3.00	--	--	13.00	13.00
OUAT, Bhubneshwar	8.00	8.00	1.00	1.00	--	--	4.00	4.00	7.00	7.00	--	--	20.00	20.00
RAU, Samastipur	--	--	1.50	1.50	--	--	3.00	3.00	12.00	12.00	--	--	16.50	16.50
CAU Pasighat	--	--	0.70	0.70	3.00	3.00	--	--	--	--	--	--	3.70	3.70
HAIC, Murthal	--	--	2.40	2.40	--	--	--	--	--	--	--	--	2.40	2.40
HPKV, Palampur	--	--	1.35	1.35	--	--	--	--	1.00	1.00	--	--	2.35	2.35
ICARRC ER, Ranchi	--	--	0.70	0.70	--	--	2.00	2.00	--	--	--	--	2.70	2.70
ICAR RC NEH Region	--	--	0.70	0.70	4.00	4.00	--	--	--	--	--	--	4.70	4.70
ICAR RC, Sikkim	--	--	0.70	0.70	4.00	4.00	--	--	1.00	1.00	--	--	5.70	5.70
ICAR RC, Basar	--	--	0.70	0.70	2.00	2.00	--	--	--	--	--	--	2.70	2.70
ICAR RC, Nagaland	--	--	0.70	0.70	4.00	4.00	--	--	--	--	--	--	4.70	4.70
ICAR RC, Mizoram	--	--	0.70	0.70	4.00	4.00	--	--	--	--	--	--	4.70	4.70
ICAR RC, Tripura	--	--	0.70	0.70	3.00	3.00	--	--	--	--	--	--	3.70	3.70
ICAR RC, Manipur	--	--	0.30	0.30	4.00	4.00	--	--	1.00	1.00	--	--	5.30	5.30
ICAR-CARI, Port Blair	--	--	3.20	3.20	--	--	--	--	--	--	--	--	3.20	3.20
IIHR, Bangalore	--	--	3.00	3.00	--	--	--	--	1.00	1.00	--	--	4.00	4.00
UHF, Nauni	--	--	0.50	0.50	--	--	--	--	1.00	1.00	--	--	1.50	1.50
VPKAS, Almora	--	--	1.20	1.20	--	--	--	--	3.00	3.00	--	--	4.20	4.20
SKUAST, Kashmir	--	--	2.50	2.50	--	--	--	--	--	--	--	--	2.50	2.50
SKUAST, Jammu	--	--	1.50	1.50	--	--	--	--	--	--	--	--	1.50	1.50
AU Assam	--	--	0.75	0.75	4.00	4.00	--	--	2.00	2.00	--	--	6.75	6.75
SVBP, Meerut	--	--	1.50	1.50	--	--	--	--	2.00	2.00	--	--	3.50	3.50
BCKVV, Kalyani	--	--	1.60	1.60	--	--	--	--	2.00	2.00	--	--	3.60	3.60
DAU, Gujrat	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANGRAU Hyderabad	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	253.83	253.83	45.00	45.00	32.00	32.00	15.00	15.00	62.00	62.00	--	--	407.83	407.83

a- sanctioned amount; b- actual release