HADP

**Sher-e-Kashmir**
**University of Agricultural Sciences & Technology of Kashmir**

Main Campus, Shalimar, Srinagar Kashmir (J&K) India-190025

## SKUAST-Kashmir

# PROGRESS REPORT 2023-24

## Holistic Agriculture Development Programme of Jammu & Kashmir

4TH BEST STATE AGRICULTURAL UNIVERSITY IN INDIA

1 SAU NIRF-INNOVATION BAND

ICAR ACCREDITATED SKUAST-K A GRADE UNIVERSITY

**Directorate of Research, SKUAST-K**

# CONTENTS



# A. Facilities Created

## Physical progress

### i. Seed and planting material

1. Strengthening of Seed Testing Lab at Division of Genetics and Plant Breeding
2. Tissue Culture facility for commercial Floriculture & exotic vegetables
3. Establishment of Fish feed mill and Trout Hatchery
4. Apple Rootstock bank for an area of 1 Ha with 30,000 plants of M-09
5. Diversified rootstock bank with three rootstocks viz M-09 T337, MM-111, MM-106 and a new mutant of M-09
6. MOET-IVF facility being established (Equipment purchased 30% civil works complete

### II. Processing and Value addition

1. Processing and Handling Unit for MushkBudji equipped with Modern Rice Mill and Rice Packing Machine at Khudwani & KVK, Kulgam
2. Establishment of Millet Threshing and Milling Unit at FoA, Wadura
3. Mustard oil Filter Press Facility in MRCFC Khudwani
4. Fur Article Development Facility
5. Carding cum Felting unit

### III. Production facility

1. Establishment of Silkworm Crop Improvement Laboratory
2. Establishment of one Prototype Production Centre
3. Facility created for Research and Cultivation for High value Nutraceutical lignolytic (Saw dust) Mushrooms
4. Nanoparticle coating unit
5. Poultry House with Cage system upgraded at F VSc & AH Shuahama

### IV. Sustainable Agriculture Research Centres

1. Biofertilizer screening & Production Centre at Faculty of Agriculture Wadura
2. Biopesticide screening & Production Centre at MRCFC Khudwani
3. Bio-Analysis Centre at Faculty of Agriculture Wadura
4. Insect Bio Control Lab at SKUAST Shalimar upgraded
5. Fungal/disease Bio-Control Lab at SKUAST K upgraded

### V. Laboratory facilities

1. Macro as well as Micro nutrient estimation in soil, leaf and water facility created
2. Soil Testing and Molecular Breeding upgraded at DARS, Rangreth
3. Soil Micronutrient analysis Facility Created

## B. Centre Of Excellence

1. Centre of Excellence on Herbal Technology at FoF, SKUAST K
2. Centre of Excellence on Integrated Farming System at FoA. Wadura
3. Centre of Excellence in Reproductive Animal Biotechnology at MLRI Mansbal
4. Market Intelligence Cell cum Agricultural Branding Centre
5. Extension Hub established at SKUAST-K Shalimar

## C. Mechanization And Automation

1. AI and ML lab at College of Ag. Engineering Shalimar
2. Five Agricultural machinery custom hiring centres in five districts (KVK Anantnag, Kulgam, Ganderbal, Budgam, Pulwama)
3. Mechanization of 08 University research farms viz. Shalimar farm, DARS Budgam, MLRI Manasbal, MRCFC, Khudwani, FOA, Wadura, MRCS&G, Manasbal, FOF, Benehama, AARS, Pahnoo
4. Mechanization for processing of apple Pruned wood for use in mushroom cultivation
5. Automatic Media Filling Machine, Walk-in Cold Storage in commercial floriculture
6. 5 custom hiring centres for horticulture sprayers in 5 districts
7. Automation of three (03) protected structures for cultivation
8. Mechanisation of 3 Ha Nursery/ mother block
9. AI based and IoT driven operations in HD Apple, vegetable and Livestock


## D. Controlled Structures

1. High Tech I oT Powered Ornamental Nursery with automation of operations
2. 20 Semi High Tech Poly Houses being established at 10 KVKs of Kashmir valley
3. Three (03) Sensor based automated protected cultivation structures (480 m2 ) for Fruit plants
4. High Tech Protected cultivation set up
5. IoT based Walk in Growth chamber at Faculty of Horticulture


# Technical Progress

## E. VARIETIES RELEASED

Ten varieties developed by SKUAST K were released by State Variety Release Committee on 26.03.2024 which include RICE (Shalimar Rice-7, Shalimar Rice-8, Shalimar Rice-9), MAIZE (Pusa Shalimar Maize Hybrid-1), COWPEA (Shalimar Cowpea-3), PEA (Shalimar Pea-2), RAJMASH (Shalimar Rajmash-5), SOYBEAN (Shalimar Soybean-3), WALNUT (Shalimar Walnut-1, Shalimar Walnut-2). Varieties besides being high yielding are location specific and climate resilient.

## F. GERMPLASM BANK

1. Medicinal and Aromatic plant Germplasm Bank at FoF, SKUAST K
2. New silkworm genotypes to enhance the current germplasm for the development of new breeds/hybrids for Jammu and Kashmir.
3. Mushrooms strains imported from Japan for their assessment along with local strains for suitability under local environment.
4. 300 accessions in maize, 250 in pulses and 75 in fodder oats maintained
5. 1.5 lakh propagules produced under commercial floriculture
6. Walnut/ Almond germplasm maintained over an area of 1 Ha
7. Developed a new germplasm bank of Apple with 3333 plants

## G. SEED PRODUCTION AND QPM

### a) Seed

1. 85.24 quintals of Breeder Seed (76.324 q of field crops and 8.906 q of vegetable crops)
2. 450 q of foundation seed of various field and vegetable crops
3. 200 quintal of quality plant material of Shallot
4. 20q Breeders seed, 460q foundation seed of recently released rice/oilseed varieties
5. 40 q quality seed distribution of fodder oats

### b) Planting material

1. 4,000 plants of Walnut, Apple , Almond and other temperate fruit crops
2. 10,000 plants of priority species of MAPs

### c) Animal Breeds developed and distributed (Sheep, Poultry, and Cattle etc.)

1. 40,000 improved breeds of poultry birds
2. 162 elite germplasm of Corriedale, Kashmir merino, FecB, Bharwal goat etc.

## H. SUSTAINABLE AGRICULTURE PRODUCTS

1. Biofertilizers (1,600 litres)
2. Biopesticide (896 litres)
3. Vermi compost ( 2,000 qt.)
4. Vermi culture (1 quintal)
5. Vermi wash (500 litres)
6. Phermones (4,000)
7. Sticky traps (3,000)
8. Anthocorid bug release in cherry (1,000)
9. Housefly pheromone trap (500)

## I. SOFTWARE AND KKG

1. Technical Specification for Hardware finalized and procurements under process.
2. Software solution for KKG and Multi crop decision support system being developed through BISAG.
3. Android App for Poultry Farmers developed.
4. Developed User-Inter of Market-Intell-App

## J. TECHNOLOGY AND INNOVATION

1. Nano-Based Artificial Diet for Silkworm, Bombyx mori L
2. Tractor operated walnut harvester
3. Cultivation of high value edible mushrooms Viz., Enokeii, King Oyester, Shiitake and Ganoderma using pruned apple wood as base substrate.
4. IoT based module for automation of ornamental nursery
5. Biofertilizer and Biopesticide strains identified for commercial Production
6. Land use and Land Cover MAP at district level prepared (10 Districts)
7. Propagation of walnut under sensor based protected structures with higher success rate
8. AI based and IoT driven operations in Apple, vegetable and Livestock
9. Validation of sensor at field scale
10. Customization of IoTs driven by AI and ML in target agricultural crop

# Patents Granted 2023-24

| | | |
|---|---|---|
| 1 | Detection of DNA Plymorphism on polyacrylamide gel and method thereof | 06/03/2023 No: 424177 |
| 2 | Low cost temperature controlled pyrolyser with Heater cum-cooker | 14/06/2023 No: 434516 |
| 3 | A smart farming unit for saffron flower & corm Productionn | 28/06/2023 No: 435971 |
| 4 | Rubber tracked walking tractor | 22-11-2023 No. 471704 |
| 5 | Comprehensive, automatic in-shelled walnut processing system and an application method thereof | 22/11/2023 No: 471699 |
| 6 | Nucleotide sequences for imporving tolerance of plants to environmental stress | 18/12/2023 No: 484202 |
| 7 | Solar Powered Insected trap lighting device | 05/01/2024 No: 396847-001 |
| 8 | Nutritional Herbal compound / Extract and its method of preparation | 15/01/2024 No. 499495 |
| 9 | An improved pre conditioning method of walnut cracking for value addition of kernels | 09/02/24 No. 508996 |
| 10 | An improved multifunctional power operated high efficiency walnut dehuller cum washer | 06/02/24 No 507376 |
| 11 | Portable Kiwi gummy maker machine | 01/02/2024 No 400082-001 |
| 12 | Smart fishing rod | 19/01/2024 No. 399758-001 |
| 13 | Rain Water Harvesting with zero energy | 02-02-2024/ No. 506657 |
| 14 | Low cost mushroom structure design for production of mushroom under cold arid conditions | 12/03/2024 No. 523702 |
| 15 | High efficiency electric walnut grading machine | 13/03/2024 No.524816 |

## Capacity Building and Skill Development

| S.NO | Name of Training | Trainings (No) | Trainees (No) |
|---|---|---|---|
| 1 | Farmers training | 61 | 2007 |
| 2 | Rural youth | 38 | 1656 |
| 3 | Capacity building for line departments | 17 | 444 |
| 4 | Awareness programmes | 30 | 3100 |

## Skilling for entrepreneurship

| S.NO | Name of Training | Trainings (No) | Trainees (No) |
|---|---|---|---|
| 1 | MSME | 550 | 37500 |
| 2 | STRY | 237 | 6000 |
| 3 | Training for Extension Functionaries | 847 | 24886 |
| 4 | License courses | 12 | 4000 |

**Content development for Kissan Daksh portal**

Practical demonstration videos for skill courses

- 86 videos in Kashmiri
- 86 video in Urdu uploaded on Kissan Daksh portal

HADP - 1

# Development of Seed and Seed Multiplication Chain in PPP Mode

## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Establishment of Seed Processing Plant at MRCFC, Khudwani (50 % complete)<br>**2.** Establishment of Millet Threshing and Milling Unit at FoA Wadura (50 % complete)<br>**3.** Strengthening of Seed Testing Lab at FoA Wadura (100 % complete) | • Production and processing of 85 quintals of Breeder Seed and 450 q of foundation seed<br>• Improvement in checking quality parameters of Breeder/Foundation Seed |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Development of climate resilient, high yielding and nutrition rich crop varieties<br>• Production of Breeder/ Foundation Seed (100% completed) | Ten varieties have been put in Seed Chain after being notified by Central Seed Sub-committee, New Delhi in 2023. Further, eight crop varieties and two walnut varieties have been developed by SKUAST K and released by State Variety Release Committee on 26.03.2024.<br>Achieving desirable SRR, VRR and SMR. |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 2 | Quality Seed Production in maize, rice. Efficient Production Technology in pulse crops | 200 Trainees |
| 2 | Line Departments/ KVKs | 2+2=4 | Food and nutritional Security | 60 Department Officers/ Officials Capacity Building |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 262.0 | 131.0 | 162.0 | **>100%** |

HADP - 2

# Promotion of Niche Crops in UT of J&K

## A. Physical

| Activity | Expected out come |
|---|---|
| 1. Establishment of Processing and Handling unit for Mushkbudji in District Anantnag<br>2. Establishment of Processing and Handling unit for Red Rice in District Kulgam | • Quality milling and value addition |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| Collection and evaluation of germplasm and development of markers of niche crops | Identification of elite germplasm for varietal development |
| Standardization of production technology of niche crops | Development of Good Agricultural Practices for non-traditional areas |
| Conduct of OFT's for shallot | Area expansion and availability of quality planting material of shallot |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 2 | Promotion of niche crops in traditional and non-traditional areas | 770 Trainees |
| 2 | Line Departments/ KVKs | 2+2=4 | Capacity building of field functionaries of line departments/KVK's | 120 Officials |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 385.00 | 192.50 | 193.57 | **>100%** |

HADP - 3

# Promotion of Vegetables and Exotic Vegetables under Open and Hi-Tech Protected Cultivation



## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Upgradation of Tisssue Culture Laboratory for Potato | • Lab upgraded |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • 20 OFT's in vegetable crops benefiting 20 farmers laid at various locations of Kashmir Valley | Area expansion and distribution of quality inputs to farmers free of cost. |

## C. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 55.00 | 27.50 | 55.00 | **100%** |

HADP - 4

# Strengthening Agricultural Marketing

## A. Physical

| Activity | Expected out come |
|---|---|
| 1. 1. Market Intelligence Cell (30% completed)<br>2. 2. Agriculture Branding Centre (30% completed) | • Decision Support System and Centre of excellence for Policy oriented research<br>• Brand building, promotion and development facilitation Centre |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Price Forecasting<br>• Market Research<br>• Branding Activity | • Better decision support system for marketing & value realization<br>• Rationalization of commodity distribution over space and time<br>• Reduction in gluts and price instability<br>• Focused insights for commodity outlooks<br>• Enhanced outreach and value realization of niche commodities |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 06 | Branding, Marketing & Entrepreneurship | 160 Trainees<br>07 Entrepreneurs |
| 2 | Line Departments/ FPO Heads | 01 | Brand Promotion for Market Valorization | 30 Department Officers/ Officials & FPO Heads |
| 3 | National Workshop | 01 | Market Intelligence for Decision Support System in Agriculture | 50 Scientists/ Officials Researchers/ Entrepreneurs |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 9.00 | 246 | 236 | **96** |

HADP - 5

# Promotion of Medicinal and Aromatic Plants Cultivation on Commercial Basis in the UT of J&K


## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Establishment of MAP Germplasm Bank | • Germplasm bank for Medicinal and Aromatic plants established.<br>• Conservation of priority species of MAPs |
| **2.** Centre of Excellence on Herbal Technology | • COEHT Established<br>• Molecular taxonomy & Phytochemical characterization of priority species<br>• Quality testing of produce |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Collection of priority MAP species from different sources<br>• Molecular taxonomy of priority species<br>• Phytochemical characterization of priority species | Conservation of priority species<br>Proper identification of species<br>identification of bioactive compounds |

## C. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 777.00 | 388.00 | 750.00 | **>100%** |

HADP - 6

# Promotion of Beekeeping

## A. Physical

| Activity | Expected out come |
|---|---|
| 1. Establishment of Bee breeding centre for climate smart bees (65% Completed)<br>2. Establishment of Disease diagnostic and quarantine centre (60% Completed)<br>3. Establishment of Quality nucleus stock Development Centre (50% Completed) | • The improvement through selection of quality climate bee will lead to better bee products production<br>• Identification of invasive pests<br>• Production of Quality queen bees |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| 1. Sampling and diagnosis of bee disease has been initiated<br>2. Selection of bee colonies for production of nucleus stock has been started.<br>3. 10 Bee breeders have been identified/selected and will be trained | • The timely diagnosis will help in better management of forthcoming diseases<br>• Queen bee rearing will lead to better colony<br>• This will promote entrepreneurship among bee breeders |

## C. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 100.00 | 50.00 | 46.35 | **92.7** |

HADP - 7

# Technological Interventions to Strengthen Sericulture in UT of J&K


## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Establishment of Silkworm Crop Improvement Laboratory | • Development of new silkworm breeds/hybrids for Jammu and Kashmir |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Procurement of Exotic silkworm Genotypes for enriching existing silkworm germplasm | Identification of potential silkworm genotypes for for the development of new breeds/hybrids for Jammu and Kashmir. |
| • Developed of Nano-Based Artificial Diet for Silkworm, Bombyx mori L | This artificial diet ensures a year-round supply of silkworm feed, eliminating reliance on seasonal leaf crops. |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 10 | Integrated Farming in Sericulture | 500 Trainees |
| 2 | Sericulture - An Avocation For Employment Generation | 8 | Preparing the trainees as future entrepreneurs | 200 Trainees |
| 3 | Rural Exploration | 3 | Exploring Rural areas of Anantnag and Baramulla for ITK and Grassroots Innovations | 60 trainees |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 200.00 | 100.00 | 83.54 | **83%** |

HADP - 8

# Promotion of Nutri-cereals (Millets) in UT of JK



## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Strengthening of DNA Fingerprinting Lab at SKUAST K, Shalimar (60 % completed) | • Quality analysis and identification of nutritionally superior millet genotypes. |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| Standardization of production technology of millets | • Package and practices for N, P and K developed<br>• Morpho characterization of millet varieties<br>• Foxtail millet yield 25 q/ha (ist year)<br>• Best results obtained with N:P:K as 40:20:5 Kgs/ha |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 2 | • Millet: as Smart food<br>• Value addition | • 200 Trainees |
| 2 | Line Departments/ KVKs | 04 | Millets as futuristic foods | 40 Department Officers/ Officials Capacity Building |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 20.0 | 10.0 | 10.0 | **100.0** |

HADP - 9

# Farm Mechanization and Automation


## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Mechanization of University research farms (70 % completed) | • Reduction in cost of cultivation by 20%<br>• Increase in productivity by 5-10%<br>• Decrease in workload on farm labours upto 60% |
| **2.** Establishment of 05 Agricultural machinery Custom Hiring Centres (90% completed) | • Availability of farm machinery to small and marginal land holdings<br>• Saving of operational time of farm operations by 60%<br>• Will allow growers to grow more number of crops per year<br>• Reduction in drudgery of farm workers |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Establishment of 01 Agricultural Machinery Prototype production Centre (50 % completed) | • State of art Prototype production centre for development of region specific farm machinery<br>• Design and development of new and innovative farm machinery to meet the demand of the users. |

## C. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 1156.00 | 578.00 | 434.40 | **75.15** |

HADP - 10

# Promotion of Year Round Mushroom Production



## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Established a research facility (with newly upgraded cropping and fruiting rooms) and other basic inflrstrecture for research and production of saw dust mushrooms like shiitake, Enokeii, King oyster , black ear and Ganoderma etc | • Research cum training center for efficient use of woody agro wastes (pruned apple wood, almond and walnut shells) for mushroom production |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| 1. 15 Mushroom cultivars of shiitake, Enokeii, King oyster , black ear and Ganoderma collected from Japan and India for further testing their suitability under Kashmir conditions.<br>2. Major Novel breakthroughs obtained w.r.to use of pruned apple wood for cultivation of shiitake, Enokeii, King oyster, and Ganoderma | • Promising cultivars for cultivation of enokeii and King oyster identified<br>• Package of practice for local entrepreneur for industrial production of shiitake, Enokeii, King oyster, and Ganoderma |
| 1. Research trials shiitake and black ear underway | • Development of package of practice based on use of locally available woody agro wastes |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 02 | 1.Mushroom spawn production.<br>2. Mushroom Production | 40 Trainees (5 enterpreneurs) |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 50.00 | 25.00 | 32.50 | **100% (above)** |

HADP - 11

# Promotion of Oilseeds

## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Procurement of Mustard Oil Filter Press<br>**2.** Structure for Mustard oil filter press | • Improvement in % oil recovery<br>• Model for entrepreneurship |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Quality Seed Production of brown sarson Breeder seed<br>• Foundation Seed | Increase in production and productivity through improvement in SRR and VRR |
| • Field demonstration of newly released oilseed varieties viz., Shalimar sarson-2 & Shalimar Gobhi sarson-1 | To ensure adoption of improved technology in the form of new varieties besides INM and IPM for increasing production and productivity. |
| • Field demonstrations on INM | |
| • Intervention for qualitative & quantitative oilseed production through bee colonies as pollinators | Increase in seed yield and bee byproducts.<br>Entrepreneurship development |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 8 | Quality seed production in oilseeds<br>Mustard based honey production.<br>Good package of practices | 200 Trainees from Line Department and farmers were trained |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 12.50 | 5.93 | 5.93 | **>47.44%** |

HADP 13

# Integrated farming System of Agriculture for sustainability

## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** 1. Mushroom unit (90% completed)<br>**2.** 2. Poultry and livestock unit (35%completed)<br>**3.** 3. Apiary unit (40%completed) | • Quality spawn produced 3 Q : 60,000 and Mushroom: 1Q: 20,000<br>• MILK : 20,000 Ltr= 10 Lakh/annum<br>• Calf sale: 05 No.: 1.25 lakh/annum<br>• Eggs: 90,000= 6.3 lakh/annum<br>• Honey: 2Q: 140,000.00 |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| IFS model developed at FoA, Wadura, Sopore | • Advance centre of Integrated Farming System<br>• Recycling of Farm resources (60%)<br>• Doubling of returns per unit area<br>• Multiplicity of products with circular economy<br>• Employment generation<br>• Demonstration unit for farmers<br>• Improves sustainability<br>• Promotes biodiversity |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 5 | Integrated farming, resource recycling, zero waste production system | 100 Trainees 03Entrepreneurs |
| 2 | Line Departments/ KVKs | 02 | Optimization of ecological resources and processes | 50 DepartmentOfficers/ OfficialsCapacityBuilding |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 243. 00 | 118.00 | 118.0 | **100.00%** |

HADP - 14

# Promotion of Commercial Floriculture

## A. Physical

| Activity | Expected out come |
|---|---|
| 1. High Tech IoT Powered Ornamental Nursery with automation of operations<br>2. Up gradation of laboratories: 01 Tissue Culture Laboratory upgraded | • Accelerated throughput and production of 4 lac Ornamental Quality Planting Material for landscape use and commercial ornamental plant nurseries<br>• Training Facility for Entrepreneurs |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Standardization of protocol for propagation of ornamental plant material | • Package and practices/ Refinement of Technologies for propagation/ production of quality planting material |

## C. Human Resource Development (HRD)

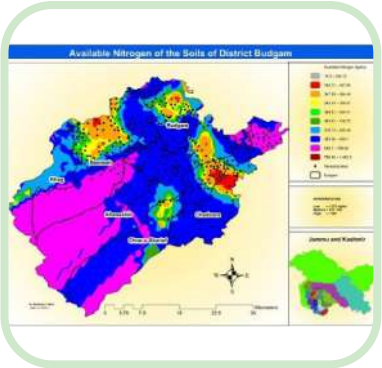
| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 36 | Advances in Commercial Floriculture for sustainable Floriculture Development | 1500 trainees<br>43 Entrepreneurs |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 42 | 37.8 | 26.14 | **69.15%** |

HADP - 15

# Rainfed Area Development




## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Stress Resilience, Resource Conservation and Molecular Breeding Facility at DARS, Rangreth established | • Lab facility established to analyze crop, soil and water samples.<br>• Facility will address changes in climate patterns and effects on crop growth and sustainability |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| Maize: 300 accessions collected<br>Pulses : 250 accessions collected<br>Fodder Oats : 75 accessions collected<br>Total Collections: 625 | Identification of putative germplasm for varietal development and QTL/gene discovery programme |
| Situational Analysis carried out linking market with farm production | Development of Thematic maps is in progress |
| Seed Production of Resilient Varieties<br>Deployment of Climate Resilient Crop varieties of Maize, Pulse and Forages across rainfed niches | 100q seed of maize, pulse and oats produced<br>400 hectare area covered under climate resilient varieties |
| Horti-Pastoral System Based Demonstrations Conducted | 150 demonstrations involving fodder crops in horticultural lands strengthened the fodder availability scenario in rainfed ecologies along with enhancing the carbon foot print with forage species |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 2 | Seed Production | 100 Trainees |
| 2 | Line Departments/ KVKs | 6 | First hand Information on IFS/INM/IPM/IDM | 120 Department Officers/ Officials Capacity Building |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 279.50 | 149.50 | 184.83 | **>100%** |

HADP - 16

# Alternate System of Agriculture for sustainability


## A. Physical

| Activity | Expected out come |
|---|---|
| Biofertilizer Production Centre (30% completed)<br>Biopesticide Production Centre (50% completed)<br>Bio-Analysis Centre (80% completed) | Centre of Excellence on Bio-Input Production<br>Biofertilizers/ Conditioners/Solubilizers: 1500 litre worth: 15.0 lakh<br>VAM: 9 Q worth : 1.0 Lakh<br>Vermicompost: 300 Q: 4.5 Lakh |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| 72 On Farm Research Trials laid throughout the valley | Package and practices/ Refinement of Technologies going on<br>30% Reduction in Urea<br>% Reduction in DAP<br>35 % Reduction in MOP<br>10-15 % ZnSO4<br>20 % Reduction in Fungicide:<br>20 % Reduction in Insecticide as per data observed |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 12 | Organic Input Production Certification Branding, Marketing, | 300 Trainees<br>05 Entrepreneurs |
| 2 | Line Departments/ KVKs | 04 | First hand Information on Organic Farming Certification/ Marketing | 100 Department Officers/ Officials Capacity Building |
| 3 | Research Exploration Programme | 01 | Organic standards, Ecological Resources, Cutting edge technologies | Director National Centre and Team Invited to facilitate Certification Process |
| 4 | National Workshop | 01 | Stakeholders like Scientists, Department officers/Officials / Participatory farmers etc | 150 Scientists/ Officers/ Farmers Attended |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 487.00 | 243.50 | 152.02 | **62.4** |

HADP - 17

# Sensor based smart agriculture

## A. Physical

| Activity | Expected out come |
|---|---|
| Creation of ecosystem for smart agriculture by upgradation of different labs<br>**1.** AI and ML,<br>**2.** IoT and Automation<br>**3.** Drone lab,<br>**4.** Data analytics | • Ecosystem system created for smart / digital agriculture<br>• Real time field data received at lab<br>• Establishment of startup ecosystem in Smart Agriculture<br>• Capacity building for skill manpower<br>• New starups ecosystem in precision agriculture<br>• Jobs with new skillsets |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Standardization of AI based and IoT driven operations in Apple, vegetable and Livestock<br>• Developing Algorithms for big data analytics for remote operations of IoTs | • Automation of agricultural operation with precision in HDPs of Apple, vegetable and livestock.<br>• Deployed different parameters sensor in 3 ha area of HDP of apple<br>• Automated 5 polyhouses for monitoring environmental parameters<br>• 40-50% saving in water and nutrient<br>• Real time data fetching from field for decision support system<br>• Remotely collection of data<br>• AI-based systems for early detection and management of pests and diseases using handheld sensor devices.<br>• Increase in resource use efficiency (50-80%) through precision agriculture techniques.<br>• Automation and monitoring of livestock environment<br>• AI based detection of pest and diseases using hand held sensor device<br>• Reduced drudgery and cost of cultivation by 20% |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 1 | AI application in agriculture | 15 participants |
| 2 | Line Departments/ KVKs | 10 | Sensor and its application in agriculture | 100 Department Officers/Officials / KVK for Capacity Building |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 720.0 | 360 | 360 | **100%** |

HADP - 18

# Minimization of pesticide use in Agriculture


## A. Physical

| Activity | Expected out come |
|---|---|
| Mechanisation of model orchards<br>5 Custom Hiring Centres developed<br>Development /Validation of computer based Decision Support System<br>Weather stations: 20<br>Growth Chamber: 1<br>Spore Trap: 1 | • Demonstrated 80% pesticide use in Agriculture<br>• Reduction in unnecessary use of pesticides |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| Research & Development for PHI estimation<br>Estimated PHI of 7 pesticides | Safe use of 7 pesticide in future<br>Safe food and health |

## C. Human Resource Development (HRD)

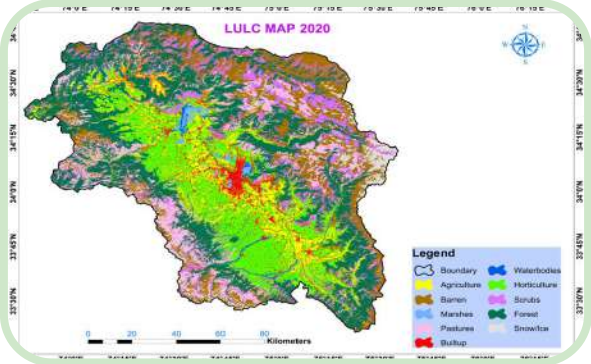
| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 1 | Bio pesticide/ Bio-stimulant | 39 trainees<br>2 enterprises |
| 2 | Awareness programmes | 6 | Integrated pest management in apple | 800 growers |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 400.0 | 200 | 200 | **100%** |

HADP - 19

# J&K Soil & Land Resource Information System for Soil Health




## A. Physical

| Activity | Expected out come |
|---|---|
| 1. Establishment of Soil Laboratories (4 Nos)<br>2. Procured Survey Pick Up Vehicle with Sur-vey Equipment | • Strengthening the capacity of Soil testing with higher accuracy<br>• Cost and time effective Soil Survey and Sampling |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Advanced Digital Soil Mapping at 30m spatial resolution | • Generated soil maps for two districts: Samba and Pulwama |
| • Land Resource Monitoring | • Generated time-series land use maps for three districts: Pulwama and Budgam, Samba |
| • Land Morphometric Analysis for Hydrology | • Generated different morphometric maps from DEM (30m resolution) for district Samba and Pulwama |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 02 | • Integrated Nutrient Management for Sustainable Soil Health Development (50 Nos of Trainee)<br>• Soil and Plant based Nutrient Management for sustainable agriculture (50 Nos of Trainee) | 100 Trainees |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 225 | 112.5 | 109.11 | **96.72** |

HADP - 20

# Innovative Extension Approaches for Promoting Agriculture in J&K



## A. Physical

| Activity | Expected out come |
|---|---|
| Kissan Khidmat Ghar: 2000 panchayats Identified; 500 being established in Phase-I. | • One-Stop Service Centre providing end-to-end linkages at panchayat level. |
| Engagement of Krishi Udyami at 500 KKGs | • 500 Krishi Udyamis (self-employments) |
| Semi Hitech Polyhouses(20 No) at KVKs (under Process) | • Production of quality seed & planting material<br>• Demonstration<br>• Soil testing and disease diagnosis<br>• Capacity Building<br>• IT enabled extension services<br>• Increase in production and productivity |
| Upgradation of soil testing and Disease Diagnostic Service Laboratories; IT centre; and Demo Units at KVKs | |
| Land Development (Fencing, Borewell, and Renovations) | |
| Cyber Extension Hub (Installation Pending) | • Handling Big data for Agricultural Research<br>• IoT and ICT enabled dynamic extension services |
| Business Orientation Centre | • Consultancy and Handholding of farmers & entrepreneurs |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Software Solution for KKG along with android and IoS platform<br>• Multi-crop Decision Support System integrated with KKG (10%) | IoT and ICT enabled dynamic extension services<br>Farmers database<br>Realtime Crop & Area Specific Weather Based advisories<br>Expert consultation |
| • Students Rural Exploration/ Internship Programme | > 2000 students of SKUAST-K to adopt >250 panchayats involving > 500 Villages across 10 districts of Kashmir |
| • 3 Extension Research Projects in progress | Developed Android App for Poultry Farmers<br>Impact of Technologies<br>Mapping of Livestock Diseases |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 24 | Farming & Non-Farming Activities<br>Smart & Secondary Agriculture | • 2200 farmers |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 487.00 | 243.50 | 152.02 | **62.4** |

HADP - 21

# Production of designer plants for promotion of high-density plantation and rejuvenation of orchards




## A. Physical

| Activity | Expected out come |
|---|---|
| 1. Establishment of Rootstock bank (Apple) (100 % completed)<br>1. Establishment of Mother orchards (Apple)<br>1. Establishment of Hi-Tech Green Houses (Protectd Cultivation) (100% completed)<br>1. Mechanization, Automation and Up gradation of nurseries (100% completed)<br>1. Strengthening and Augmentation of plant material testing labs | • 30,000 imported apple rootstocks of M-09/ MM-111/ MM-106<br>• 3333 plants / ha with bud wood production in 2nd year<br>• 480 m2 Polyhouse Established , 6000 grafted plants to be produced in 2nd year<br>• Mechanization of 3.3 Ha land with reduction in labour by 50 %<br>• One plant testing/quality control lab established |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • 04 Research Trials laid at SKUAST-K | Characterization of 04 types of roostsocks and varieties belonging to 04 groups<br>Development of new varieties<br>Improved propagation practices and orchard management practices with higher success rate |

## C. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 400 | 270 | 267.44407 | **99.99** |

HADP - 23

# Strengthening Dairy Sector in UT of J&K



## A. Physical

| Activity | Expected out come |
|---|---|
| 1. Establishment of MOET-IVF facility<br>2. Importation of HGM Jersey cows<br>3. Establishment of Calf Rearing Station<br>4. Repair and renovation of existing animal sheds at MLRI Manasbal | • Development of state of art MOET-IVF lab at MLRI Manasbal<br>• Introduction of 100 high genetic merit Jersey cows as ovum donors for OPU MOET<br>• Establishment of a dedicated facility for rearing high genetic merit calves obatined through ETT, their pedigree analysis and for future semen production<br>• Increased availability of high genetic merit heifers for breed improvement.<br>• Improved animal housing and management facilities<br>• Enhanced research and development capabilities in animal breeding and reproduction |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Standardization of Ovum Pick-Up (OPU) procedures<br>• Standardization of IVF and Invitro embryo Production procedures<br>• Embryo Transfer Technology (ETT) standardization using imported embryos | Optimized protocols for OPU in cattle<br>Efficient in-vitro embryo production system<br>Optimized protocols for MOET-IVF in cattle<br>Increased production of high genetic merit embryos for breed improvement. |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 10 | Advanced breeding technologies (MOET-IVF) | • Trained scientists and technical staff in assisted reproductive technologies. |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 1400.00 | 1100.00* | 818.00 | **75.00%** |

*** Rs 248.54 Lacs released in April 2024 were utilized to meet the liabilities of financial year 202**

HADP - 24

# Reorienting Priorities self -sufficiency in Mutton Production in J&K

## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Evaluation of imported Elite germplasm with good quality mutton traits | • Evaluated good quality germplasm will be disseminated in the UT for improvement in mutton production |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| Quality germplasm distributed among progressive breeders ( 250 animals in 23-24))<br>Corriedale ,Kashmir Merino FecB,Polled Cross Boer and its crosses and Bhakerwaal goat<br>Sheep units developed: o6 | Gains in mutton production<br>Package and practices/ Refinement of Technologies related to sheep breeding going on |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Breeders / Rural youth Trainings | 04 | Awareness regarding scientific and profitable breeding practices<br>Package and practices/ Refinement of Technologies related to sheep breeding going on | 05 Entrepreneurs<br>230 Trainees<br>Trained youth and breeders more attracted towards Enterprise<br>Profitable farming<br>Established Germplasm centres harboring elite animals<br>Increased no .of Commercial farmers |
| 2 | Line Departments/ KVKs | 04 | Demonstration cum awareness on smart sheep breeder application for efficient data recording | 63 Department Officers/Officials Capacity Building<br>Will help in real time decision making and policy planning |
| 3 | Research Exploration Programme | 01 | Conservation and use of native sheep for improving the mutton production | Director National Centre and Team Invited to facilitate Certification Process |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 40 | 40 | 19.53 | **100.00%** |

HADP - 25

# Roadmap for Poultry Production in J&K

## A. Physical

| Activity | Expected out come |
|---|---|
| 1. Up-gradtion of Poultry Breeding Facili-ty for pedigree breeding<br>2. Augmentation of vaccine laboratory | Poultry Breeding Facility with Californian cages (300 bird capacity)<br>Sero-prevalence studies<br>Initiate trials on vaccine development |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| Identification & procurement of local Poultry<br>Procurement of exotic layer population<br><br>Evaluation of Kashmir Favorella Poultry<br><br>Sero-prevalance to identify locally prevalent strains of Ranikhet Disease Virus | Development of crossbred layer-type Poultry<br><br><br><br>Poultry health package<br>Develop thermo-stable Ranikhet Disease Virus |

## C. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 100.00 | 100.00 | 96.7 | **96.7** |

HADP - 26

# Technological Intervention for Fish Seed and Trout Production in UT of J&K

## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Establishment of Feed Mill<br>**2.** Establishment of Fish Hatchery | • Facility for production of low cost feed<br>• Facility for production of quality seed of Trout Fish |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| Development of low cost feed | Low cost feed will be developed from locally available ingredients to arrest the high input cost of fish production |
| Genetic interventions for growth and breeding in cold water fish. | Higher survival rate and fast growth of Trout fishes |
| Seed production of indigenous & exotic fish species. | Development of fish diversified practices and use best use of available resources for cultural practices |
| Disease diagnosis & prophylaxis. | To arrest the early mortality of fishes especially at Fry and Finger stage |
| Value addition and product development | Technology for fish product development for more returns and entrepreneurship |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer/ Rural youth Trainings | 9 | Modern Aquacultures practices<br>Post Harvest Technology<br>Diseases diagnosis and treatment<br>Ornamental Farming | • 250 Trainees |
| 2 | National Workshop | 01 | Technological Intervention for Fish Seed and Trout Production in UT of J & K | 120 Farmers/Unemployed youth |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 285.00 | 285.00 | 132.02 | **46.31** |

HADP - 27

# Promotion of wool and pelt for effective processing and Marketing



## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Upgradation of Aimal Fibre Quality assur-ance Laboratory (completed)<br>**2.** NABL Accreditation of Animal Fibre Quality Assurance Laboratory (Under Process)<br>**3.** Establishment of Fur processing unit (10% completed) | • Facilility to cater the stakeholders for quality assur-ance of fibres.<br>• Credibility and Acceptability of Test Reports<br>• Fur Processing R&D Centre |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| Development of wool and pelt based Value added products | • Technology development.<br>• Diversified range of novel wool and fur based products. |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Farmer Trainings | 4 | Skill based training programme of wool growers on “leveraging upon wool resource base in J&K through effective processing and marketing | 48 Trainees |
| 2 | Wool Artisans Training | 2 | Wool Spinning on Innovative Charkha for Realizing Better Returns. | 25 Trainees |
| 3 | Line Departments Trainings | 1 | ToT on Revitalizing wool and pelt industry of J&K” | 19 Department Officers/ Officials Capacity Building |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 430.00 | 188.61 | 181.13<br>(92.7731+ 88.36) | **96.03** |

HADP - 28

# Development of Fodder Resources for UT of J&K



## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Established Molecular Breeding Lab at FoA Wadura<br>**2.** Machinery input for seed testing and nutritional quality evaluation at Shalimar Campus | • Genetics, breeding and varietal development in Fodder crops |

## B. Research and Development (R&D)

| Activity | Expected out come |
|---|---|
| • Development of Fodder maize hybrids / varieties with greater luxuriance and biomass with inbuilt resilience to drought | Around 200 maize inbred lines were evaluated for GFY during 2023 of which five were identified having high biomass of 1.5 kg per m2<br>*No. of genotypes identified for high yield and drought tolerance*<br>*No. of crosses made and advanced*<br>*No. of genetic stocks developed* |
| • Breeding non-cereal based (legume) fodders with enhanced nutrition quality | *Identified two genotypes of fodder soybean with high biomass of 300q/ha*<br>*Performed Transcriptomics for cold tolerance in alfalfa*<br>*M.i: No. of genotypes identified for high yield* |
| • Development & Promotion of oat Varieties with early maturity, & high yield/biomass | *Evaluated 40 oat germplasm lines for Water use efficiency, chlorophyll,*<br>*M.i: No. of genotypes identified for high yield and earliness* |
| • Development of Fodder varieties / hybrids with optimum quality (ADF, NDF, Protein, etc) | *Targets for year 2024-25* |
| • Development of fodder varieties suitable for hydroponic cultivation | Targets for year 2024-25 |

## C. Human Resource Development (HRD)

| S. No | Activity | No | Broad Theme | Deliverables / |
|---|---|---|---|---|
| 1 | Quality seed production and dissemination aming farmers | 1 | Fodder Seed Production and distribution | Vertical gains in productivity |

## D. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 325.0 | 272.5 | 193.69 | **72%** |

HADP - 29

# Support to Human Resource Development for Technological backstop for sustainable and accelerated transformation of agriculture

## A. Physical

| Activity | Expected out come |
|---|---|
| **1.** Scholarships to Masters and PhD Students<br>**2.** 824 students provided Scholarships @<br>**3.** Rs 5000/month | • Increase student orientation and motivation for the Agricultural higher education, research & entrepreneurship<br>• Make Agricultural Education and Research lucrative to attract talent and retain youth in Agriculture |
| **4.** Vice Chancellors Flexi-grant to provide research support nd necessary inputs | • Up gradation of Academic and Research standards at two farm universities<br>• Provide timely critical inputs/contingencies for research/training/outreach etc & cover other unfore-seen expenditures |

## B. Financial (Lakhs)

| Allotted | Released | Expenditure | % utilization |
|---|---|---|---|
| 953 | 476 | 473 | **99.37%** |

# Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir

Main Campus, Shalimar, Srinagar Kashmir (J&K) India-190025


***Edited by:*** *Prof. Haroon A Naik (Director Research)*
***Compiled by:*** *Arshad H Mughal (associate Director Research) & Prof. Parmeet Singh (Chief Scientist Agronomy)*
***Designed by:*** *Sheikh Parveez (ARIS, SKUAST-K)*