

AGRICULTURE HIGHLIGHTS

Fiscal Year 2025-26

Department of Agriculture
Ministry of Agriculture and Livestock

Agriculture Highlights
2025-26



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Department of Agriculture
Ministry of Agriculture and Livestock
Royal Government of Bhutan, Thimphu

Executive Summary

During Fiscal Year (FY) 2025-26, the Department of Agriculture continued to advance Bhutan's agriculture sector through targeted investments in production infrastructure, farm inputs, research, climate services, and sustainable land management, in line with the priorities of the 13th Five-Year Plan. The Department utilized **98%** of its capital budget of **Nu. 777.32 million**, reflecting strong implementation progress and effective use of resources. In addition, **Nu. 847.32 million** was mobilized and provided to Dzongkhags for chain-link programmes.

Major efforts focused on addressing key constraints to agricultural production. The completion of **656 km** of chain-link fencing protected approximately **18,588 acres** of farmland and benefited around **7,453** farming households. At the same time, **55 irrigation schemes** (27 new schemes and 28 rehabilitation works) were implemented, initiating irrigation services to more than **6,831 acres** of agricultural land. Commercial farming initiatives at Chirub Farms and the Yarjugang Open Air Prison (OAP) Farm also progressed through continued land development, infrastructure establishment, mechanization, and trial crop production. The Million Fruit Tree Plantation (MFTP) Programme shifted its focus towards survival assessment, mortality replacement, and improved orchard management, instead of continuing with the regular plantation.

Progress was also made in soil and land management, organic agriculture, mechanization, and climate services. A total of **2,148.55 acres** was brought under Agriculture Land Development and Sustainable Land Management interventions, while **24.41 acres** of land belonging to **32** households were newly registered under the Local Organic Assurance System (LOAS). Agricultural mechanization covered **18,229 acres** and benefited **9,830** farming households, while digital and renewable-energy applications were expanded through drone-based land assessment, solar-powered systems, and standardization. In addition, more than **86** Agromet advisory bulletins were disseminated across six Dzongkhags, providing timely weather and crop advisories that supported the management of El Niño-related climate risks.

Research and innovation continued to strengthen the technical foundation of the sector. The Department strengthened efforts on improved crop varieties, nutrient management, water-efficient production systems, pest and disease surveillance, bio-inputs, and locally adapted farm technologies.

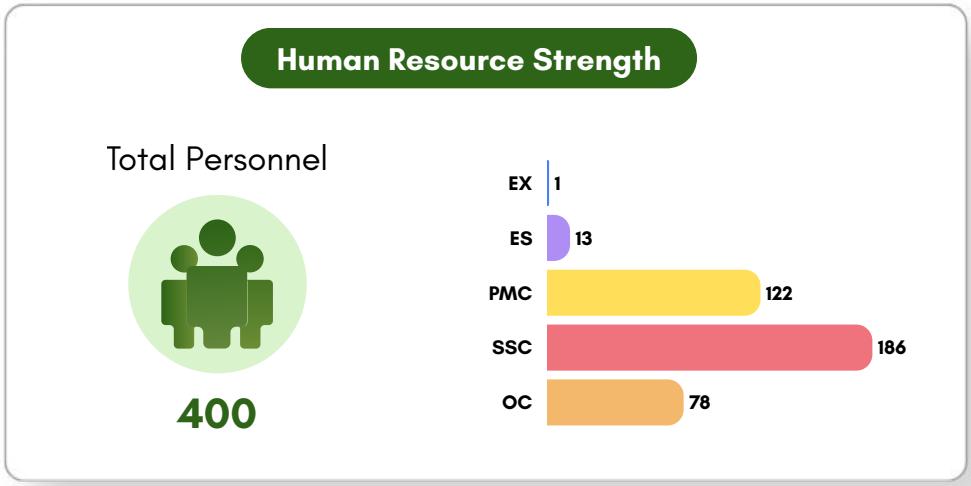
Overall, FY 2025-26 marked steady progress towards a more productive and climate-resilient agriculture sector indicated by positive agriculture production growth during the year with several priority crops meeting or exceeding their annual production targets.

Acronyms and Abbreviations

AMTC	Agriculture Machinery and Technology Centre
ARDC	Agriculture Research and Development Centre
ARDSC	Agriculture Research and Development Sub-Centre
DoA	Department of Agriculture
FRS	Farmer Registration System
FY	Fiscal Year
FYP	Five Year Plan
GoI-PTA	Government of India Project Tied Assistance
MFTP	Million Fruit Tree Plantation
MoAL	Ministry of Agriculture and Livestock
NCOA	National Centre for Organic Agriculture
NMC	National Mushroom Centre
NPPC	National Plant Protection Centre
NSC	National Seed Centre
NSSC	National Soil Services Centre
PPP	Plant Protection Products
RSC	Regional Seed Centre

Institutional Capacity and Resource Utilization

Effective implementation of the Department of Agriculture's activities during FY 2025-26 was supported by its institutional workforce and capital resources. The Department had a total human resource strength of **400** personnel distributed across DoA Headquarters, Agriculture Research and Development Centres, and Central Programs. In addition, Dzongkhag Agriculture Sectors played a pivotal role in translating departmental plans into field-level implementation, ensuring that services reached farming communities across the country.



During the same period, the Department had a revised capital budget of Nu. 777.32 million, of which 98% was utilized, reflecting strong implementation progress during FY 2025-26. Under the current budget of Nu. 63.60 million, the Department recorded current savings of 4%, achieved through careful expenditure scrutiny, limited travel, and efficient use of available resources.

In addition, Nu. 847.32 million was mobilized and provided to Dzongkhags for chain-link fencing programmes, further demonstrating strong resource mobilization and field-level implementation support.

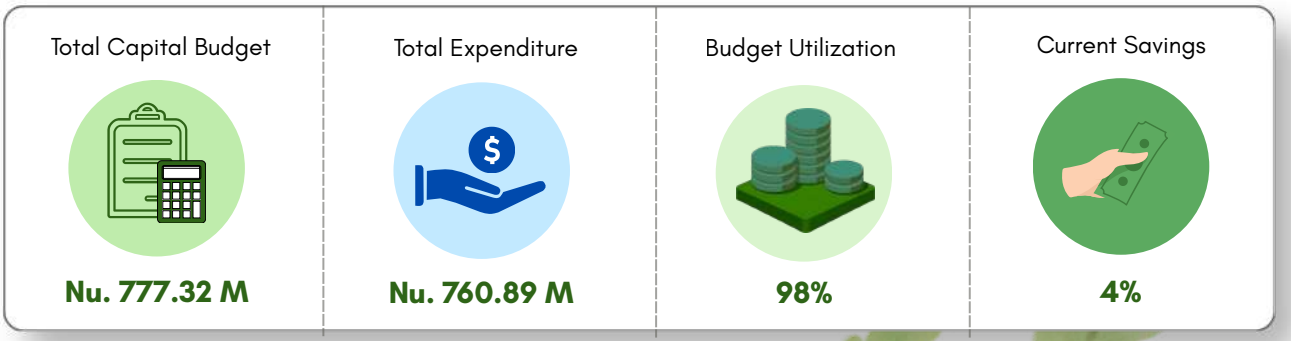


TABLE OF Contents

01 **Chapter 1: Major Programmes**
02 Innovative Fencing for HWC Management
04 Irrigation
06 Chirub Farms
08 Yarjugang Open Air Prison (OAP) Farm
10 Million Fruit Tree Plantation (MFTP)
11 National Crop and Livestock Insurance Scheme
12 **Chapter 2: Agriculture Extension Services and Resource Management**
13 Agriculture Input support
16 Soil and Land Management
18 Farm mechanization
19 Land Conversion
20 Agrometeorology (Weather and Climate) Services
21 Organic Agriculture Services
24 Farmer Registration System
25 **Chapter 3: Major Research Highlights**
38 **Chapter 4: Institutional Development and Knowledge Management**
39 Technology Released
40 Bhutanese Journal of Agriculture, Vol. 9, Issue 1
41 Infrastructure Relocation and Continuity
42 Capacity Building and Training
46 Engagements and Knowledge Exchange Platforms
48 **Chapter 5: Crop Production**
50 **Annexure**



CHAPTER 1

MAJOR PROGRAMMES









1.1. Innovative Fencing for HWC Management

Human-wildlife Conflict (HWC) is estimated to cause **19-43%** loss of annual crop production, making it a major constraint in crop production. To address this, the Department prioritized chain-link fencing under the 13th Five-Year Plan (FYP), with an allocation of **Nu. 5.1 billion** to reduce crop losses, protect farmland, and strengthen food security.



In the previous Fiscal Year (FY), the programme was implemented through 83 schemes, with a total expenditure of Nu. 530.21 million. During the current reporting period, the Department further expanded the programme through the Government of India Project Tied Assistance (GoI-PTA) funding of **Nu. 847.32 million**, completing **126** schemes spanning **656 km** of chain-link fencing (Annexure 1). The intervention benefited around **7,453** households and protected approximately **18,588 acres** of agricultural land. The continued expansion of chain-link fencing provides a practical basis for reducing wildlife-related crop losses and supporting priority crop production in vulnerable farming communities.



> "After working day and night, guarding crops and monitoring irrigation water supply, we end up losing our crops to wild animals just when it is about time to harvest. Production would decrease by 60-70%. From this year, with the fencing, we have not seen wild animals damaging our paddy."
>
> **Tashi Wangdi, Resident, Dekiling, Radhi Gewog, Trashigang.**

Source: BBS article titled "First chain-link fencing project in Radhi Gewog to benefi Dekiling-Tsangkhar farmers" published on August 30 2025

In addition to the large-scale chain-link fencing programme, a Universal Hybrid Fence (UHF) was piloted under the Community-Based Human-Wildlife Conflict Management Project (WiCoMP) as a practical and cost-effective solution to reduce crop losses from wildlife depredation. Jointly implemented by the National Plant Protection Centre (NPPC) and Japan International Cooperation Agency (JICA), the project promotes improved coexistence between farming communities and wildlife. The UHF combines a physical wire-mesh barrier with electrified wires that deliver a brief, non-lethal pulse to deter wild animals from entering agricultural fields.

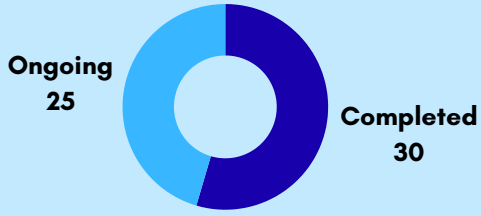




1.2. Irrigation

During FY 2025-26

- New (27)
- Rehabilitation (28)



200 KM
Total Length

6,831 Acres
Total Command Area

3,510 Households
Total Beneficiaries

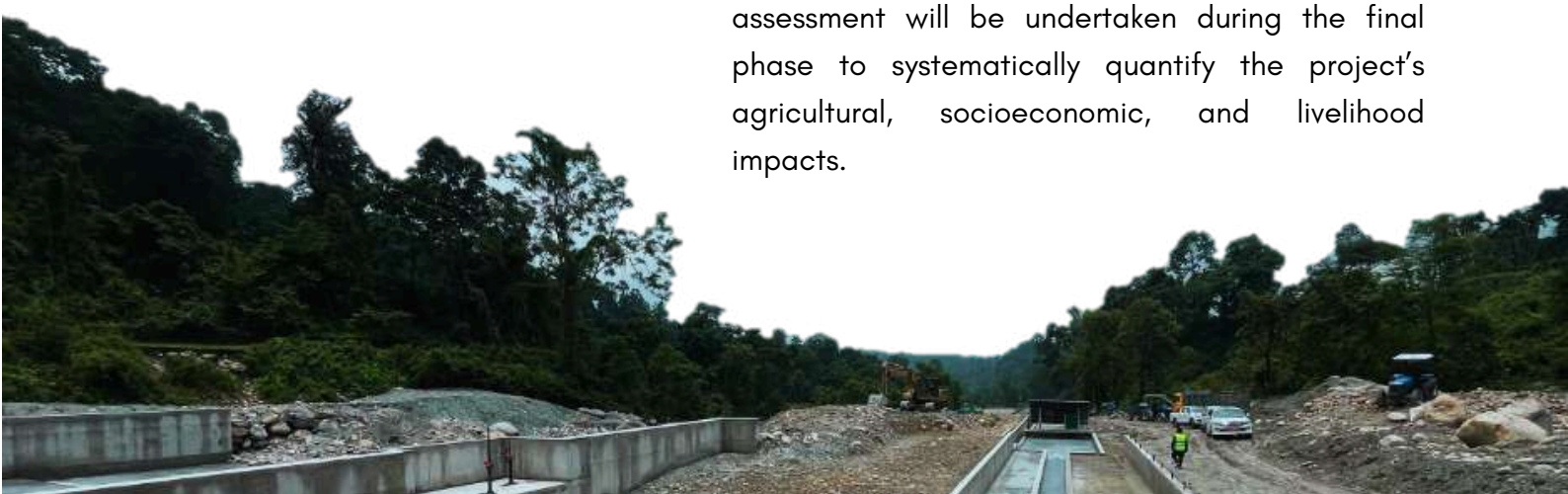
Nu. 1,131 M
Total Amount

During the current FY, **55** irrigation schemes (27 new, 28 rehabilitated) covering **200 km** were initiated with an investment of **Nu. 1,131 million**, benefiting **3,510** households across **6,831 acres**. So far, 30 schemes are completed and 25 are progressing as planned.

Of the 55 irrigation schemes, the Department of Agriculture (DoA) centrally managed the construction of **9** schemes, while the remaining **46** schemes were implemented by Dzongkhags and Gewogs. Out of the centrally managed schemes, **6** have been completed, covering **44.63 km** of irrigation conveyance infrastructure and a command area of **1,232 acres**, benefiting **556** farming households. These schemes were completed at a total investment cost of **Nu. 324 million**, funded through the Government of India's Project Tied Assistance (GoI-PTA) (Table 1).

Recognizing the increasing need for climate-resilient irrigation infrastructure, the Department introduced innovative irrigation systems, such as the renewable energy-powered hybrid lift irrigation system in Guma, Punakha, and two model irrigation systems in Bumthang and Samtse.

Preliminary field observations suggest that irrigation investments are already contributing to increased rice cultivation, including the reversion of previously fallow land into productive fields within the project areas. These early outcomes are encouraging; however, a comprehensive impact assessment will be undertaken during the final phase to systematically quantify the project's agricultural, socioeconomic, and livelihood impacts.



Climate Smart and Innovative Irrigation Schemes



Lower Kuchidina Model Irrigation System

Nu. 65 M
Total project Cost

74
Beneficiary Houheholds

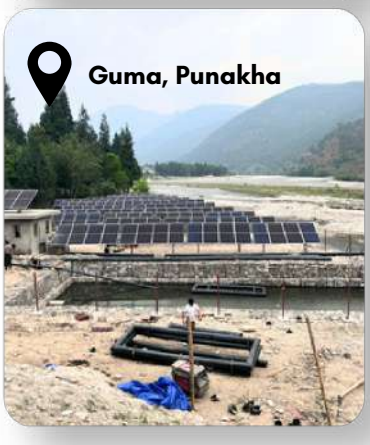
210 Acres
Agriculture Land Command Area

Key Innovations

- Permanent intake with cross-weir
- Solar powered automated flow-control gates
- Sediment control facility
- Protection works & access roads

Impacts

- Reliable irrigation & higher yields
- Crop diversification & less fallow land
- Enhanced food security & livelihoods



Changyul-Ritsa Hybrid Irrigation System

Nu. 30 M
Total project Cost

255
Beneficiary Houheholds

380 Acres
Agricultural Land Command Area

Key Innovations

- Hybrid solar-hydropower system
- Lifting water from the river
- Floating sump intake
- 0.27 million m^3/year pumping capacity

Impacts

- Improved irrigation & cropping intensity
- Reduced fallow land
- Enhanced climate resilience
- Reduced energy dependence
- Improved food security & livelihoods

Table 1. Summary of centrally executed irrigation schemes

Irrigation Schemes	Implementation Status
Changyul-Ritsa Irrigation , Guma, Punakha (3 KM)	Completed spillover scheme from FY 2024-25
Changwa Rongchu Integrated Irrigation Scheme, Choekhor, Bumthang (11.8 KM)	Completed spillover scheme from FY 2024-25
Kuchidina Irrigation Channel, Yoeseltse, Samtse (5 KM)	Completed
Gudari-Gangri Kadam Irrigation Channel, Chasker, Mongar (7.57 KM)	Completed
Phuentenchhu Irrigation Channel, Norbuthang, Tsirang (8.0 KM)	Completed
Damchekha Irrigation Channel, Logchina, Chukha (9.26 KM)	Completed
Phakpari/Brakchilo Irrigation Channel, Radhi, Trashigang (9.12 KM)	Spillover to FY 2026-27
Karilum Irrigation Channel, Tseza, Dagana (4 KM)	Spillover to FY 2026-27
Nemjo-Khangku Irrigation Channel, Wangchang, Paro (3 KM)	Spillover to FY 2026-27

1.3. Chirub Farms

Project At a Glance

- **Department of Agriculture** — Implementing Agency
- **Desuung HQ** — Implementing Partner
- **GOI-PTA** — Funding
- **Pemathang & Samrang** — Site

Objectives

- Precision Agriculture
- Commercial Farm
- Employment Generation
- Food Security

The Chirub Commercial Farms Project is a Department of Agriculture initiative, implemented with De-suung Headquarters and funded through the GoI-PTA funding, to establish two modern commercial farms at **Pemathang** and **Samrang**. The project promotes precision agriculture, sustainable commercial farming, employment for local youth/De-suups, and national food security.



As of June 2026, substantial progress had been achieved in farm establishment. Major civil works and farm infrastructure had been completed, including land development, irrigation systems, power connectivity, fencing, and recruitment of De-suups. Across the two farms, **20.1 acres** of fruit orchards had been established with **3,505 plants** comprising mango, seedless lime, macadamia nut, and dragon fruit (Table 2). Remaining works, including support infrastructure, automation systems, and capacity building, are progressing towards the project completion target of **March 2027.**





Table 2. Total orchard area in Chirub Farms

Fruit Commodity	Pemathang		Samrang	
	Area (acre)	No of Plants	Area (acre)	No of Plants
Mango	2.9	329	4.3	482
Seedless Lime	2.6	413	3.7	602
Macadamia Nut	1.2	131	1.2	131
Dragon Fruit	2	671	2.2	746
Total	**8.7**	**1,544**	**11.4**	**1,961**

1.4. Yarjugang Open Air Prison (OAP) Farm

A collaborative initiative of the Department of Agriculture, Royal Bhutan Police, and The PEMA to develop a productive commercial farm while supporting the rehabilitation of inmates through agriculture-based skills. The project is targeted for completion by **December 2026.**

Project Outcomes

- Food Self Sufficiency
- Inmate Rehabilitation
- Economic Impact

Project At a Glance

Nu. 184.8 M	Jul 2024 - Dec 2026	Yarjugang, W/Phodrang	DoA, RBP, The PEMA
Total Project Cost	Implementation Period		



Key Activities (FY 2025-26)

Land Development and Crop Establishment

176.51 acres developed for wetland, dryland, orchard and plantation

Farm Mechanization

Procurement of essential machinery to support farm operations

Capacity Building

Training of inmates and RBP personnel in Good Agricultural Practices (GAP) and farm record keeping

Infrastructure Development

Construction of 10 mega greenhouses, 2 mushroom sheds and 5.3 km irrigation channel

Trial Crop Production

Potato, cardamom, kiwi, persimmon and almond

Ongoing Construction

Support infrastructure and farm facilities in progress



Machinery Field Testing



Land Development



1.5. Million Fruit Tree Plantation (MFTP)

By FY 2025-26, the programme had completed four phases of plantation and one phase mortality replacement, distributing and planting **4.4 million** fruit seedlings of **28** species across all 20 dzongkhags, benefiting over **122,000** households and institutions.

MFTP at a GLANCE

4.4 M
Fruit Seedlings Planted

28
Fruit Species Promoted

20
Dzongkhags Covered

122,000+
Households and Institutions benefitted

Input Support Provided



1086
Secateurs



1103
Pruning Saw



48
Knapsack Sprayers



25
Power Sprayers

Efficient Irrigation Support

50 sets of efficient irrigation system materials supplied covering more than 50 Acres

Kiwi Trellising Support

191 beneficiaries were supported with kiwi trellising infrastructure for 3,450 kiwi plants

Guided by the geo-validation survey and Performance Audit recommendations, the recent phase focused on mortality replacement and supply of production inputs to improve orchard performance. A total of **68,915 seedlings** of five subtropical fruit species were supplied across 15 dzongkhags to eligible beneficiaries.

Mortlity Replacement and Aftercare Support



3,955
Lime Seedlings



4,479
Mango Seedlings



23
Macademia Seedlings



42,049
Coffee Seedlings



18,409
Mandarin Seedlings

FY 2025-26: Key Highlights

Follow up on Past Phases of MFTP: Evaluation and Learning

- Nationwide geo-validation survey was conducted covering 47,175 beneficiaries, equivalent to 38% of total programme beneficiaries, and validating more than 2.41 million seedlings distributed under the programme.
- Overall seedling survival rate of 53% was achieved with subtropical fruit species recording higher survival at 63%.

1.6. National Crop and Livestock Insurance Scheme

Crops Insured



The National Crop and Livestock Insurance Scheme (NCLIS) was approved during the 48th Session of the Fourth Lhengye Zhungtshog on 24th April 2025, and subsequently launched on 11th November 2025, coinciding with the Birth Anniversary of the Fourth Druk Gyalpo. As the country's first nationwide crop and livestock insurance scheme, the Government subsidizes **50%** of the premium cost, a measure intended to improve affordability and encourage broader farmer participation. The scheme covers **paddy, maize, potato and mandarin** with **5.8%** premium for all the crops.

Given that the scheme is fairly new, a continuous sustained outreach to relevant stakeholders was prioritized through both in-person and virtual modalities. A nationwide in-person awareness and consultation programme, led by the Policy and Planning Division (PPD), engaged **447** participants comprising Local Government members and Dzongkhag Agriculture and Livestock officials. This was complemented by a series of virtual sensitization sessions conducted between October 2025 and March 2026 to address stakeholder queries and reinforce understanding of the scheme led by the Agriculture Department.

As designed, Dzongkhag and Gewog Agriculture officials created further awareness to farmers across **18 dzongkhags** (except for Haa and Trashigang) covering a total of **14,046 households** by May-end 2026.

As of end-July 2026, **98** farmers from Bumthang, Chhukha, Mongar, Pemagatshel, Samtse, Samdrup Jongkhar, and Trashigang had enrolled in the scheme, insuring paddy, maize, and potato crops across **88.56 acres**, with a total sum insured of **Nu. 3.59 million**. Of these, **20** farmers from Bumthang, Mongar, and Pemagatshel received compensation amounting to **Nu. 225,000** for crop losses of approximately **0.82 MT** of paddy and **7.2 MT** of maize caused by weather-related hazards, disease infestation, and wildlife depredation.

Enrolment is expected to increase progressively as neighboring farmers observe the tangible benefits realized by early adopters following crop loss events, reinforcing the scheme's demonstrated value proposition.

CHAPTER 2

AGRICULTURE EXTENSION SERVICES AND RESOURCE MANAGEMENT





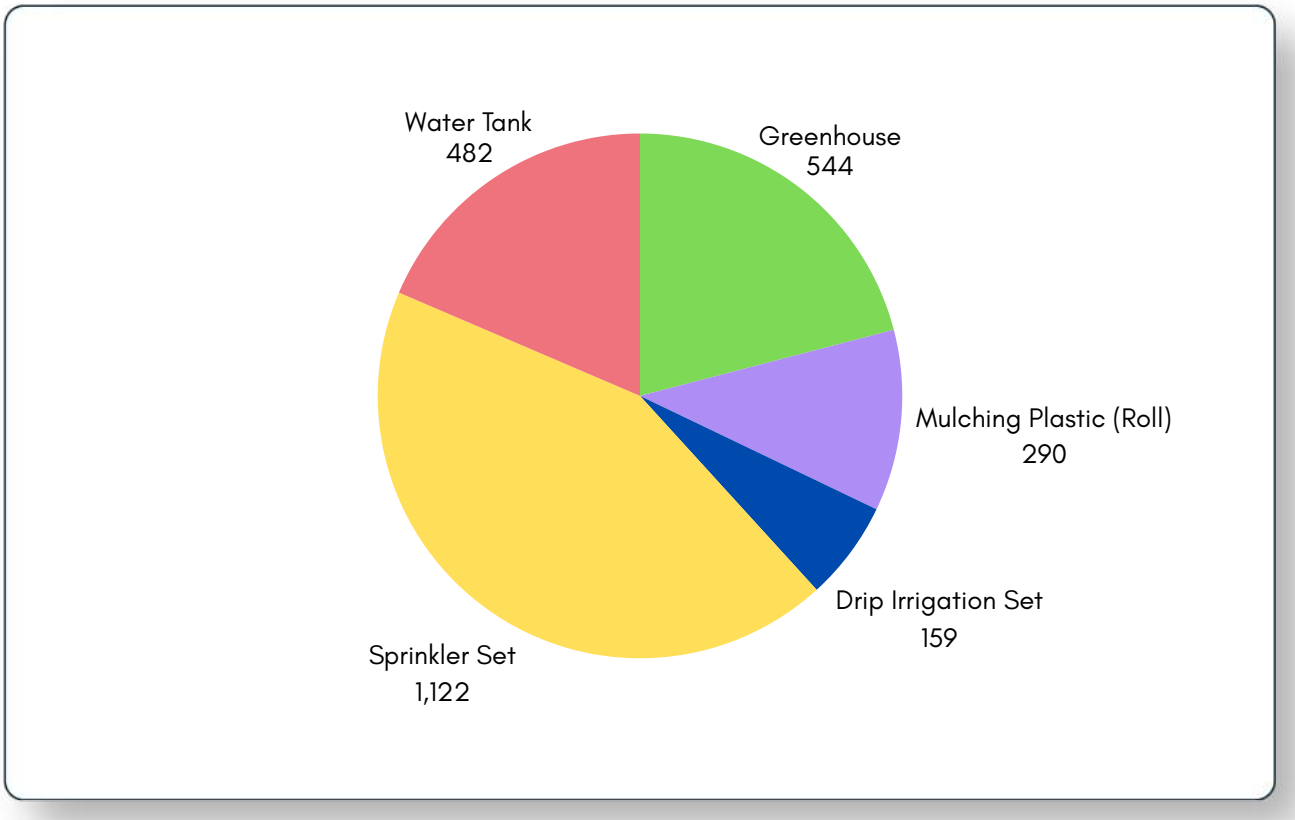


2.1. Agriculture Input support

2.1.1. Protected Cultivation and Climate Smart Input

To strengthen protected cultivation and climate-resilient crop production, the Department supported the supply of key farm inputs such as greenhouses, mulching plastic, drip irrigation sets, sprinkler sets, and water tanks during FY 2025-26. These inputs help farmers improve crop establishment, reduce moisture stress, protect crops from adverse weather, and support more efficient use of water in vegetable and high-value crop production systems.

A total of **544** greenhouses and **2053** climate-smart input items were supplied across Dzongkhags. The climate-smart input items included **290** rolls of mulching plastic, **159** drip irrigation sets, **1,122** sprinkler sets, and **482** water tanks, supporting improved production conditions and better farm-level water management.



2.1.2. Seeds, Seedlings, and Fertilizers

During FY 2025-26, the National Seed Centre (NSC) supplied **593.49 MT** of seeds valued at **Nu. 51.58 million**, **426,211** seedlings valued at **Nu. 11.28 million**, and **3,225.41 MT** of fertilizers and chemicals valued at **Nu. 152.46 million** to support crop production and seed multiplication across the country.

Seeds Supplied by NSC



Paddy
Value: Nu. 0.26 M
6 MT



Maize
Value: Nu. 2 M
53 MT



Wheat
Value: Nu. 0.48 M
8.7 MT



Vegetables
Value: Nu. 33 M
4.6 MT



Potato
Value: Nu. 14 M
510 MT



Oilseeds & Pulses
Value: Nu. 0.25 M
2.2 MT



Organic Seeds (Beans, Chilli, Quinoa, Buckwheat)
Value: Nu. 0.83 M
8.3 MT

Seedlings Supplied by NSC

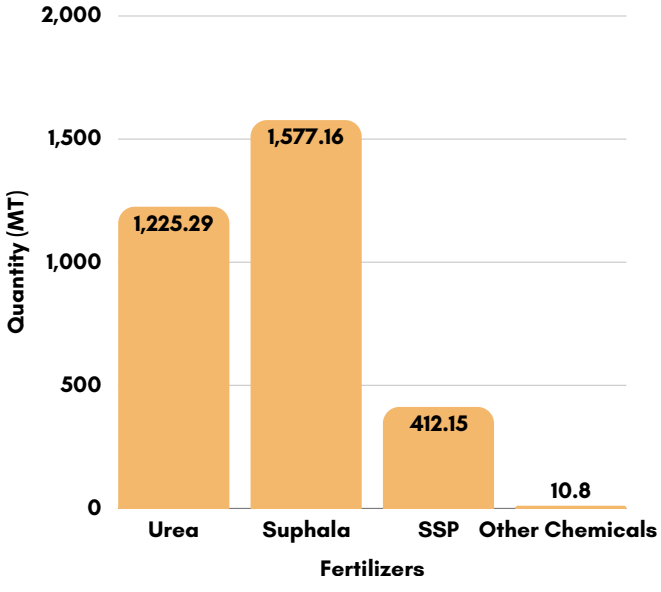


258,375
Temperate Fruit Plants
Value: Nu. 6.42 M

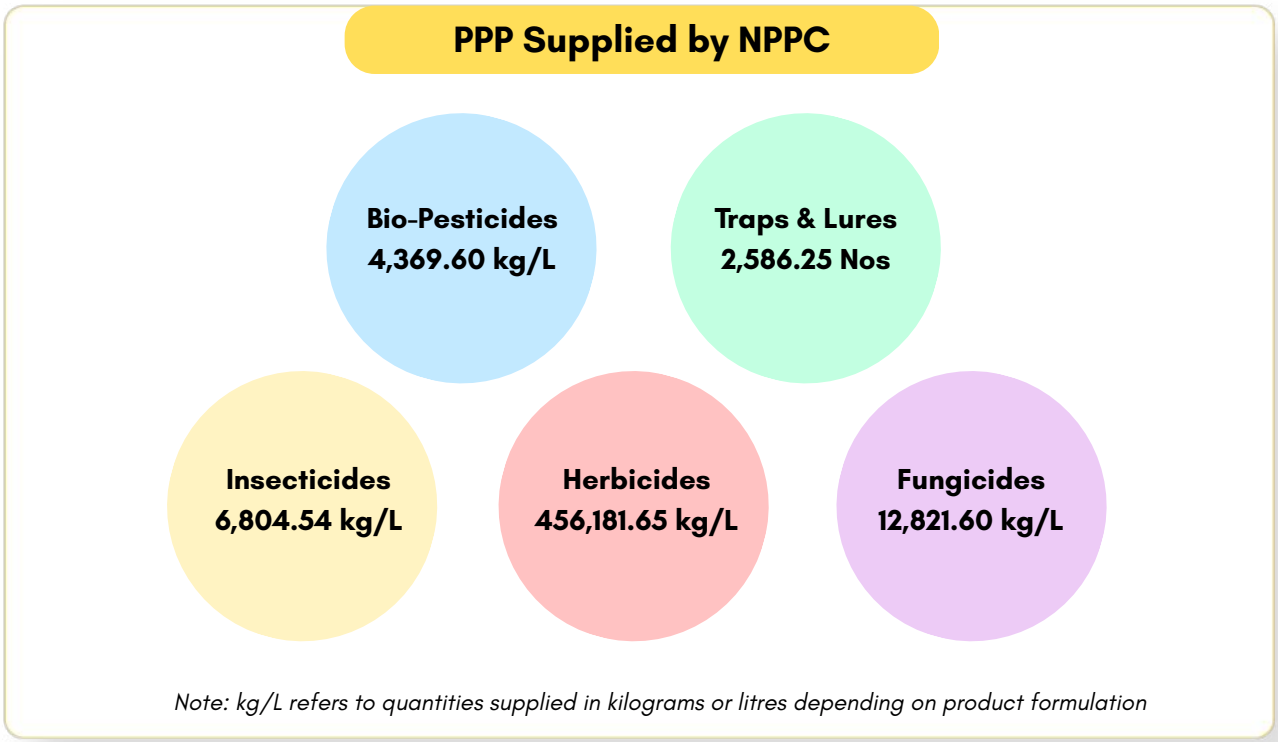


167,836
Sub-tropical Fruit Plants
Value: Nu. 4.86 M

Fertilizers Supplied by NSC

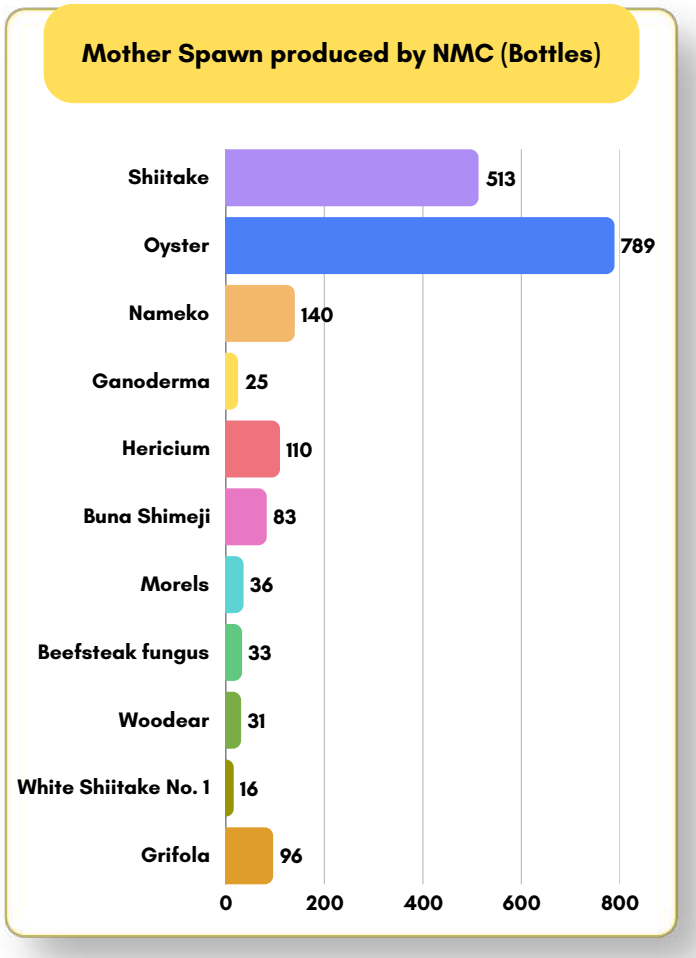


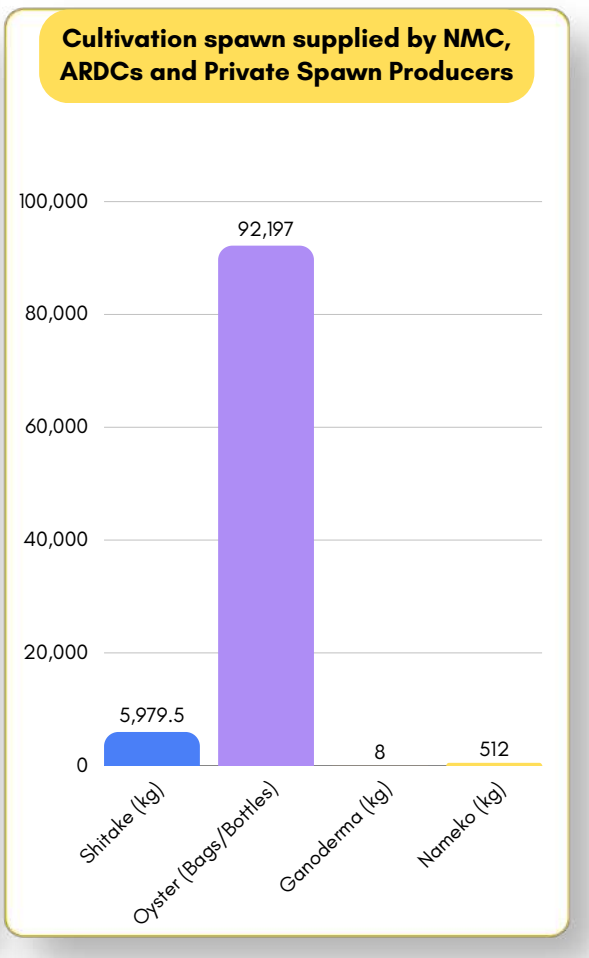
2.1.3. Plant Protection Products



Note: kg/L refers to quantities supplied in kilograms or litres depending on product formulation

2.1.4. Mushroom Spawn





2.2. Soil and Land Management

Soil Testing Services

The Soil and Plant Analytical Laboratory of the National Soil Services Centre (NSSC) is mandated to provide analytical laboratory services to farmers and other relevant stakeholders to enhance soil fertility for crop production and support research activities. The total number of samples processed for physical and chemical analysis from July 2025 to 8 June 2026 is presented in Table 3.

Table 3. Summary of soil samples processed

Sample Type	Total Analysed
Soil Chemical Analysis	1672
Soil Physical Analysis	2,332
Compost, FYM, Vermi-Compost	70
Irrigation Water	8
WEPAL	16
Digital soil testing mini laboratories at ARDCs	554

******WEPAL (Wageningen Evaluation Programs for Analytical Laboratories):***
International proficiency testing to ensure accurate, reliable, and internationally recognized soil, plant, and water analytical results through laboratory quality assurance.

Reconnaissance Soil Survey for Land Resource Planning

Soil surveys provide essential baseline information for land-use planning, agricultural development, soil mapping, and sustainable soil management.

During FY 2025-26, NSSC carried out a reconnaissance soil survey across seven Dzongkhags.

- **Gasa**
- **Haa**
- **Paro**
- **Punakha**
- **Samtse**
- **Thimphu**
- **Wangdue Phodrang**

Soil Observations Recorded

449 Total Soil Observations	87 Profile Pits	362 Auger Bore Observations





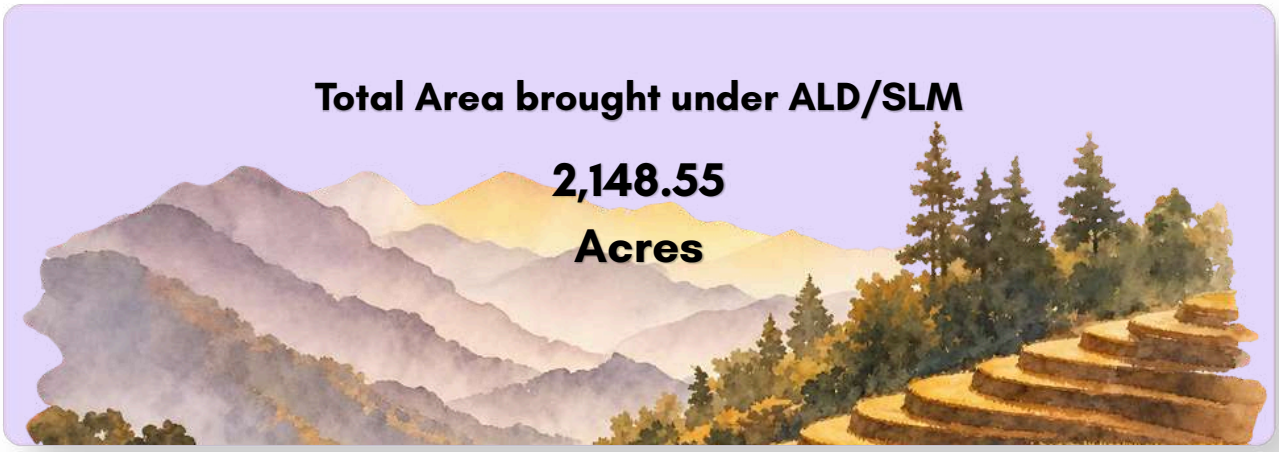
The information generated will support soil mapping, land evaluation, and the updating of soil maps and soil information generated in 2023.

Scaling Agriculture Land Development (ALD) & Sustainable Land Management (SLM)

A total of **2,148.55 acres** of agricultural land was brought under ALD/SLM interventions during FY 2025-26 across all 20 Dzongkhags, comprising **1,725.50 acres** under ALD and **423.05 acres** under SLM.

Table 4. ALD/SLM interventions

ALD Activity	Area (Acre)	SLM Activity	Area (Acre)
Dry land terracing	527.31	Hedgerow establishment	121.77
Terrace consolidation	793.21	Contour stone bund construction	8.10
Surface stone removal	246.55	Check dam construction	45
Fallow land reversion	158.43	Orchard establishment & improvement	248.18
Total ALD	**1,725.50**	**Total SLM**	**423.05**



2.3. Farm Mechanization

Farm mechanization remains a key priority in Bhutan, where rugged terrain, fragmented landholdings, and labour shortages constrain timely farm operations. During FY 2025-26, mechanization support focused on improving access to appropriate farm machinery, particularly small-scale equipment suited to local farming conditions.

Reporting Period: 1 May 2025 to 30 June 2026

Mechanized Area: 18,229 Acres

Total Households Benefitted: 9,830

In the current FY, a total of **18,229 acres** of agricultural land were mechanized, benefiting **9,830** farming households through two approaches: farmer-owned machinery and custom hiring services. While farmer-owned machinery supported direct access for individual farmers, custom hiring services reached a much larger number of households by enabling smallholders to access tractors, power tillers, paddy transplanters, combine harvesters, paddy reapers and water pumps without requiring full machinery ownership.

1 Mechanization Through Farmer-Owned Machinery

Mechanized Area
11,656 Acres

Households Benefitted
475 Households

Machines supplied under various government interventions to improve farmers' access and reduce dependence on manual labor.

2 Mechanization Through Custom Hiring Services

Mechanized Area
6573 Acres

Households Benefitted
9355 Households

A service-based mechanization model where farmers hire farm machinery when needed instead of purchasing and maintaining the machines themselves.

Machinery Supplied during FY 2025-26



467 Minitillers

Estimated mechanized area: 11,208 Acres



8 Powertillers

Estimated mechanized area: 448 Acres

The mechanization achievements of FY 2025-26 demonstrate steady progress toward transforming Bhutan's agriculture into a more productive, efficient, and resilient sector.

2.4. Land Conversion

The Chuzhing to Kamzhing Conversion Service is a key public service delivered by the Department of Agriculture to facilitate the sustainable use of agricultural land while safeguarding productive paddy fields. The service involves technical assessment and field verification of applications submitted by Dzongkhags in accordance with Section 166 of the Land Act of Bhutan, 2007 and the prevailing land conversion guidelines.

Status Update for FY 2025-26

206
Applications Reviewed from 6 Dzongkhags

99
Applications Covering 58.7 acres Approved for Conversion

107
Applications Covering 101.2 acres not Recommended for Conversion

Our Process

Application Received
Applications submitted by Dzongkhags

Field Investigation
Technical assessment by the Field Investigation Team (NSSC & DoID)

Committee Review
Review and recommendation by the Land Conversion Committee

Decision
Approved or Not Recommended for Conversion

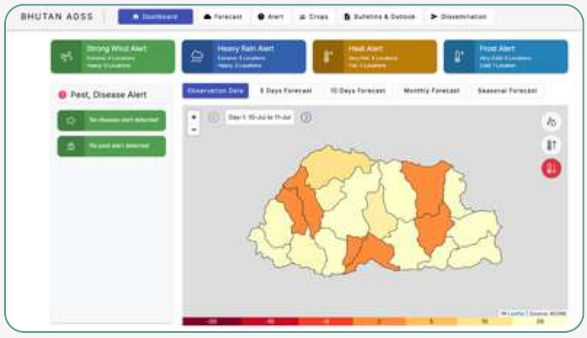


This service continues to play an important role in ensuring that only genuinely unsuitable land is converted, while productive paddy land is protected to support sustainable land management and national food and nutrition security objectives. At the same time, land conversion results in a gradual reduction of the country's cultivable agricultural land base which is important for domestic food production. The technical assessment process therefore helps balance genuine land-use needs with the need to minimize unnecessary loss of productive farmland.

2.5. Agrometeorology (Weather and Climate) Services



As a significant milestone toward strengthening climate-resilient agriculture, the Department of Agriculture, in collaboration with the National Centre for Hydrology and Meteorology (NCHM), successfully operationalized the Bhutan Agromet Decision Support System (ADSS) to facilitate the delivery of timely, location-specific weather and climate information to farmers. The Agromet service currently covers six Dzongkhags: **Paro, Punakha, Wangdue Phodrang, Dagana, Tsirang and Mongar**, with crop advisories focused on **paddy, maize, potato, apple and mandarin**. Under the 13th Five Year Plan, the Department aims to institutionalize weekly weather-based crop advisory services during critical crop growth stages to support proactive farm management, reduce climate-related risks, and enhance agricultural productivity.



During FY 2025-26, more than **86** Agromet Advisory Bulletins were generated and disseminated, providing farmers with actionable recommendations on weather-sensitive crop management practices. To further promote effective utilization and sustainability of these digital services, **two** instructional video documents were developed: one focusing on the operation and management of the ADSS platform, and another providing a user guide for the SANAM JABCHOR mobile application, aimed at enabling wider adoption and accessibility of agrometeorological information.

Advisory Dissemination Channels

- **Emails**
- **ADSS Portals**
- **Sanam Jabchor Mobile App**
- **Extension Network**

2.6. Organic Agriculture Services

Organic agriculture remains an important pathway for Bhutan to promote safe food production, sustainable soil management, biodiversity conservation, and reduced reliance on external chemical inputs. It also offers opportunities for farmers to access niche and premium markets through certified organic products, while supporting environmentally responsible farming systems aligned with the country's sustainable development priorities.

During FY 2025-26, organic agriculture services focused on strengthening registration, renewal, and certification in line with the Bhutan Organic Standards. A total of **32** households covering **24.41 acres** were newly registered under organic management, **7** households covering **180.78 acres** renewed their LOAS certificates, and **17** organic aggregators and processors were registered, contributing to improved organic assurance, traceability, and market-oriented value chain development.

Cumulatively, including the FY 2025-26 achievements, **2,766** households covering **8,492.49 acres** have been registered under organic management at the national level (Annexure 3). Of these, **1,831** households covering **7,206.76 acres** have been certified, strengthening the credibility of Bhutan's organic agriculture system.

32

Households Newly Registered (24.41 acre)

7

Households Renewed LOAS (180.78 acre)

17

Aggregators & Processors Registered



Organic Farm Registration & Certification

Table 5. Summary of newly registered and certified households

Dzongkhag	Registered HH	Registered Area (ac)	Households Certified	Certified area (ac)
Bumthang	1	10	0	0
Tsirang	1	1.37	0	0
Dagana	1	1.24	0	0
Thimphu	29	11.8	1	0.5
Total	**32**	**24.41**	**1**	**0.5**

Table 6. Status of renewal of LOAS certificates

Dzongkhag	HH Renewed	Total Area Renewed (ac)
Punakha	1	9
Zhemgang	2	12. 733
Chhukha	2	148.45
Thimphu	1	0.5
Samdrup Jongkhar	1	10.099
Total	**7**	**180.782**

Table 7. Overview of registered and certified organic aggregators and processors

Dzongkhag	HH registered	HH Certified	Aggregators	Processors
Samtse	8	8	8	0
Paro	1	1	1	0
Chhukha	6	6	6	0
Thimphu	2	2	0	2
Total	**17**	**17**	**15**	**2**

Strengthening Bhutan Organic Guarantee System (BOGS) for International Accreditation

- NCOA initiated a roadmap to strengthen the BOGS towards international accreditation with technical assistance from Earth Net Foundation, Bangkok.
- Benchmarked with IFOAM, EU, COR, and NOP standards.





Model Organic Villages

The NCOA under the Model Organic Village programme selected Subrang (Zhemgang), Thakhorling (Tsirang), and Pungzhi (Dagana) villages for organic certification and to promote sustainable farming systems. The initiative aims to expand organic farming, raise awareness on organic practices, and generate ecological and livelihood benefits, particularly in alignment with opportunities arising from the development of GMC. Baseline surveys, capacity building on Bhutan Organic Standards (BOS 02:2022), certification systems, farm diary maintenance, and support for organic input production was initiated to guide the villages towards organic certification and strengthen their transition into model organic farming communities.

2.7. Farmer Registration System



Following the nationwide rollout of the Farmer Registration System (FRS) last year, the 2025 data collection exercise has been successfully completed. The system was instituted to address persistent discrepancies between agricultural data published through the Integrated Agriculture and Livestock Census and administrative records maintained by Local Governments. It serves as a centralized platform for managing farmer and agricultural data, while its landing page provides a snapshot of key national statistics, including registered farmers, agricultural land, cultivated area, and fallow land.

The system is currently undergoing enhancements to improve usability and streamline data entry, with a focus on making it more convenient for Gewog Extension Officers, the primary data feeders. User Acceptance Testing (UAT) is scheduled for August 2026, and the 2026 data collection exercise will commence from October 2026 onwards.

FRS Enhancement Road Map

1 — August 2026
User Acceptance Testing

2 — September 2026
Training on New Features

3 — October 2026
2026 Data Collection Commences

Benefits

- **Reliable data for better decision making**
- **Improved planning and resource allocation**
- **Enhanced service delivery to farmers**
- **Evidence based policy and interventions**
- **Stronger, smarter and sustainable agriculture**

CHAPTER 3

MAJOR RESEARCH HIGHLIGHTS









3.1. Soil-Test Based Fertilizer Demonstration for Enhancing Rice Productivity

The productivity of paddy in the southern belt remains relatively low at about 1.5 MT/acre, compared to the national average of 1.9 MT/acre, although a major share of paddy cultivation takes place in this region. Low fertilizer application has been identified as one of the contributing factors. To address this, the Department, through NSSC, initiated a soil-test based fertilizer demonstration across 73 acres of rice fields in Samtse. The demonstration recorded a 36% productivity gain compared to existing farmers practices. To enhance paddy productivity in the southern belt, wider adoption of soil-test based fertilizer application is recommended.

Results of Demonstration



Field day at Sangnacholing Gewog

Average Yield of the Demonstration	Average Yield with Existing Practices in Samtse	Productivity Gain	Additional Yield
1.9 MT/Ac	1.4 MT/Ac	36%	+0.5 MT/Ac

Gross Return (nu./Ac)	70,070 To 96,040	Marginal Benefit Cost Ratio	2.9

3.2. Evaluation Of Alternate Wetting and Drying (AWD) on Growth, Yield and Water Productivity of Rice

With increasing water scarcity and rainfall variability affecting rice production, Alternate Wetting and Drying (AWD) was evaluated at Agriculture Research and Development Centre (ARDC) Bajo as a climate-smart irrigation practice. AWD, which allows rice fields to alternate between flooded and non-flooded conditions, reduced irrigation water use by 30.3% compared to Conventional Flooding (CF) without significantly affecting rice yield or major growth parameters.

Results

AWD	CF
Yield: 2.1 MT/Acre	Yield: 2.4 MT/Acre
Water productivity: 3.91 kg/m^3	Water productivity: 3.09 kg/m^3

Therefore, AWD is recommended as a practical option during periods of water shortage and in rice-growing areas where irrigation water is limited.

3.3. National Rice Survey to Guide Rice Productivity and Food Security Planning

Rice remains a priority crop for national food security, but planning effective interventions requires updated data and evidence. To generate this evidence, ARDC Bajo conducted a National Rice Survey across all 20 Dzongkhags, covering 2,085 rice-farming households. The survey findings provide a basis for targeted planning and interventions to strengthen rice production, including improved irrigation support, varietal promotion, input access, and responses to key production constraints.

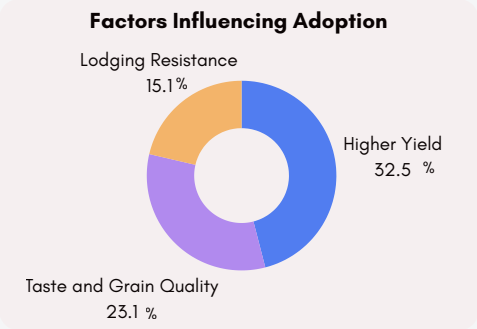
Key Findings

Irrigated Rice Dominates Bhutanese Rice Production System

85.9% of rice-farming households practice irrigated rice cultivation, confirming the importance of reliable irrigation for national rice production. Upland rice remains particularly important in eastern and central Bhutan, where irrigation infrastructure is limited.

Awareness and Adoption of Improved Rice Varieties

78% of rice farmers were aware of improved rice varieties, but only 43% reported cultivating them, highlighting a substantial gap between awareness and adoption.



The findings underscore the need to promote improved varieties based not only on yield, but also on grain quality, resilience, maturity, and market preferences.

Improved Rice Varieties Yields 54% Higher

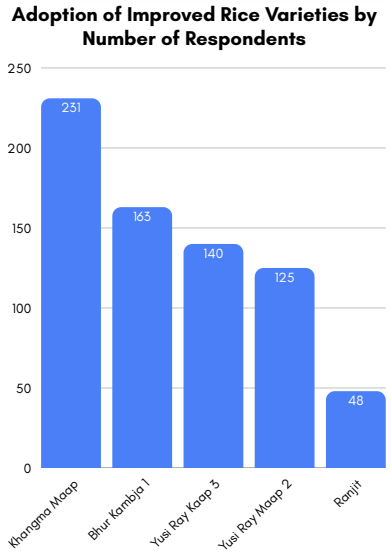
Improved rice varieties achieved an average yield of 1.53 ± 0.69 MT/acre, compared to 1.00 ± 0.60 MT/acre for local varieties.

Top Priority Intervention Areas

- Subsidies for farm inputs and machinery
- Access to quality seeds and fertilizers
- Improved irrigation facilities

Top Constraints in Rice Farming

- **Human-Wildlife Conflict**
- **Labour Shortage**
- **Water Scarcity**
- **Climate Change Impacts**



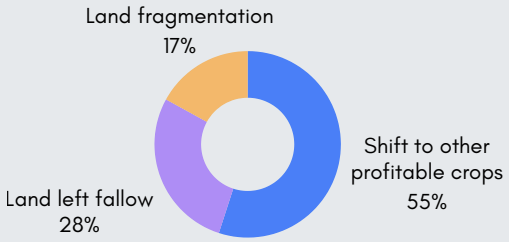
3.4. Maize Production Trend Survey

Maize remains an important cereal crop in Bhutan, but declining cultivation area and production have raised concerns for sustaining maize-based farming systems. To understand the causes of this decline, a nationwide diagnostic survey was conducted across 11 major maize-growing Dzongkhags, covering 954 maize-growing households, to identify key production constraints and factors affecting maize cultivation.

Key Findings

94% of Respondents reported decline in area under maize cultivation

Reasons for Decline in Area



Reasons for decline in production



Wildlife Damage



Pests & Diseases (Particularly Fall Army Worm)

Priority Areas of Intervention

The survey calls for targeted interventions in areas such as human-wildlife conflict management, pest surveillance, and access to quality seeds and fertilizers.

3.5. Tri-coloured Quinoa Evaluation

Tri-coloured quinoa offers potential for value addition through its visual appeal, nutritional diversity, and premium market value. However, Bhutan's released quinoa varieties are currently limited to white-grained types, restricting product diversification. To address this gap, the National Quinoa Commodity Programme introduced three coloured quinoa lines and evaluated them across ARDSC Lingmethang, ARDC Bajo, and ARDSC Tsirang, using Ashi Heychum/*Amarilla Marangani* as the check variety.



CHLi29 – Red | **COKA1911 – Cream** | **CHLi28 – Black**

Results

All coloured lines recorded acceptable yields:

- CHLi29: 0.584 MT/acre
- COKA1911: 0.654 MT/acre
- CHLi28: 0.493 MT/acre

Although the check variety recorded the highest yield at 0.783 MT/acre, the results indicate strong potential for developing premium tri-coloured quinoa products

3.6. Crop Booster Trials

To enhance crop production, there is a need to explore innovative technologies that can improve plant growth and productivity under local farming conditions. In response, the Kyminasi Crop Booster Disc was evaluated as a non-chemical crop enhancement technology. The disc is a micro-transmitter installed in irrigation systems, where it transmits biophysical signals through flowing water with the aim of stimulating natural plant growth processes. During FY 2025-26, the technology was evaluated across research centres on selected crops to assess its effectiveness under local growing conditions.

Results

Wheat (ARDC Bajo)	Mean yield of crop booster treatment at 1.21 MT/acre compared to control (1.01 MT/acre)
Kumquat (ARDC Wengkhar)	Mean yield of crop booster treatment at 465 g/plant, compared to control (427 g/plant)
Maize (ARDSC Lingmethang)	Under drip irrigation, yield increased from 1.70 MT/acre without Crop Booster to 1.83 MT/acre with Crop Booster. Under farmers practice, yield increased from 1.47 MT/acre to 1.80 MT/acre with Crop Booster.

Crop booster treatments consistently performed better during the trials; however, multi-season evaluation is required before wider field promotion.

3.7. MARPLE Laboratory Diagnostics

The growing importance of wheat in the country makes early wheat rust detection and monitoring increasingly relevant. Following its introduction in the previous year, MARPLE Diagnostics was therefore used during FY 2025-26 to characterize wheat rust pathogens from infected field samples, including yellow rust and stem rust in Haa Dzongkhag.





Preliminary Results

High genetic diversity in both Yellow Rust and Stem Rust

Multiple pathogen lineages detected within localized environments.

The use of MARPLE strengthens the National Plant Protection Centre's (NPPC) capacity for early detection of emerging rust variants and timely technical response for wheat rust disease management.

3.8. Mushroom Research Trials

The National Mushroom Centre (NMC) continued various research trials during FY 2025-26 to evaluate the adaptability, growth performance, and yield potential of high-value mushroom species and strains under local production conditions. The trials focused on strengthening technical information for future varietal recommendation and wider promotion of promising mushroom species in Bhutan.

Table 8. Research trials of NMC

Sl. No.	Research Trial	Progress
1	Production evaluation of Lion's Mane mushroom (*Hericium erinaceus*) on sawdust medium	Fruiting performance was suboptimal, likely due to space constraints and shared grow-tent conditions with Wood Ear mushroom during the fruiting stage.
2	Evaluation and cultivation of Wood Ear mushroom (*Auricularia auricula-judae*) for morphological characterization, yield performance and varietal recommendation	Two strains, KM and Jellyfish, imported from Japan, were evaluated on *Alnus* spp. sawdust substrate. Fruiting was achieved in the Jellyfish strain, while the KM strain did not produce fruiting bodies despite vigorous mycelial growth and complete substrate colonization.
3	Cultivation trial of Morel mushroom	Mycelial growth and colonization were satisfactory; however, sclerotia formation was inconsistent, possibly due to environmental fluctuations.
4	Evaluation of wood dowel spawn efficacy on mycelium recovery and growth rate in wood logs	First soaking and harvest data were collected. The billets will undergo further soaking after a one-month resting period.
5	Evaluation of growth and yield performance of Shiitake mushroom on different sawdust media	The first harvest was completed, and second fruiting has been initiated.
6	Comparative evaluation of growth and yield performance of Shiitake (*Lentinula edodes*) strains	Monitoring and data collection are being carried out as scheduled.

3.9. Culture Collection of Morel Mushroom



Wild Morel Collection



Isolation & Culture for Preservation

Wild morel specimens and associated soil samples were collected from their natural habitats in: Shemagangkha (Chhukha), Chelela (Paro), Wangsisina & Talakha (Thimphu)

3.10. Bhutan National Fungarium: Specimen Processing

To strengthen documentation and conservation of Bhutan's fungal diversity, the National Mushroom Centre processed fungal specimens for the Bhutan National Fungarium.

>300 Specimens preliminarily identified

~200 Specimens processed for fungarium

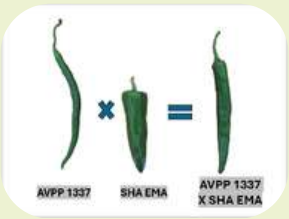
Registered in Global Inded Fungorum Database

Strengthens documentation, visibility & supports future conservation research

3.11. Evaluation of F1 Chili Hybrids

Performance evaluation for four F1 chili hybrids was conducted under greenhouse and in open field conditions. AVPP 1337 x Sha Ema emerged as best perfoming and preferred hybrid. However, it shall undergo National Coordinated Trials for further evaluation.

AVPP1337 x Sha Ema



Highest yield 16.9 MT/acre (Greenhouse)

Desired fruit size, shape, uniformity & taste

3.12. Evaluation of F1 tomato hybrids

F1 tomato hybrids were screened to identify promising lines with better tolerance to late blight. Among the evaluated hybrids, AVTO1712 × AVTO1954 showed the lowest late blight infection and good suitability for open-field cultivation. However, this is subject to further evaluation.

AVTO1712 x AVTO1954



Showed lowest late blight infection

Ideal for open-field cultivation under temperate conditions

3.13. Evaluation of Citrus and Pomelo Varieties

Citrus and pomelo variety evaluations were conducted to identify adaptable, high-performing cultivars for wider cultivation in Bhutan. Sixteen citrus varieties were evaluated in Tsirang and Dagana, where Star Ruby performed best overall for fruit size, juice yield and pulp weight, while Naveline and Valencia showed favourable fruit quality and consistency. In addition, three pomelo varieties were evaluated, with R3P4 recording the highest TSS and lowest seed count, and R4P5 recording the highest fruit weight and pulp percentage.

16
Citrus Varieties Evaluated

Star Ruby
Best Fruit Size, Juice Yield & Pulp Weight

3
Pomelo Varieties Evaluated

R3P4 recorded highest TSS and lowest seed count
R4P5 recorded highest fruit weight and pulp%

3.14. Evaluation of Native Potassium-solubilizing bacteria (KSB) & Phosphate-solubilizing bacteria (PSB) for Biofertilizer Development

Although organic agriculture is being prioritized in Bhutan, the limited availability of locally produced biofertilizers remains a key constraint to wider adoption of biological nutrient management practices. To address this gap, eight elite isolates selected from 16 strains isolated in the previous FY were further evaluated for stress tolerance and identified through 16S rRNA sequencing. The isolates showed strong nutrient-solubilizing potential, with Bacillus subtilis KSB7 demonstrating notable performance as a potential candidate for future local biofertilizer development.

Characteristics of Promising Strain



Bacillus subtilis **(KSB7)**

Grows under High Salt-Stress upto 7% NaCl

Thrives across a wide temperature range of 10 - 40°C as compared to others

The findings indicate potential for developing locally formulated bio-inputs to strengthen organic nutrient management practices in the country.

3.15. Testing an Insecticide Against Fall Army Worm (FAW)

FAW remains a major threat to maize production in Bhutan. NPPC's laboratory evaluation confirmed strong dose and time-dependent efficacy of Emamectin benzoate 5% SG, indicating its potential as a management option for FAW. Probit analysis revealed LC_{50} values of 16.5 mg a.i./L at 6 hours, decreasing progressively to 0.165 mg a.i./L by 96 hours, indicating high potency and rapid toxicity. These findings establish Emamectin benzoate 5% SG as a highly effective and reliable management option for FAW under controlled laboratory conditions, with quantified LC_{50} baseline values providing a robust reference for comparing multiple insecticide formulations.

Key Findings

LC_{50} at 6 hours: 16.5 mg a.i./L | **LC_{50} at 96 hours: 0.165 mg a.i./L**

The findings establish a baseline for insecticide efficacy and susceptibility monitoring, providing a foundation for field validation of effective and economical application rates for farmers.





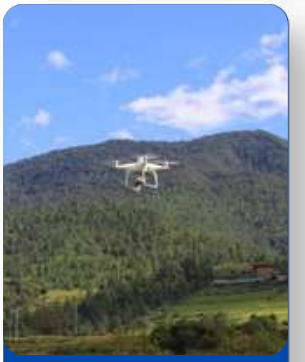
3.16. Technologies for Climate-Resilient Agriculture



15 Units installed
38 Acres Covered

TIMER BASED ANIMAL REPELLENT

The Agriculture Machinery and Technology Centre (AMTC) promoted and installed 15 timer-based animal repellent units in Langthel Gewog to help reduce crop damage from wildlife. The initiative demonstrates the practical use of locally developed farm technologies to protect standing crops, reduce human-wildlife conflict, and support agricultural productivity.



High-Resolution mapping for better planning

DRONE LAND MAPPING

AMTC, in collaboration with the GovTech Agency, used multispectral drone imagery to assess cultivated wetland areas in Dzomi Gewog, Punakha. The drone-based survey data was compared with NSB-published data, revealing considerable discrepancies between the two sources. The findings highlight the need to strengthen production data collection through remote sensing technologies to improve agricultural statistics and support evidence-based land-use planning.



Climate-Resilient farm power

ELECTRIC MINI TILLER

AMTC initiated the development of an electric mini-tiller by replacing the conventional engine with a battery-powered BLDC motor system. Preliminary testing confirmed stable power delivery and basic functionality, with final calibration and field validation planned for the coming year.

3.17. Tested and Certified Machinery

With the increasing import and sale of farm machinery by private firms, testing and certification play an important role in ensuring that farmers have access to safe, efficient, and reliable equipment. The process also encourages suppliers to maintain quality standards and promotes healthy competition in the farm machinery market.

During FY 2025-26, 19 new models of farm machinery and parts were taken up for testing and certification by AMTC.

Machine Type	Models Tested	Remarks
Brush Cutter	2	Certified
Mini Tiller	2	Not Certified
Greenhouse Plastic	2	Not Certified
Quinoa De-husker	6	Preliminary test
Plough & Parts	7	Preliminary test

3.18. Standardization and Certification

The Agriculture Machinery and Technology Centre (AMTC), in collaboration with the Bhutan Standards Bureau and Technical Committee TC-08, contributed to the formulation, review, and harmonization of two national standards/test codes for agricultural machinery.



3.19. Seed Potato Replacement Through Targeted Research Outreach in High-Potential Areas





Under the RNR Jobs Project, around 200 MT of seed potato was replaced, while research outreach program covering 53 acres were conducted across Thimphu, Paro, Punakha, Wangdue, and Chhukha to promote improved potato varieties and the adoption of good agronomic practices.

53 Acres Covered	53 MT Seed Potato Distributed	Fertilizers Worth Nu. 0.526 million Supplied	Demonstrations of Yusi Chip & Yusi Maap 2 at Research Sites

3.20. Establishment of Citrus-Focused Villages

Under the RNR-Jobs Project, two Citrus-Focused Villages were established in Pemagatshel (Dechenling Gewog) and Trashigang (Kangpar Gewog) to promote commercial citrus cultivation, rejuvenate ageing orchards, and strengthen citrus-based livelihoods.

68 Acres Covered

60 Households Benefitted

6,721 Quality Seedlings Planted

3.21. Early tomato production in Bunagu, Chhukha

As tomato is a priority crop under the 13th Five-Year Plan, Chhukha Dzongkhag, in collaboration with National Centre for Organic Agriculture (NCOA) Yusipang, supported early tomato production in Bunagu village, Chapcha Gewog, Chhukha.

The activity supported 13 farming households with tomato production in 20 greenhouses through the provision of seedlings, technical guidance, and crop management demonstrations.





Production data will be assessed after harvesting to guide future support for early tomato production.

3.22. Quinoa Model Farms

To strengthen quinoa production, five pilot model farms were established in Bartsham Gewog, Trashigang, under the OCOP-FAO FVC project. Progressive farmers from five Chiwogs were supported with inputs to demonstrate recommended quinoa production practices. The sites also served as learning platforms for farmers from Bartsham, Ramjar, and Toetsho Gewogs.

5 Farmers Fields Established

5 Chiwogs Involved

Sustainable quinoa production promoted

Table 9. Productivity of quinoa model farms by location (MT/acre)

Nangkhar (Potato based)	Dzongthung (Potato based)	Trashang (Potato based)	Kumung (Potato based)	Muktangkhar (Maize based)
1.71	0.96	1.06	0.89	0.76

CHAPTER 4

INSTITUTIONAL DEVELOPMENT AND KNOWLEDGE MANAGEMENT









4.1. Technology Released

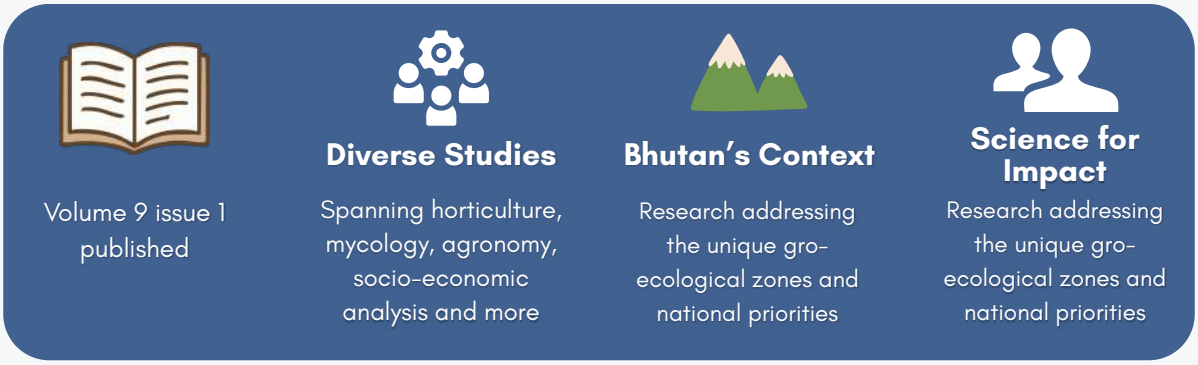
The Technology Release Committee (TRC) is convened annually by the Department of Agriculture to review and approve potential agricultural technologies for release and wider promotion. During FY 2025-26, the 7th TRC meeting was successfully convened with a total of seven technology proposals being presented for review and five being endorsed for release.

Table 10. Summary of technologies reviewed during the 7th TRC

Technology	Proponent agency	Decision
Trichoderma Biofungicide for Blight Management in Chilli	NPPC	Endorsed for release
Semi-automated Poly Pot Filling Machine	AMTC	Endorsed for release
Mini Tiller-Operated Potato Seeder	AMTC	Endorsed for release
Assessment of Different Soil Mixture for Raising Seedling in Tray for Machine Rice Transplanter	AMTC	Recommended for promotion through guideline development
Tractor-Mounted Lifting Mechanism in Modern Farming	AMTC	Endorsed for release
AI-powered Dakzin System	AMTC and CST	Recommended for further piloting and validation
Hot Callusing Technology for Improved Walnut Propagation	ARDC Wengkhar	Endorsed for release

4.2. Bhutanese Journal of Agriculture

Vol. 9, Issue 1



The Bhutanese Journal of Agriculture (BJA), published by the Department of Agriculture, continues to serve as a vital platform for showcasing original, peer-reviewed research by Bhutanese agricultural scientists. The published **BJA Volume 9, Issue 1** brings together **ten** diverse studies spanning horticulture, mycology, agronomy, socio-economic analysis, and emerging technologies, reflecting the breadth of adaptive research needed to support Bhutan's uniquely varied agro-ecological zones. From evaluating wine grape varieties, Summer Queen passion fruit, and black rice adaptability to domesticating wild enoki mushrooms and analysing soil properties in dragon fruit cultivation, the issue highlights ongoing efforts to diversify and strengthen crop options suited to Bhutan's mountainous terrain.

The journal also addresses pressing systemic, economic, and technological questions facing the sector. Studies examining the arecanut farming system in Chhuzanggang Gewog, the viability of Bhutan's organic agriculture movement, and the economic impact of the winter chilli subsidy programme in Dagana and Sarpang offer critical insights into livelihoods and policy, while a systematic review of UAV applications and research on *Moringa oleifera* leaf powder processing point to forward-looking innovations. Together, this volume reaffirms BJA's mission of generating scientifically grounded, locally adapted knowledge that supports the resilience, sustainability, and transformation of Bhutan's agrifood sector.

For access to the full article scan the QR Code or visit https://www.bja.gov.bt/

4.3. Infrastructure Relocation and Continuity

Relocation of ARDC & RSC Samtenling to Samphelling, Chhukha





The **ARDC** and the **Regional Seed Centre (RSC)**, Samtenling were relocated to Samphelling, Chhukha, due to the ongoing Gelephu International Airport development under the Gelephu Mindfulness City (GMC) initiative. The relocation was undertaken to ensure continuity of seed production, planting material conservation, and agricultural input supply services.

Key relocation activities during FY 2025-26



Relocation of ARDC & RSC to Samphelling, Chhukha



Land clearing and site preparation



Development of nursery facilities



Construction of temporary infrastructure

Continuity Accured



The new site at Samphelling provides the foundation to continue their mandate of Research and Development in sub-tropical and plantation crops.

4.4. Capacity Building and Training

Capacity Building of Irrigation Engineers

30 irrigation engineers were trained in India under the following key areas:

- Pressurized and gravity-flow irrigation systems
- Lift irrigation and micro-irrigation technologies
- Hydraulic design and system efficiency
- Plastic piping materials and selection
- Field visits to irrigation projects and pipe manufacturing facilities

The training provided practical knowledge on modern irrigation technologies, sustainable water management, and cost-effective irrigation system design, contributing to improved irrigation development in Bhutan.





Two in-country training programmes were conducted in Phuentsholing, equipping 49 engineers with practical skills in modern engineering surveying and design.

Key areas covered:

- RTK GNSS and Total Station (TS) surveying
- LISCAD data processing
- Autodesk Civil 3D for terrain modelling and design
- Contour mapping, alignment design, and earthwork estimation
- Cross-section generation and engineering design

The training strengthened participants' technical capacity in modern surveying and digital engineering design, enhancing the Department's ability to plan and implement irrigation systems, roads, and other infrastructure with greater accuracy, efficiency, and climate resilience.





Capacity Building on Epidemiological Studies of Wheat Rust Pathogen

Wheat rust surveillance requires strong technical capacity to understand pathogen spread, alternate hosts, and disease development under local conditions. To support ongoing research in this area, a training workshop on epidemiological studies of wheat rust pathogens was conducted, facilitated by experts from the University of Minnesota, USDA, Cornell University, and CIMMYT.

25 NPPPC Officials Trained

National Plant Protection Centre





The trained officials are expected to strengthen wheat rust surveillance, and contribute to improved preparedness for wheat rust management in Bhutan.

Capacity Building on Wheat Genomics & Bioinformatics

Capacity in genomics and bioinformatics is needed to support crop improvement, disease-resistance studies, and evidence-based research. To strengthen this, a Wheat Genomics and Bioinformatics Training Workshop was conducted through the WISER Project under CIMMYT. The training built the capacity of 28 participants, including RPPOs and laboratory officers from four regional research centres and NPPC.



Participants gained practical skills in genomic and bioinformatics tools to support future studies on wheat diseases and national plant health systems.

Capacity Building for Climate-Adaptive Potato Seed Production



Under the ADB-SCAPP Project, the National Seed Centre (NSC) trained registered potato seed growers in Wangdue Phodrang and Bumthang Dzongkhags on seed certification, quality standards, climate-smart field management, and good seed production practices.

The training strengthened technical capacity for quality seed production while promoting a farmer-led seed system with strong participation of women growers.

Capacity Building on Sustainable Soil and Land Management (SLM)

Hands-on and field-based training on sustainable soil and land management, composting technology, and Bhutan GAP-aligned soil and nutrient management was conducted across CARLEP, GEF-8, BTFEC-Adaptation Fund, and GoI-supported programmes. The trainings reached 1,248 field-level participants, including farmers, inmates and De-suups, and 114 extension supervisors and officials, strengthening practical capacity in sustainable land management practices.





Youth Skilling in Citrus Orchard Management

ARDC Bajo and ARDC Wengkhar jointly piloted a youth skilling programme to enhance rural youth participation and employment opportunities in Bhutan's citrus value chain.



38 Youths Trained	**Hands-on Orchard & Nursery Management**	**Basic Citrus Value Addition Skills**	**Better Livelihood Opportunities**

Capacity Building on Precision Farming and Climate Smart Agriculture

As part of the Chirub Commercial Farm capacity building programme, a training was conducted at Jain Irrigation Systems Ltd., Jalgaon, India, to strengthen technical capacity in precision farming and climate-smart agriculture. The programme trained 15 participants from DoA Headquarters, ARDC Bajo, ARDC Wengkhar, AMTC, NSSC, FMCL, and De-suups from Samrang and Pemathang, who are key stakeholders in the development, management and operation of the Chirub Commercial Farms.

The training covered micro-irrigation systems, protected cultivation, hydroponics, IoT and AI applications, drone operations, remote sensing, GIS and data analytics through classroom sessions, field visits and practical demonstrations.





The knowledge gained is expected to support efficient irrigation planning, technology-based farm management, crop monitoring and improved operation of the commercial farms.

4.5. Engagements and Knowledge Exchange Platforms

ANTAM Annual Conference Meeting



Bhutan successfully hosted the 12th Annual Meeting of the Asian and Pacific Network for Testing of Agricultural Machinery (ANTAM) in Thimphu, the country's first-ever United Nations ESCAP technical meeting with delegates from 15 participating countries and representatives of UN-ESCAP and UN-CSAM, strengthening regional cooperation on harmonized agricultural machinery standards, mountain-specific mechanization, and climate-resilient technologies.

Annual Mushroom Festival

NMC Participated in Mushroom Festivals at Genekha (15-16 Aug 2025) & Ura (23-24 Aug 2025)

Engaged with farmers, enthusiasts & public on sustainable mushroom cultivation





Key Objectives

- **Promote Conservation of Indigenous Mushroom Resources**
- **Build Strong Foundation for Future Research**
- **Enhance global recognition of Bhutan's mycology**
- **Promote Awareness & Sustainable Utilization**

CHAPTER 5

CROP PRODUCTION









Cereals and Vegetables Production Progress

Table 11. Commodity wise production

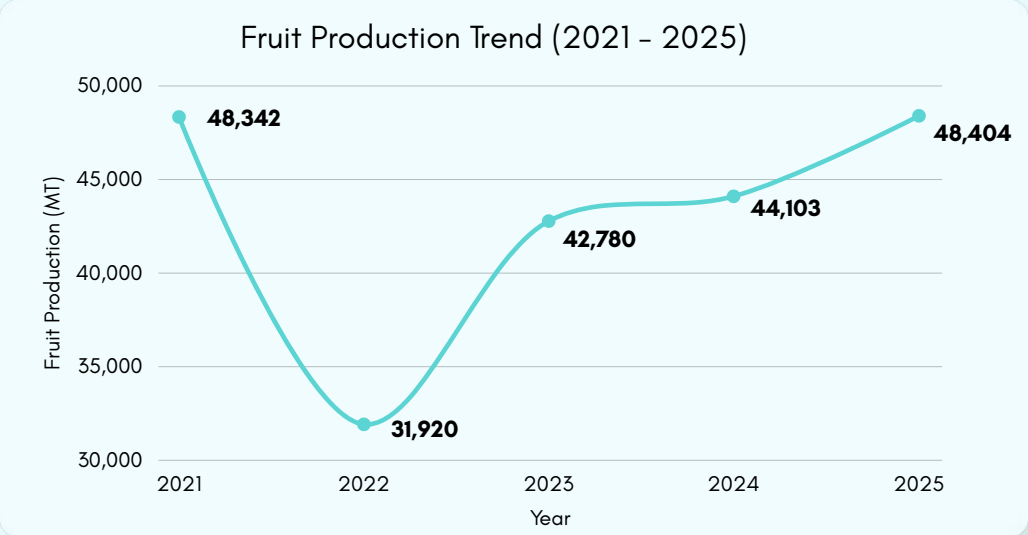
Commodity	2024 Production (MT)	2025 Production (MT)	2025 Target (MT)	Achievement (%)
Paddy	41,537	45,530	47,157	97%
Maize	27,636	32,042.74	28,211	114%
Quinoa	40	94 *	100	94%
Wheat	839	1,357 *	844	161%
Chilli	5,596	6,883.35	6,306.70	109%
Tomato	183	216.83	582.25	37%
Cauliflower	1,096	1,516.85	1,509.43	100%
Beans	1,785	2,811.28	1,915	147%
Onion	196	524	606	86%
Potato	37,778	44,752	39,000	115%
Organic Asparagus	-	14.65	4	366%
Organic Broccoli	-	16.05	16	100%

Note: Figures marked with an asterisk (*) are based on the Farmer Registration System (FRS). All other figures are from the Quarterly Integrated Agriculture and Livestock Survey (IALS) published by NSB.

- **Quinoa**: Achieved 94 MT in FRS, while IALS reported 39 MT.
- **Wheat**: Achieved 1,357 MT in FRS while IALS reported 625 MT.
- **Tomato**: Achieved 216.83 MT (37% of target) due to climate challenges and marketing constraints.

Fruit Production Progress

Fruit production is increasing gradually, rising from **44,103 MT** in 2024 to **48,404.07 MT** in 2025, reflecting a **10%** increase. However, production remains below the FY 2025-26 target of **86,571 MT**.

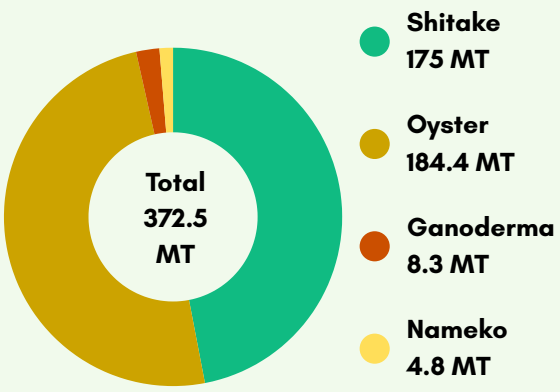


Ongoing input and technical support, expansion of high-value fruit cultivation and establishment of new orchards under the MFTP Programme are expected to contribute to higher fruit production in the coming years as planted trees mature and begin to yield.

Mushroom Production Progress

Mushroom production exceeded the FY 2025-26 target of **317.6 MT**, reaching an estimated **372.5 MT** as reported by the National Mushroom Centre. This was supported by extension efforts, input supply, and technical assistance to growers across the country.

Beyond increasing production, efforts are also being directed towards diversifying cultivation with high-value mushroom species such as nameko and Ganoderma, which have potential for niche and export-oriented markets.







Annexure

Annexure 1: Chain-link Fencing Implementation by Dzongkhag

Dzongkhag	Actual Length in KM	No. of Chiwog Covered	No. of Schemes	Cultivated land Protected (acres)	Expenditure (Nu. M)
Bumthang	17	4	4	457	35.511
Chhukha	46	9	9	1699	60.32
Dagana	17	3	3	202	14.839
Gasa	9	2	2	71	17.193
Haa	9	1	1	135	13.119
Lhuentse	17	5	5	291	21.517
Mongar	59	10	10	439	53.824
Paro	30	9	8	856	45.163
Pema Gatshel	18	5	5	680	25.168
Punakha	80	5	5	2159	85.426
Samdrup Jongkhar	34	6	6	1386	54.631
Samtse	38	8	8	1015	53.544
Sarpang	41	6	5	1825	50.257
Thimphu	15	5	5	294	16.276
Trashigang	47	7	7	2095	76.896
TrashiYangtse	18	4	4	630	23.154
Trongsa	25	8	8	385	22.338
Tsirang	61	12	10	1830	84.708
Wangdue Phodrang	54	16	16	1417	61.959
Zhemgang	21	5	5	721	31.479
Grand Total	**656**	**130**	**126**	**18588**	**847.322**

Annexure

Annexure 2: Status of Land Conversion Applications

Sl.No.	Dzongkhag	Cases Reviewed (Nos.)	Cases Recommended for Conversion (Nos.)	Cases Not Recommended for Conversion (Nos.)	Area Recommended for Conversion (Acres)	Area Not Recommended for Conversion (Acres)
1	Chhukha	85	47	38	22.87	31.243
2	Mongar	1	1	0	0.147	0
3	Samdrup Jongkhar	5	5	0	7.964	0
4	Samtse	55	30	25	18.242	21.269
5	Trongsa	1	1	0	0.185	0
6	Tsirang	59	15	44	9.304	48.733
	Total	**206**	**99**	**107**	**58.712**	**101.245**

Annexure

Annexure 3: Area Registered for Organic Management in Dzongkhags

SN	Dzongkhag	Household Registered	Household Certified	Area Registered (Acre)	Certified area (Acre)
1	Haa	91	3	294.402	96.149
2	Tsirang	132	110	159.444	69.02
3	Wangdue	95	67	156.251	19.62
4	Punakha	43	13	75.095	17.36
5	Gasa	16	16	16	16
6	Thimphu	210	176	2270	2253.88
7	Paro	23	18	28.37	23.872
8	Chhukha	357	181	994.813	830.541
9	Trongsa	203	29	180.47	175.47
10	Samtse	193	178	258.769	234.106
11	Samdrup Jongkhar	324	243	407.83	325.269
12	Sarpang	223	208	385.99	279.9
13	Zhemgang	122	90	311.054	103.05
14	Bumthang	135	133	121.178	111.608
15	Mongar	179	172	208.483	200.299
16	Lhuntse	86	37	101.793	46.862
17	Tyangtse	17	14	20.41	12.8
18	Tgang	134	45	2330.57	2266.9
19	P/gatshel	164	98	170.301	124.051
20	Dagana	1	0	1.24	0
	Total	**2766**	**1831**	**8492.49**	**7206.757**



Department of Agriculture
Ministry of Agriculture and Livestock