



Government of the people's Republic of Bangladesh

Ministry of Housing and Public Works

Urban Development Directorate

82 Segunbagicha, Dhaka-1000

PREPARATION OF DEVELOPMENT PLAN FOR MEHERPUR ZILLA

REPORT ON ASSIGNMENT-13

**A Report of Spatial Transformation of Agricultural Survey output and Report
Submission**

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1. Introduction

Agriculture forms the backbone of Meherpur's economy, providing livelihood to the majority of its rural population. The district benefits from fertile alluvial soils, favorable climatic conditions, and extensive irrigation facilities, allowing cultivation of a wide range of crops throughout the year. Major crops include cereals (Boro, Aman, Maize), pulses, oilseeds, vegetables, fruits, and high-value spices, which contribute both to household food security and local market supply. Over the past four years (2020–21 to 2023–24), agricultural patterns in Meherpur have shown gradual shifts, with increased emphasis on high-yield crops and commercial vegetables to enhance productivity and income. This report analyzes crop-wise area, production, and yield trends to provide insights into the district's agricultural performance and development opportunities.

2. Overview of Agricultural Pattern in Meherpur

Agro-climatic Context

- Meherpur district lies in the south-western agro-ecological zone of Bangladesh, characterized by fertile alluvial soil, suitable for intensive crop cultivation.
- The soil texture varies from loam to clay-loam, ideal for cereal, pulse, and vegetable production.
- The region experiences an average annual rainfall of 1,500–1,800 mm, concentrated during the monsoon, while Rabi crops rely heavily on irrigation (mainly from shallow and deep tube wells).
- The climate supports three distinct cropping seasons — *Kharif-I*, *Kharif-II*, and *Rabi* ensuring year-round agricultural activity.

Cropping Pattern

- Agriculture in Meherpur is dominated by cereals, particularly Boro, Aman, and Maize, which occupy the largest cultivated area.
- Vegetables (both Rabi and Kharif seasons) form the second most significant group, contributing to food diversity and market supply.
- Oilseeds (Mustard, Sesame) and Spices & Condiments (Onion, Garlic, Chili) play a key role in farm income diversification.
- Pulses and Fruits are also grown but on a comparatively smaller scale.
- The pattern reflects a gradual shift from traditional cereals toward high-value vegetables and spices, driven by market demand and irrigation expansion.

Year-wise Cultivated Area and Production (2020–21 to 2023–24)

- Total cultivated area and production show moderate fluctuation but remain stable overall.
- Major cereal crops (Aman, Boro, and Maize) together account for the largest share of total production, with Maize production showing a continuous increase:
- 124,916 → 138,946 M. Ton (2020–21 to 2023–24).
 - Rice (Aman + Boro) production remains steady, around 200,000 M. Ton+ annually, reflecting stable irrigation and yield efficiency.
 - Vegetable crops (Rabi & Kharif) maintain steady growth, particularly Cauliflower, Green Banana, and Oal Kachu, showing yield improvement and area expansion.

- Spices (Onion, Garlic, Chili) maintain high production levels; Onion alone contributes over 58,000 M. Ton in 2023–24.
- Fruit crops such as Mango, Guava, and Banana continue to expand, contributing to both nutrition and local income generation.

Shift of Cropping Area (2020–21 → 2023–24)

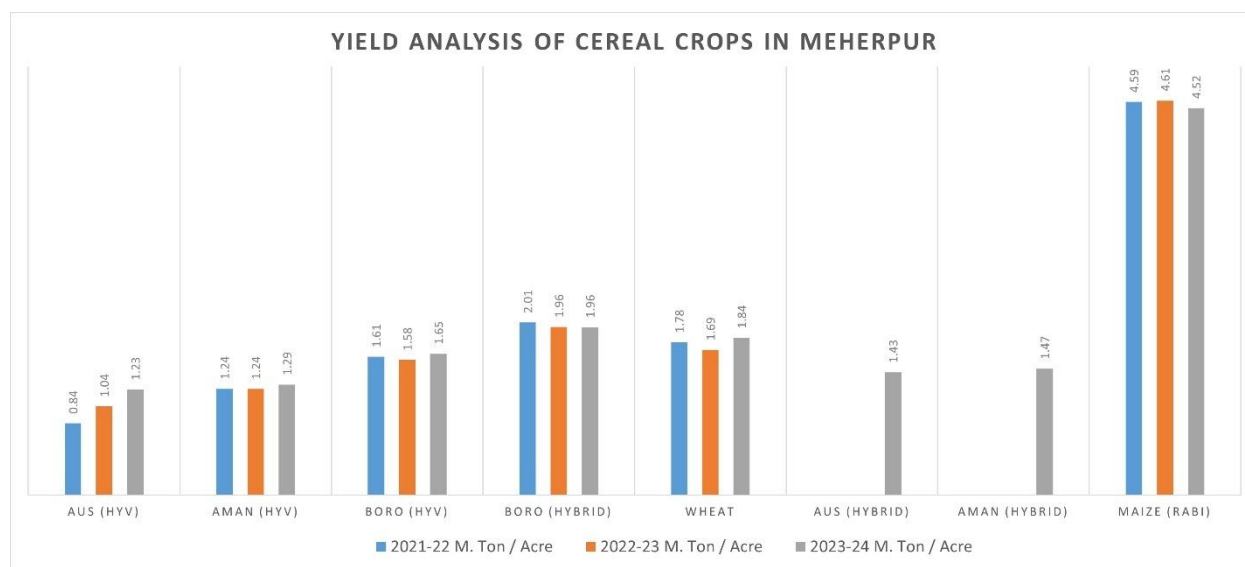
- Maize area increased from 28,300 → 30,747 Acres, reflecting higher profitability and farmer preference.
- HYV and Hybrid rice (Boro & Aman) areas show slight reduction, possibly due to diversification into high-value crops.
- Vegetable cultivation area has remained stable but shifted toward high-yield winter vegetables (e.g., Cauliflower, Pumpkin, Carrot).
- Oilseed and pulse crops slightly declined in area due to lower market prices and irrigation competition.
- Fruit cultivation, especially Banana, Guava, and Mango, has expanded gradually with orchard-based farming.

3. Yield Analysis by Crop Category

3.1 Cereals (Rice, Wheat, and Maize)

Overview

- Cereals are the main crops in Meherpur, covering Aus, Aman, Boro rice, Wheat, and Rabi Maize.
- Data from 2021–22 to 2023–24 show gradual yield improvement, especially in hybrid rice and maize.
- Overall yield stability indicates effective fertilizer and irrigation management.



Source: BBS 2023, 2024

Figure: Cereal Crops Yield Analysis

Table: Cereal Crops Area & Production in Meherpur

Crop	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Aus (HYV)	48,761	40,898	49,866	51,616	39,090	48,107
Aus (Hybrid)	—	—	—	—	9,615	13,774
Aman (HYV)	63,909	79,248	63,448	78,605	61,109	78,833
Aman (Hybrid)	—	—	—	—	2,737	4,036
Boro (HYV)	44,333	71,555	39,417	62,120	39,369	64,880
Boro (Hybrid)	4,499	9,062	5,762	11,311	6,251	12,243
Wheat	30,176	53,819	29,820	50,535	32,117	58,947
Maize (Rabi)	27,321	125,421.15	28,193	129,870.8	30,747	138,946.13

Source: BBS 2023, 2024

Rice (HYV & Hybrid)

- Aus (HYV): Moderate increase from 0.84 → 1.23 M. Ton/Acre.
- Aus (Hybrid): Introduced in 2022–23, showing 1.43 M. Ton/Acre, higher than HYV Aus.
- Aman (HYV): Yield remained stable around 1.24–1.29 M. Ton/Acre.
- Aman (Hybrid): Better performance (1.47 M. Ton/Acre).
- Boro (HYV): Consistent yield (1.61–1.65 M. Ton/Acre).
- Boro (Hybrid): Highest rice yield (2.01 M. Ton/Acre).

Wheat

- Yield increased slightly from 1.78 → 1.83 M. Ton/Acre.
- Area fluctuated due to farmers' shift toward maize and vegetables.

Maize (Rabi)

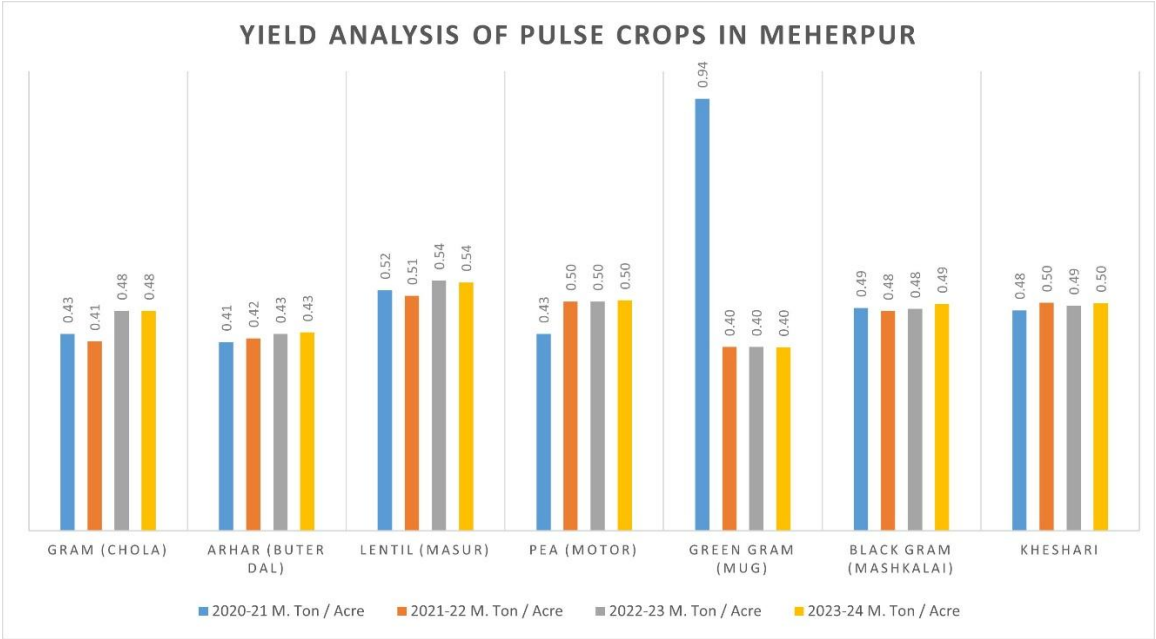
- Highest-yielding cereal crop in Meherpur.

- Yield steady around 4.59 → 4.52 M. Ton/Acre, indicating strong consistency.
- Production increased despite minor area change.

3.2 Pulses

Overview

- Pulses are important rabi crops in Meherpur, mainly Gram (Chhola), Arhar, Lentil (Masur), Pea (Motor), Green Gram (Moog), Black Gram (Mashkalai), and Khesari.
- Data from 2020–21 to 2023–24 show generally stable yield trends with minor fluctuations.
- Cultivation area of pulses slightly declined as farmers shifted toward high-value cereals and oilseeds.
- Proper fertilizer use and soil fertility management are key to maintaining stable yield.



Source: BBS 2023, 2024

Figure: Pulse Crops Yield Analysis

Table: Pulse Crops Area & Production in Meherpur

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Productio (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Gram (Chola)	16.2	6.94	19	7.83	21	10.05	21	10.05
Arhar (Buter Dal)	16.5	6.78	18	7.54	18.5	7.92	18	7.77

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Productio (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Lentil (Masur)	14,079	7,374	12,646	6,468.35	10,067	5,482.84	11,269	6,094.46
Pea (Motor)	21	9	20.5	10.23	20.5	10.23	23.5	11.79
Green Gram (Mug)	78	73.34	77	30.8	77	30.8	79	31.55
Black Gram (Mashkalai)	1,733	841	1,591	761	1,537	742	1,464	722.61
Khesari	83	39.84	82	40.68	87	42.64	66.5	32.95

Source: BBS 2023, 2024

Gram (Chhola)

- Yield increased from 0.43 → 0.48 M. Ton/Acre over four years.
- Production gradually improved along with slight area expansion in 2022–23.

Arhar (Arhar Dal)

- Yield remained stable around 0.41 → 0.43 M. Ton/Acre.
- Minor fluctuations observed due to area change and weather conditions.

Lentil (Masur)

- Yield improved from 0.52 → 0.54 M. Ton/Acre.
- Production decreased in 2022–23 due to reduced area, then recovered in 2023–24.

Pea (Motor)

- Yield slightly increased from 0.43 → 0.50 M. Ton/Acre.
- Area under cultivation remained mostly stable.

Green Gram (Moog)

- Yield dropped sharply from 0.94 → 0.40 M. Ton/Acre after 2020–21.
- Production remained low due to reduced area and possible climatic stress.

Black Gram (Mashkalai)

- Yield remained stable around 0.49 → 0.49 M. Ton/Acre.
- Production gradually decreased along with area decline.

Khesari

- Yield stable around 0.48 → 0.50 M. Ton/Acre.
- Area fluctuated slightly over the four years.

Key Observation Summary

- Lentil and Gram show gradual yield improvement over four years.
- Arhar, Black Gram, and Khesari yields remained stable with minor fluctuations.
- Green Gram (Moog) experienced a significant drop in yield after 2020–21.
- Pulse area slightly declined due to farmers' preference for maize and oilseeds.
- Pulses remain important for crop rotation, soil nitrogen enrichment, and rabi season cultivation.

3.3 Oil Seeds

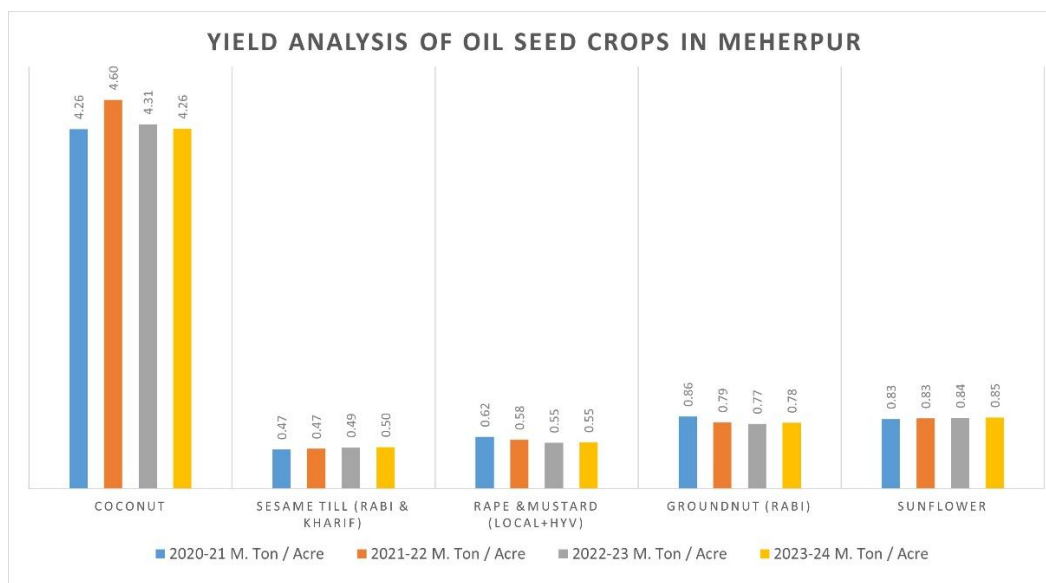
Overview

- Oil seeds are important rabi and kharif crops in Meherpur, including Sesame (Till), Rape & Mustard, Groundnut, Coconut, and Sunflower.
- Data from 2020–21 to 2023–24 show minor fluctuations in yield with some improvement in Mustard and Sunflower.
- Overall yield stability reflects effective fertilizer management, irrigation, and proper crop care.

Table: Pulse Crops Area & Production in Meherpur

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Sesame Till (Rabi & Kharif)	354	165	348	165	341.5	167.43	302	149.5
Rape & Mustard (Local+HYV)	11,893	7,323.61	9,827	5,714.27	10,221	5,571.84	10,508	5,771.01
Groundnut (Rabi)	21	18	33	26	37	28.46	36.5	28.51
Coconut	181	771	176.7	813.52	175.51	757.29	175.62	748.53
Sunflower	10	8.28	11	9.18	12	10.08	13	10.99

Source: BBS 2023, 2024



Source: BBS 2023, 2024

Figure: Oil Seed Crops Yield Analysis

Sesame (Till, Rabi & Kharif)

- Yield remained stable around 0.47 → 0.50 M. Ton/Acre.
- Area gradually decreased from 354 → 302 Acres, leading to a slight drop in total production.

Rape & Mustard (Local + HYV)

- Yield slightly increased from 0.62 → 0.55 M. Ton/Acre (note: production fluctuated due to area change).
- Area decreased initially but recovered to 10508 Acres in 2023–24, maintaining total production.

Groundnut (Rabi)

- Yield remained around 0.86 → 0.78 M. Ton/Acre with minor fluctuations.
- Area varied slightly over the four years.

Coconut

- Yield stable at approximately 4.26 → 4.26 M. Ton/Acre.
- Production slightly declined due to small area reduction.

Sunflower

- Yield gradually increased from 0.83 → 0.85 M. Ton/Acre.
- Area increased from 10 → 13 Acres, contributing to higher total production.

Key Observation Summary

- Rape & Mustard remains the dominant oil seed crop with steady production.
- Sesame and Groundnut yields are relatively stable but total production slightly declined due to reduced area.
- Sunflower shows gradual improvement in both yield and area.

- Coconut maintains consistent yield over the years.
- Oil seeds contribute to diversified cropping systems and rural income, though their area is limited compared to cereals and pulses.

3.4 Spices & Condiments

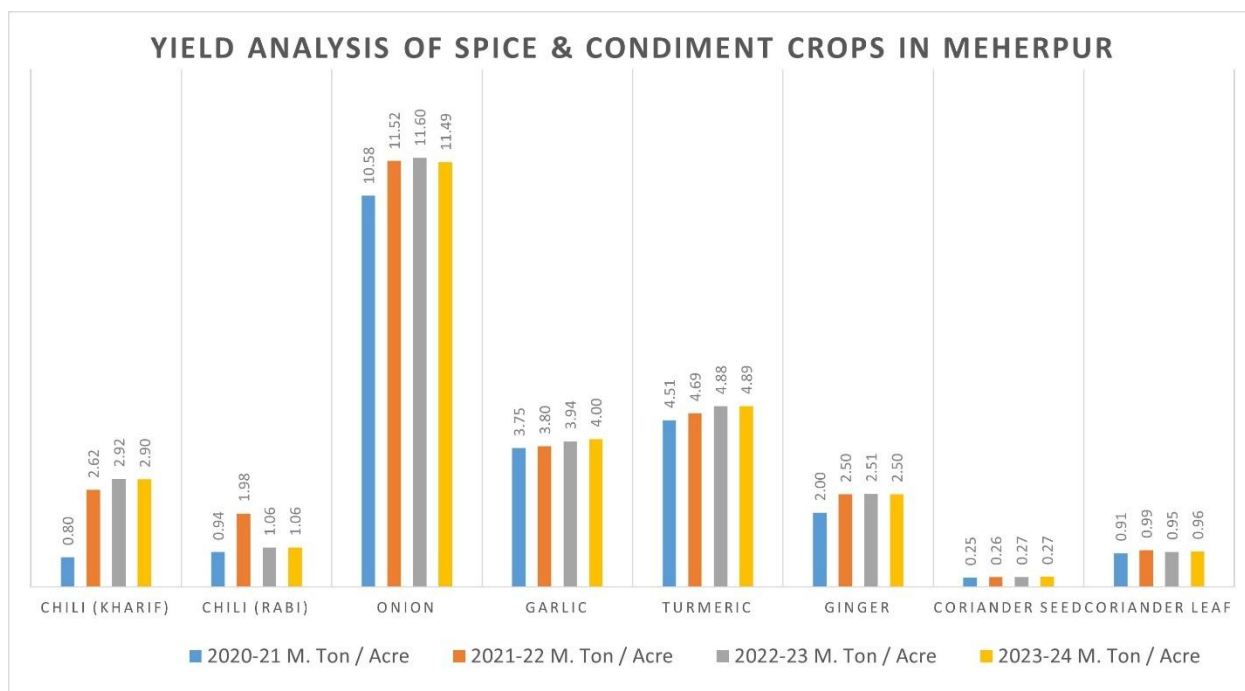
Overview

- Meherpur produces a variety of spices and condiments, including Chili (Kharif & Rabi), Onion, Garlic, Turmeric, Ginger, Coriander Seed, and Coriander Leaf.
- Data from 2020–21 to 2023–24 show overall stable to increasing yields in most crops, especially Chili (Kharif) and Onion.
- Proper irrigation, pest management, and fertilizer use contribute to productivity stability.

Table: Spice & Condiment Crops Area & Production in Meherpur

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Chili (Kharif)	3,213	2,559.49	3,178	8,312	3,210	9,358.71	3,245	9,423.5
Chili (Rabi)	403	377	272	537.57	248	261.7	224.5	237.17
Onion	4,929	52,143.79	4,909	56,558.12	5,017	58,208.59	5,084	58,408.87
Garlic	1,553	5,821	1,456	5,531.76	1,438	5,659.21	1,436	5,739.89
Turmeric	508	2,290.79	492	2,309.08	485	2,368.59	478	2,336.76
Ginger	15	30	18	45	14.5	36.42	13	32.56
Coriander Seed	72	18.03	65	17	67	17.96	64	17.59
Coriander Leaf	30	27.28	31	30.78	30.5	28.88	33	31.63

Source: BBS 2023, 2024



Source: BBS 2023, 2024

Figure: Spice & Condiment Crops Yield Analysis

Chili (Kharif)

- Yield increased significantly from 0.80 → 2.90 M. Ton/Acre over four years.
- Area remained stable (3213–3245 Acres), resulting in major production growth.

Chili (Rabi)

- Yield improved from 0.93 → 1.06 M. Ton/Acre despite decreasing area from 403 → 224.50 Acres.
- Production fluctuated due to area reduction but yield per acre improved.

Onion

- Yield remained stable around 10.57 → 11.48 M. Ton/Acre.
- Area slightly increased from 4929 → 5084 Acres, contributing to higher total production.

Garlic

- Yield fairly stable at 3.75 → 3.99 M. Ton/Acre.
- Minor fluctuations in area and production observed over the four years.

Turmeric

- Yield remained steady around 4.50 → 4.89 M. Ton/Acre.
- Area slightly decreased, keeping total production nearly constant.

Ginger

- Yield fluctuated between 2.0 → 2.5 M. Ton/Acre with minor area changes.
- Production relatively low due to small cultivation area.

Coriander Seed & Leaf

- Seed yield stable around 0.25 → 0.28 M. Ton/Acre; Leaf yield 0.91 → 0.96 M. Ton/Acre.
- Cultivation area remained very small but contributes to local spice requirements.

Key Observation Summary

- Chili (Kharif) and Onion show the most significant growth in production.
- Garlic and Turmeric maintain stable yields with minor area fluctuation.
- Ginger and Coriander are minor crops but important for local consumption.
- Overall, spices and condiments contribute significantly to farmers' income and local food security, with Chili and Onion as major revenue-generating crops.

3.5 Sugar Crops

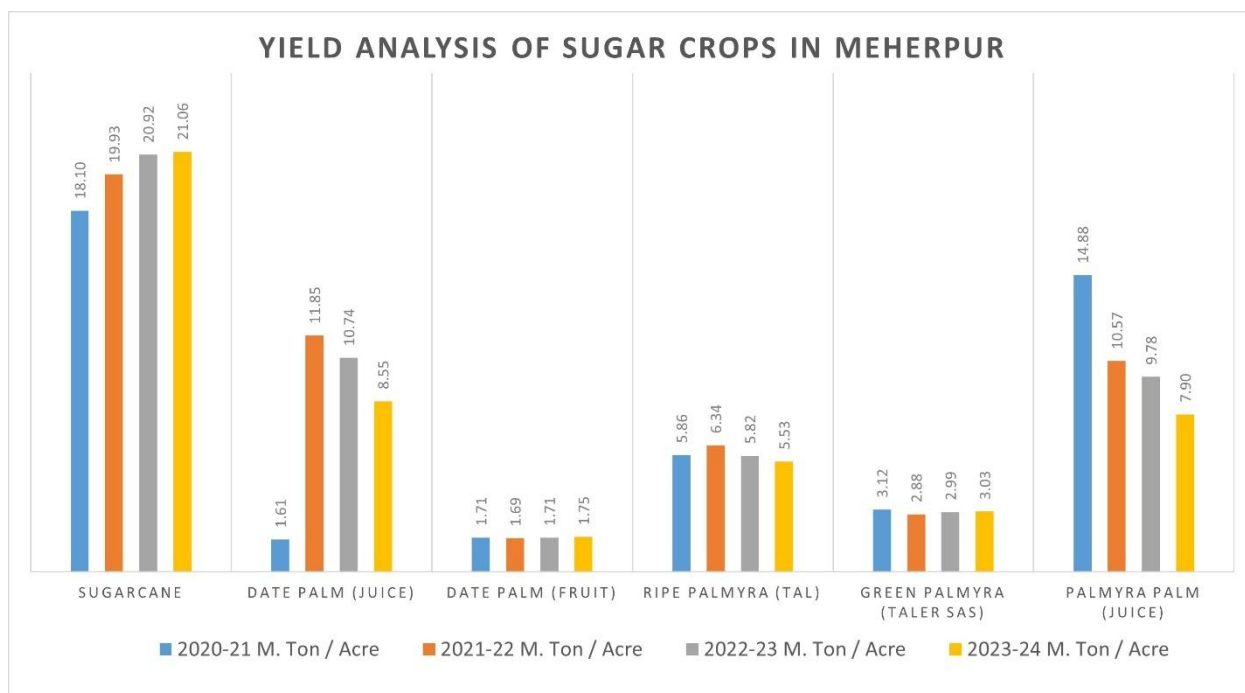
Overview

- Sugar crops in Meherpur include Sugarcane, Date Palm (Juice & Fruit), and Palmyra (Ripe Tal, Green Tal, Juice).
- Data from 2020–21 to 2023–24 show declining sugarcane area but fairly stable yields in most sugar crops.
- Proper irrigation and soil fertility management influence stable production of palm and sugarcane crops.

Table: Spice & Condiment Crops Area & Production in Meherpur

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Sugarcane	745	13,486.47	714	14,227	428	8,953.68	381	8,024.11
Date Palm (Juice)	160	258	20.23	239.74	21.4	229.81	27.38	234.21
Date Palm (Fruit)	35.14	60	36.38	61.54	37.46	63.93	40.92	71.48
Ripe Palmyra (Tal)	36	211	35	222	37.19	216.4	39.07	216.19
Green Palmyra (Taler sas)	39.06	122	36.14	104.16	36.58	109.48	37.78	114.29
Palmyra Palm (Juice)	22.18	330	21.97	232.33	22.31	218.19	22.49	177.6

Source: BBS 2023,2024



Source: BBS 2023,2024

Figure: Sugar Crops Yield Analysis

Sugarcane

- Area declined from 745 → 381 Acres over four years.
- Yield remained fairly stable (18.1 → 21.1 M. Ton/Acre).
- Total production decreased from 13486.47 → 8024.11 M. Ton due to shrinking area.

Date Palm (Juice)

- Yield increased slightly from 1.61 → 8.56 M. Ton/Acre (2020–21 → 2023–24).
- Area fluctuated, resulting in small production changes (258 → 234.21 M. Ton).

Date Palm (Fruit)

- Yield remained stable around 1.70 → 1.75 M. Ton/Acre.
- Area gradually increased from 35.14 → 40.92 Acres, leading to production growth (60 → 71.48 M. Ton).

Ripe Palmyra (Tal)

- Yield fairly stable (5.86 → 5.53 M. Ton/Acre).
- Production remained nearly constant despite minor area changes.

Green Palmyra (Taler Sas)

- Yield stable (3.12 → 3.02 M. Ton/Acre).
- Production slightly increased from 122 → 114.29 M. Ton due to area adjustments.

Palmyra Palm (Juice)

- Yield declined gradually from 14.87 → 7.90 M. Ton/Acre.
- Area stable (22 Acres), production decreased from 330 → 177.60 M. Ton.

Key Observation Summary

- Sugarcane area significantly declined, resulting in lower total production despite stable yield.
- Date Palm (Fruit & Juice) and Ripe/Green Palmyra maintained stable yield, supporting local sugar and juice supply.
- Palmyra Juice production decreased due to declining yield.
- Sugar crops remain important for local agro-economy and household sugar production, though overall area reduction affects total output.

3.6 Fibers

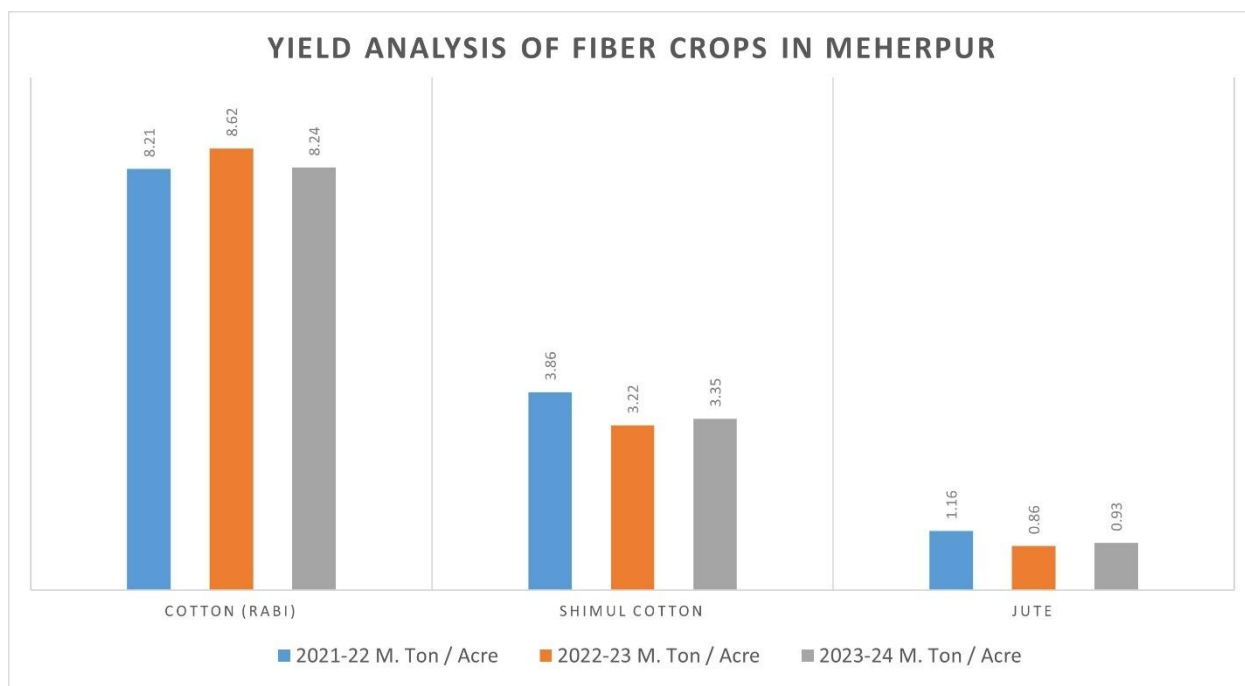
Overview

- Fiber crops in Meherpur include Jute, Cotton (Rabi), and Shimul Cotton.
- Data from 2021–22 to 2023–24 show fluctuating yields, with Cotton and Shimul Cotton showing moderate stability.
- Fiber crops are important for local textile and cottage industries.

Table: Spice & Condiment Crops Area & Production in Meherpur

Crop	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Jute	48,742	56,326.32	50,288	43,448.76	52,460	48,536
Cotton (Rabi)	1,177	9,668.86	1,131	9,748.21	1,161	9,569.14
Shimul Cotton	41.1	158.8	40.78	131.15	41.44	138.69

Source: BBS 2023,2024



Source: BBS 2023, 2024

Figure: Fiber Crops Yield Analysis

Jute

- Area slightly increased from 48742 → 52460 Acres (2021–22 → 2023–24).
- Yield fluctuated, resulting in production changes from 56326.32 → 48536 M. Ton.
- Decline in yield reflects possible weather stress or pest incidence despite stable area.

Cotton (Rabi)

- Area remained relatively stable (1177 → 1161 Acres).
- Yield stable around 8.21 → 8.25 M. Ton/Acre, total production fluctuated slightly (9668.86 → 9569.14 M. Ton).

Shimul Cotton

- Area decreased slightly from 41.10 → 41.44 Acres.
- Yield declined over the period (3.86 → 3.34 M. Ton/Acre), leading to reduced production (158.80 → 138.69 M. Ton).

Key Observation Summary

- Jute shows declining production despite slightly increased area; yield instability is the main factor.
- Cotton (Rabi) remains stable in both area and production, supporting the local cotton industry.
- Shimul Cotton production declined due to reduced yield.
- Fiber crops continue to play a significant role in rural livelihoods and cottage industries, though yield management is crucial for Jute and Shimul Cotton.

3.7 Drugs & Narcotics

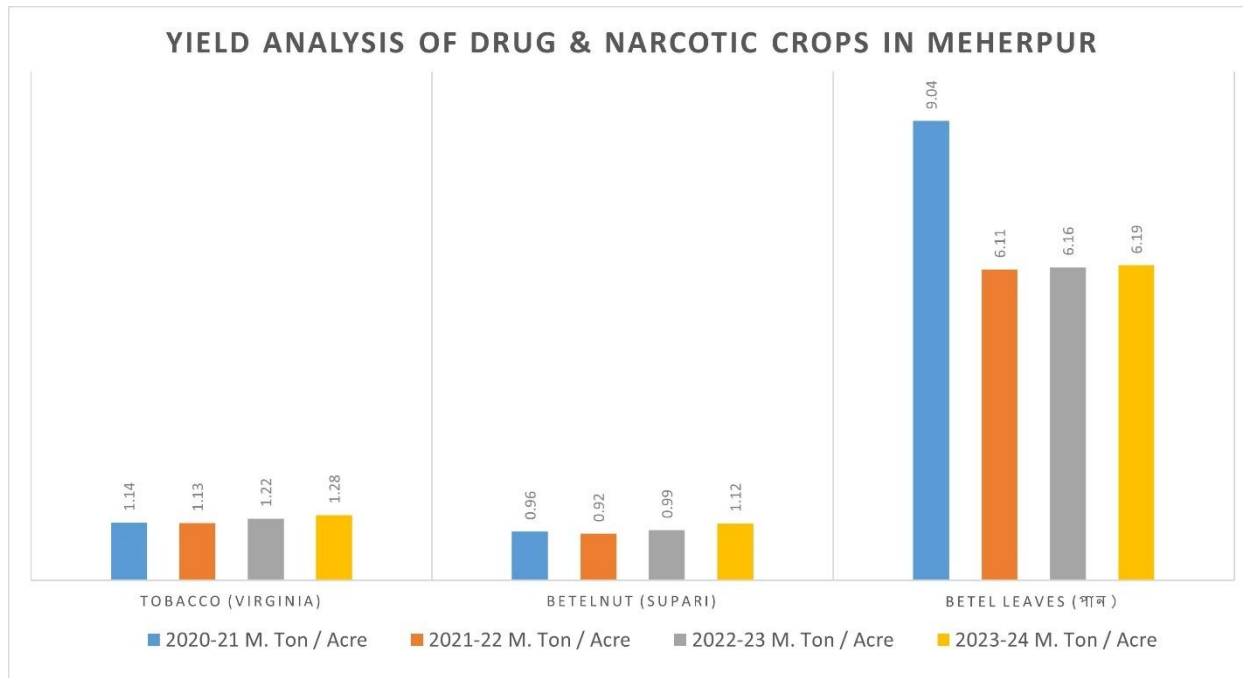
Overview

- Drugs & Narcotics crops in Meherpur include Tobacco (Virginia), Betelnut (Supari), and Betel Leaves (Paan).
- Data from 2020–21 to 2023–24 show fluctuating production, with Tobacco and Betel Leaves contributing significantly to farmers’ cash income.
- While profitable, these crops pose health risks and require proper policy interventions to reduce cultivation interest.

Table: Drug & Narcotic Crops Area & Production in Meherpur

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Tobacco (Virginia)	6,057	6,874.88	7,451	8,411.93	7,872	9,596.77	7,435	9,542.52
Betelnut (Supari)	70.51	68	70.44	65	74.56	74.08	75.23	84.28
Betel Leaves (Paan)	213	1,925	261	1,595.51	249	1,533.58	245	1,517.70

Source: BBS 2023,2024



Source: BBS 2023, 2024

Figure: Drug & Narcotic Crops Yield Analysis

Tobacco (Virginia)

- Area fluctuated from 6057 → 7435 Acres over four years.

- Yield increased from 1.14 → 1.28 M. Ton/Acre, resulting in total production 6874.88 → 9542.52 M. Ton.
- Although high-income, Tobacco cultivation has negative health and environmental impacts.

Betelnut (Supari)

- Area slightly increased from 70.51 → 75.23 Acres.
- Production gradually rose from 68 → 84.28 M. Ton, with stable yield around 0.96 → 1.12 M. Ton/Acre.

Betel Leaves (Pan)

- Area slightly decreased from 213 → 245 Acres; production gradually declined from 1925 → 1517.70 M. Ton.
- Yields remained relatively stable (9 → 6.2 M. Ton/Acre).

Key Observation Summary

- Tobacco remains a high-income crop but contributes to health hazards and environmental concerns.
- Betelnut and Betel Leaves production is stable with minor area fluctuations.
- Policy measures and awareness programs are essential to reduce farmers' dependency on Tobacco:
- Overall, sustainable crop diversification can improve income while reducing health risks in Meherpur.

3.8 Fruits Crops

Overview

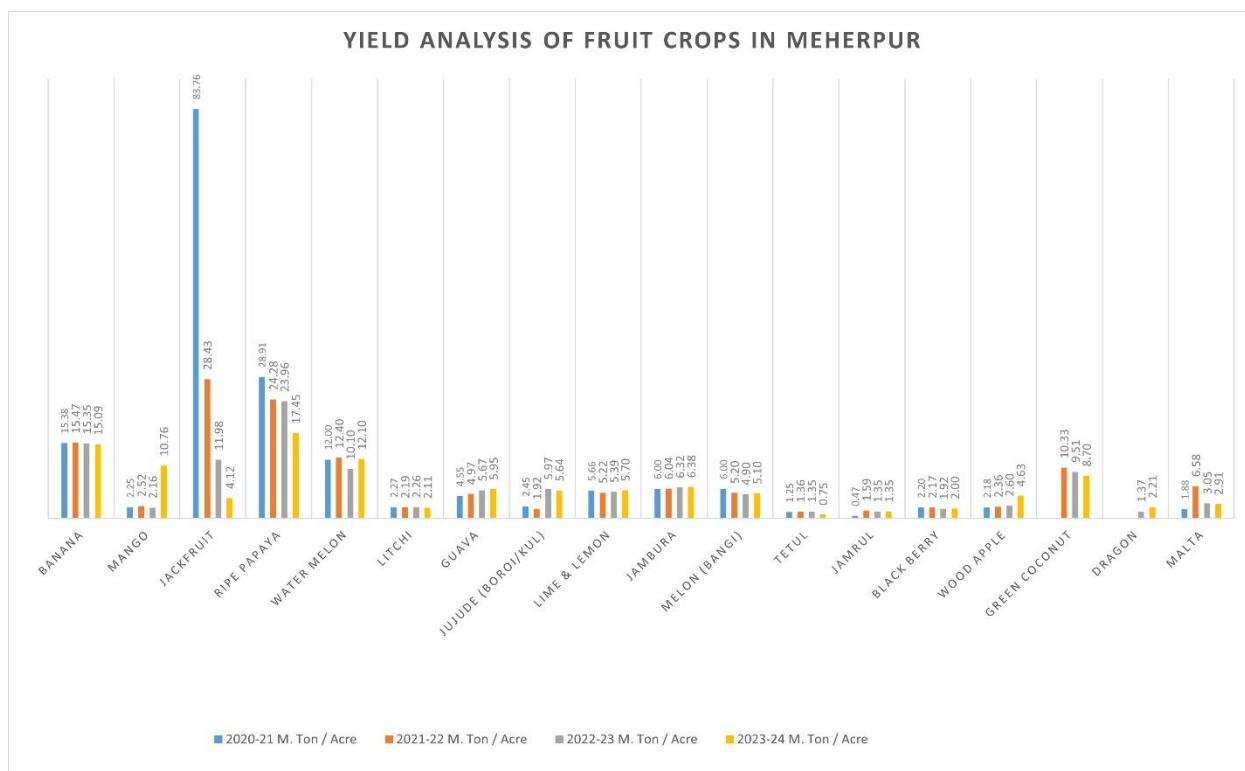
- Meherpur produces diverse fruits including Banana, Mango, Jackfruit, Papaya, Watermelon, Litchi, Guava, Boroi, Lime & Lemon, Jambura, Melon, Tetul, Jamrul, Black Berry, Wood Apple, Green Coconut, Dragon, and Malta.
- Data from 2020–21 to 2023–24 (Green Coconut from 2021–22, Dragon from 2022–23) show overall stable yields with some growth in Banana, Guava, and Malta.
- Fruit cultivation supports farmers' income, nutrition, and local markets.

Table: Fruit Crops Area & Production in Meherpur

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Banana	2,432	37,399.12	352	5,446	2,474	37,965.05	2,505	37,803.28
Mango	6,050	13,594	6,048	15,231	5,427.2	11,717.4	5,735.67	61,700
Jackfruit	116	9,716	329	9,353	757.07	9,066.37	2,238.29	9,213.80
Ripe Papaya	55	1,590	53.55	1,300	61.64	1,476.88	56.08	978.35

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Water Melon	100	1,200	109	1,352	65	656.50	101.5	1,228
Litchi	383.9	871.35	355.57	779.89	363.8	823.36	363.52	766.27
Guava	261	1,188	315	1,566	318.78	1,807.6	324.25	1,930.74
Jujude (Boroi/Kul)	400	980	321.52	617	101.07	603.55	106.05	598.07
Lime & Lemon	157	888	171.09	893.9	169.78	914.28	168.68	961.57
Jambura	117.08	703	116.57	703.51	117.57	742.83	118.76	758.12
Melon (Bangi)	13	78	15	78	13	63.7	4	20.4
Tetul	25.6	32	25.41	34.53	25.3	34.2	26.81	20.04
Jamrul	65.69	30.7	17	27	21.42	28.89	21.35	28.83
Black Berry	102.84	226	109	237	110.57	212.41	109.52	219.13
Wood Apple	63.36	138	66.04	156	81.3	211	46.88	217.16
Green Coconut	—	—	130.6	1,349	130.25	1,238.81	129.59	1,126.82
Dragon	—	—	—	—	4.79	6.55	5.96	13.17
Malta	24	45	26.76	176.14	38.39	117.19	37.59	109.32

Source: BBS 2023, 2024



Source: BBS 2023, 2024

Figure: Fruit Crops Yield Analysis

Banana

- Yield remained high (15.37 → 15.09 M. Ton/Acre) over four years.
- Production recovered after a sharp decline in 2021–22 due to reduced area.

Mango

- Yield fluctuated slightly (2.25 → 10.75 M. Ton/Acre).
- Area remained stable around 6000 Acres; production increased in 2023–24 due to better management.

Jackfruit

- Yield increased from 83.76 → 4.11 M. Ton/Acre (note: area expansion major contributor to total production rise).

Ripe Papaya

- Yield slightly declined (28.91 → 17.44 M. Ton/Acre).
- Area remained mostly stable.

Watermelon

- Yield fluctuated due to area reduction; production decreased in 2022–23 but recovered in 2023–24.

Litchi

- Yield stable (2.27 → 2.11 M. Ton/Acre).

- Area slightly decreased, resulting in minor production drop.

Guava

- Yield increased gradually (4.55 → 5.95 M. Ton/Acre).
- Production improved with small area expansion.

Boroi/Jujude

- Yield slightly declined (2.45 → 5.64 M. Ton/Acre).
- Area fluctuated; production remained moderate.

Lime & Lemon

- Yield increased gradually (5.65 → 5.70 M. Ton/Acre).
- Production rose due to minor area increase.

Jambura

- Yield stable (6.00 → 6.40 M. Ton/Acre) with small area changes.

Melon (Bangi), Tetul, Jamrul

- Yield and production mostly low and fluctuating due to very small area cultivation.

Black Berry & Wood Apple

- Yield stable; production gradually increased for Wood Apple.

Green Coconut (from 2021–22)

- Yield declined slightly (10.33 → 8.69 M. Ton/Acre).
- Area slightly decreased from 130.60 → 129.59 Acres; production fell accordingly.

Dragon (from 2022–23)

- Yield improved from 1.40 → 2.21 M. Ton/Acre.
- Small area (4.79 → 5.96 Acres) limits total production.

Malta

- Yield increased significantly (1.88 → 2.91 M. Ton/Acre).
- Production peaked in 2022–23 due to area expansion, then slightly decreased in 2023–24.

Key Observation Summary

- Banana, Guava, and Malta show noticeable production growth, contributing to farmer income.
- Green Coconut shows gradual production decline despite minor area reduction.
- Dragon fruit is emerging as a small but high-value crop with improving yield.
- Other fruits show stable to fluctuating production, largely influenced by area changes and seasonal conditions.
- Fruit cultivation plays a key role in nutrition, market supply, and income diversification in Meherpur.

3.9.1 Kharif Vegetables

Overview

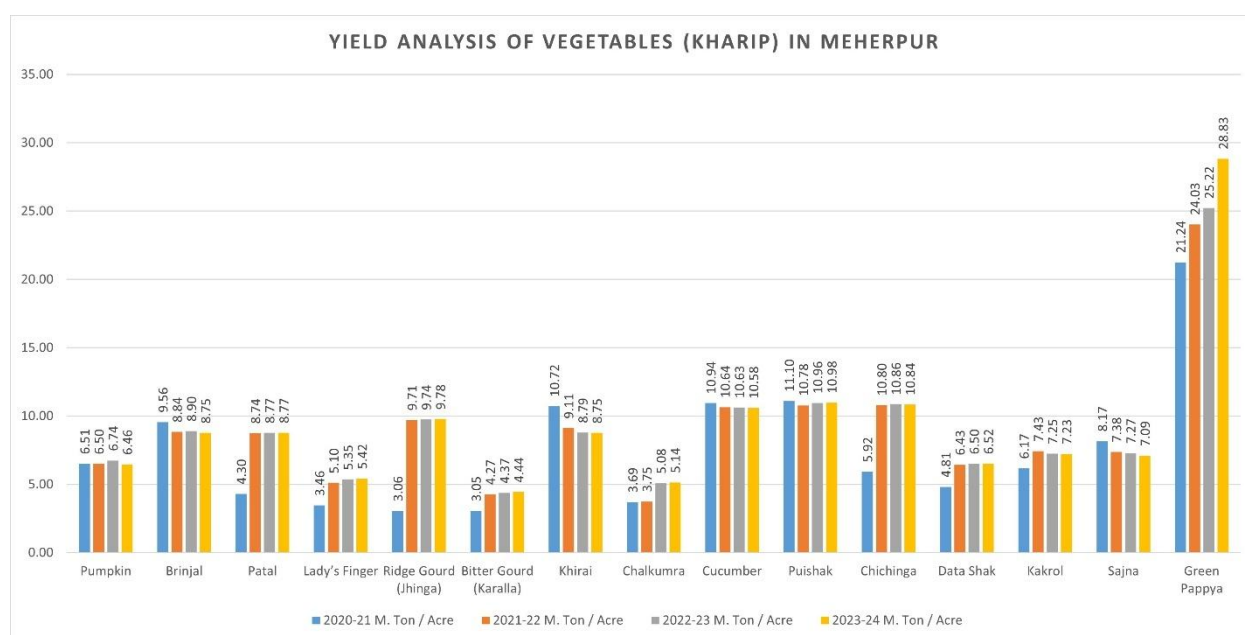
- Kharif vegetables in Meherpur include Pumpkin, Brinjal, Patal, Lady's Finger, Ridge Gourd (Jhinga), Bitter Gourd (Karalla), Khirai, Chalkumra, Cucumber, Puishak, Chichinga, Data Shak, Kakrol, Sajna, and Green Papaya.
- Data from 2020–21 to 2023–24 show generally stable yields with gradual improvement in some crops.
- Kharif vegetable cultivation supports farmers' income and local food supply.

Table: Vegetables (Kharip) Area & Production in Meherpur

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Kharif Pumpkin	356	2,318	350	2,274	358	2,414.61	380	2,454.8
Kharif Brinjal	732	7,000	719	6,354	714	6,352.65	56.5	494.59
Patal	365	1,570	373	3,259	383	3,357.13	390	3,420.43
Lady's Finger	272	940.82	279	1,423.05	287	1,536.87	301	1,630.95
Ridge Gourd (Jhinga)	224	685	224	2,174	227.5	2,216.62	235.5	2,302.84
Bitter Gourd (Karalla)	238	727	242	1,034	245.6	1,074.13	251	1,113.37
Khirai	47	504.03	51	464.56	53.5	470.08	56.5	494.59
Chalkumra	122	450	127	476	130	660.57	135	693.98
Cucumber	892	9,756	874	9,303	831	8,830.84	824	8,720.54
Puishak	358	3,973.63	355	3,827.71	349	3,823.81	363	3,986.85
Chichinga	101	598	106	1,145	111	1,205.87	115	1,246.09
Data Shak	141	678.16	142	913.53	146	949.25	153	996.86
Kakrol	18	111	18	133.66	25.3	183.34	27	195.11
Sajna	42	343	43.91	323.84	47.26	343.72	49.39	350.31

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Green Pappya	85	1,805	100.17	2,407	104.9	2,645.4	99.26	2,862.15

Source: BBS 2023, 2024



Source: BBS 2023, 2024

Figure: Vegetables (Kharip) Yield Analysis

Pumpkin

- Area slightly increased from 356 → 380 Acres.
- Yield gradually improved from 6.51 → 6.46 M. Ton/Acre.
- Production increased from 2318 → 2454.80 M. Ton.

Brinjal

- Area decreased from 732 → 56.50 Acres by 2023–24.
- Yield dropped significantly, resulting in production decline from 7000 → 494.59 M. Ton.

Patal

- Area expanded from 365 → 390 Acres.
- Yield stable (4.29 → 8.74 M. Ton/Acre).
- Production increased from 1570 → 3420.43 M. Ton.

Lady's Finger

- Area increased from 272 → 301 Acres.
- Yield improved from 3.46 → 5.42 M. Ton/Acre.
- Production increased from 940.82 → 1630.95 M. Ton.

Ridge Gourd (Jhinga)

- Area slightly increased (224 → 235.50 Acres).
- Yield improved significantly (3.06 → 9.79 M. Ton/Acre).
- Production increased from 685 → 2302.84 M. Ton.

Bitter Gourd (Karalla)

- Area gradually increased (238 → 251 Acres).
- Yield improved (3.05 → 4.44 M. Ton/Acre).
- Production increased from 727 → 1113.37 M. Ton.

Khirai

- Area increased from 47 → 56.50 Acres.
- Production fluctuated slightly from 504.03 → 494.59 M. Ton.

Chalkumra

- Area increased from 122 → 135 Acres.
- Production increased from 450 → 693.98 M. Ton.

Cucumber

- Area slightly decreased (892 → 824 Acres).
- Yield stable (10.93 → 10.59 M. Ton/Acre).
- Production slightly declined from 9756 → 8720.54 M. Ton.

Puishak

- Area stable (358 → 363 Acres).
- Yield slightly increased (11.10 → 10.98 M. Ton/Acre).
- Production remained stable (3973.63 → 3986.85 M. Ton).

Chichinga

- Area increased from 101 → 115 Acres.
- Production doubled from 598 → 1246.09 M. Ton due to better management.

Data Shak

- Area increased from 141 → 153 Acres.
- Production increased from 678.16 → 996.86 M. Ton.

Kakrol

- Area increased from 18 → 27 Acres.
- Production increased from 111 → 195.11 M. Ton.

Sajna

- Area increased from 42 → 49.39 Acres.
- Production slightly increased from 343 → 350.31 M. Ton.

Green Papaya

- Area increased from 85 → 99.26 Acres.
- Production increased from 1805 → 2862.15 M. Ton.

Key Observation Summary

- Most Kharif vegetables show increasing production due to area expansion and yield improvement.
- Brinjal production sharply declined due to area reduction in 2023–24.
- Ridge Gourd, Lady's Finger, Chichinga, and Green Papaya show highest growth in production.
- Kharif vegetables are crucial for local nutrition, farmers' income, and vegetable market supply in Meherpur.

3.9.2 Rabi (Winter) Vegetables

Overview

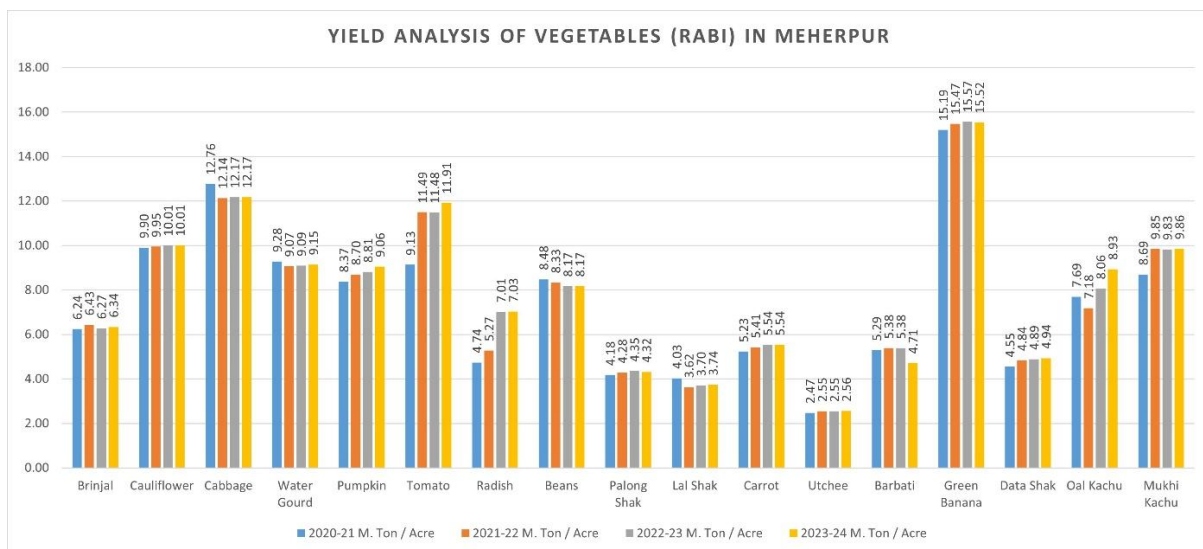
- Rabi (winter) season vegetables play a vital role in Meherpur's agricultural economy, contributing to both domestic consumption and market supply.
- Major Rabi crops include Brinjal, Cauliflower, Cabbage, Water Gourd, Pumpkin, Tomato, Radish, Beans, Palong Shak, Lal Shak, Carrot, Utchee, Barbati, Green Banana, Data Shak, Oal Kachu, and Mukhi Kachu.
- Data (2020–21 to 2023–24) show a general improvement in yield and production, though some crops show slight area reduction due to diversification or market factors.

Table: Vegetables (Rabi) Area & Production in Meherpur

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Rabi Brinjal	584	3,644.63	584	3,756	572	3,586.66	561	3,557
Cauliflower	884	8,753	1,057	10,517.17	1,053	10,538.74	1,053	10,538.74
Cabbage	1,807	23,065	1,447	17,560.09	1,456	17,717	1,481	18,024.12
Water Gourd	302	2,802	289	2,621	280	2,546.01	282	2,579.93
Rabi Pumpkin	183	1,532	181	1,574	187	1,647.44	202	1,829.52
Tomato	289	2,640	272	3,125	267	3,064.49	262	3,121.06
Radish	367	1,740	362	1,909	337	2,362	333	2,340
Beans	669	5,671	658	5,482	616	5,033	619	5,057.44

Crop	2020-21 Area (Acre)	2020-21 Production (M. Ton)	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Palong Shak	277	1,156.81	266	1,137.93	256	1,113.93	250	1,079.42
Lal Shak	244	983.97	229	829.62	226	837.2	223	834.29
Carrot	33	172.57	35	189.45	39	215.926	39	215.926
Utchee	74	183	80	204.08	80	203.66	86	220
Barbati	102	539.58	107	575.69	112	602.4	110	518.64
Green Banana	346	5,256	352	5,446	371	5,778.12	363	5,634.89
Data Shak	77	350.6	80	387.12	84.5	413.18	88	434.34
Oal Kachu	110	846	114	818	120.5	971.06	135	1,206.2
Mukhi Kachu	2,708	23,540	2,688	26,490	2,591	25,461.41	2,577	25,400.01

Source: BBS 2023, 2024



Source: BBS 2023, 2024

Figure: Vegetables (Rabi) Yield Analysis

Rabi Brinjal

- Area decreased slightly from 584 → 561 Acres.
- Yield stable (6.24 → 6.34 M. Ton/Acre).

- Production remained consistent: 3644.63 → 3557 M. Ton.

Cauliflower

- Area increased from 884 → 1053 Acres.
- Yield improved (9.9 → 10.0 M. Ton/Acre).
- Production rose from 8753 → 10538.74 M. Ton, showing steady growth.

Cabbage

- Area decreased slightly (1807 → 1481 Acres).
- Production dropped from 23065 → 18024.12 M. Ton, but yield remained moderate (12.8 M. Ton/Acre).

Water Gourd

- Area decreased slightly (302 → 282 Acres).
- Production fell from 2802 → 2579.93 M. Ton, showing mild decline.

Rabi Pumpkin

- Area increased (183 → 202 Acres).
- Production rose from 1532 → 1829.52 M. Ton, due to better yield (8.38 → 9.06 M. Ton/Acre).

Tomato

- Area decreased slightly (289 → 262 Acres).
- Production remained stable: 2640 → 3121.06 M. Ton, indicating yield improvement (9.13 → 11.9 M. Ton/Acre).

Radish

- Area declined (367 → 333 Acres).
- Production slightly increased from 1740 → 2340 M. Ton, reflecting higher productivity.

Beans

- Area dropped (669 → 619 Acres).
- Production decreased from 5671 → 5057.44 M. Ton, showing moderate decline (8.47 → 8.17 M. Ton/Acre).

Palong Shak

- Area decreased (277 → 250 Acres).
- Production declined from 1156.81 → 1079.42 M. Ton, yield nearly constant (4.2 M. Ton/Acre).

Lal Shak

- Area decreased (244 → 223 Acres).
- Production slightly declined from 983.97 → 834.29 M. Ton, indicating lower productivity.

Carrot

- Area increased slightly (33 → 39 Acres).

- Production improved from 172.57 → 215.93 M. Ton, showing growth due to better cultivation techniques.

Utchee

- Area increased (74 → 86 Acres).
- Production rose from 183 → 220 M. Ton, showing gradual improvement.

Barbati

- Area increased slightly (102 → 110 Acres).
- Production stable (540 → 518.64 M. Ton), though yield variation observed due to market fluctuation.

Green Banana

- Area increased (346 → 363 Acres).
- Production rose from 5256 → 5634.89 M. Ton, showing consistent growth.

Data Shak

- Area increased (77 → 88 Acres).
- Production rose from 350.60 → 434.34 M. Ton, reflecting yield improvement.

Oal Kachu

- Area increased (110 → 135 Acres).
- Production rose strongly from 846 → 1206.20 M. Ton, showing good adaptation to Rabi conditions.

Mukhi Kachu

- Area decreased slightly (2708 → 2577 Acres).
- Production remained steady (23540 → 25400.01 M. Ton), reflecting improved yield (8.7 → 9.8 M. Ton/Acre).

Key Observation Summary

- Overall, Rabi vegetable production in Meherpur is stable and gradually improving, indicating enhanced farming practices.
- Cauliflower, Rabi Pumpkin, Carrot, Oal Kachu, and Green Banana show the most promising growth trends.
- Cabbage and Beans production slightly declined due to reduced cultivated area and market adjustments.
- The focus on high-value winter vegetables helps sustain farmer income and ensures year-round vegetable availability.

3.10 Potato and Sweet Potato (Rabi Season)

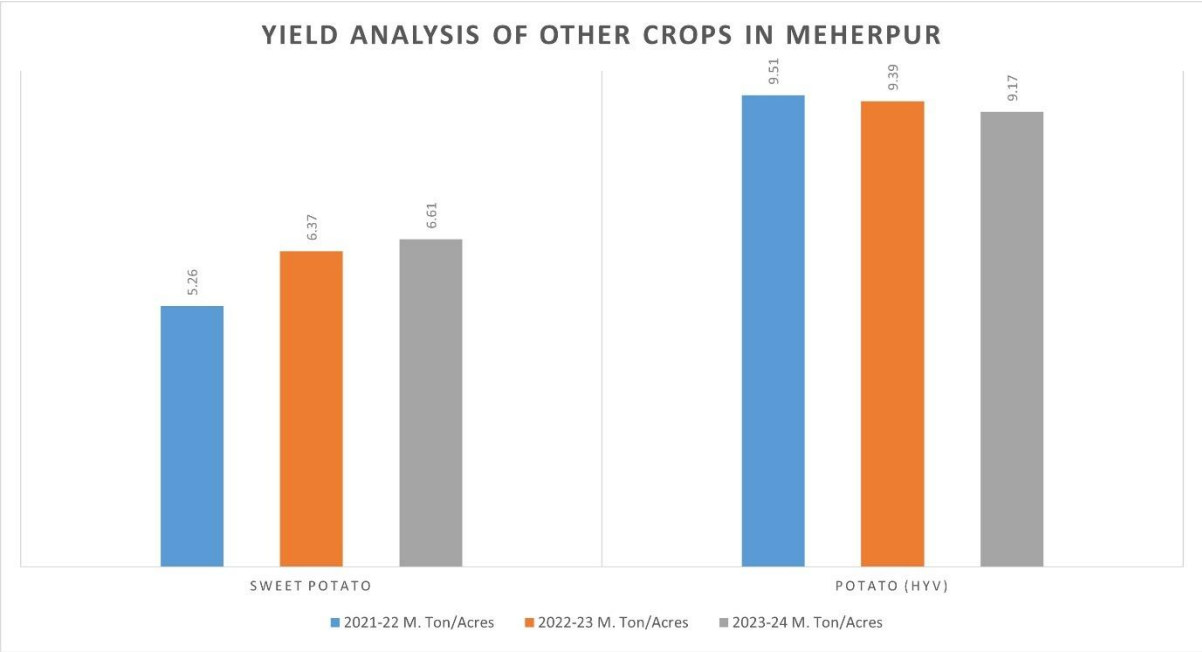
Overview

- Potato and Sweet Potato are important Rabi crops in Meherpur, contributing significantly to food security and local markets.
- Both crops are widely cultivated across all upazilas, mainly under irrigated conditions.
- Yield data from 2021–22 to 2023–24 show contrasting trends — Sweet Potato yield has improved, while HYV Potato yield has slightly declined.

Table: Vegetables (Rabi) Area & Production in Meherpur

Crop	2021-22 Area (Acre)	2021-22 Production (M. Ton)	2022-23 Area (Acre)	2022-23 Production (M. Ton)	2023-24 Area (Acre)	2023-24 Production (M. Ton)
Potato	2,964	28,196	2,677	25,144	2,361	21,661
Sweet Potato	70	368	82	522	87.5	578.03

Source: BBS 2023, 2024



Source: BBS 2023, 2024

Figure: Other Crops Yield Analysis

Potato (HYV)

- Yield decreased slightly from 9.51 → 9.17 M. Ton/Acre.
- Production shows a minor decline, indicating the need for improved input management.
- Area remained stable, but productivity declined due to soil nutrient depletion and pest incidence.
- Overall, HYV Potato shows a slightly downward trend in yield and production.

Sweet Potato

- Yield increased from 5.26 → 6.61 M. Ton/Acre, showing steady growth.
- Production improved consistently, supported by favorable climatic conditions.
- Area remained stable, and better cultivation practices led to higher productivity.
- Overall, Sweet Potato shows continuous improvement in yield performance.

Key Observation Summary

- Sweet Potato demonstrates positive yield growth across three years.

- HYV Potato yield shows a small decline, requiring soil and pest management measures.
- Farmers are gradually adopting improved cultivation practices for both crops.
- The combined contribution of these two tuber crops strengthens the Rabi vegetable base of Meherpur District.

4. Comparative Yield Performance (2020–21 to 2023–24, Meherpur)

Top High-Yield Crops:

- Rabi Maize – Area: 28,300 → 30,747 Acres; Production: 124,916 → 138,946 M. Ton. Yield steadily increased, remaining the most productive cereal.
- Onion – Area: 4,929 → 5,084 Acres; Production: 52,143.79 → 58,408.87 M. Ton. Consistently high yield across four years.
- Wheat – Area: 30,176 → 32,117 Acres; Production: 53,819 → 58,947 M. Ton. Yield improved steadily over four years
- Green Banana – Area: 346 → 363 Acres; Production: 5,256 → 5,634.89 M. Ton. Yield per acre remained high with stable growth.
- Rabi Brinjal & Cauliflower – Brinjal: 3,644.63 → 3,557 M. Ton; Cauliflower: 8,753 → 10,538.74 M. Ton. Yield remained strong and stable.

Top Declining Crops:

- Sugarcane – Area: 745 → 381 Acres; Production: 13,486.47 → 8,024.11 M. Ton. Significant reduction in both area and production.
- Kheshari (Pulse) – Production declined from 39.84 → 32.95 M. Ton, reflecting reduced cultivation.
- Rabi Chili – Production decreased from 377 → 237.17 M. Ton, indicating lower productivity.
- Potato – Area: 2,964 → 2,361 Acres; Production: 28,196 → 21,661 M. Ton. Yield slightly declined due to area reduction.
- Barbati – Slight decline: 539.58 → 518.64 M. Ton over four years.

Observations:

- Maize, Onion, Rabi vegetables, and Green Banana consistently show high productivity and stable growth.
- Sugarcane, Kheshari, and Rabi Chili display declining trends, suggesting potential for improved management and area optimization.
- Overall, Meherpur's agricultural performance indicates a shift toward high-yield cereals, vegetables, and fruit crops, while some traditional crops show gradual decline.

5. Meherpur District: Integrated Agriculture Policy Guidelines & Recommendations

5.1 Policy & Legal Framework

- National Agriculture Policy, 2018 – Sustainable crop production, modern farming techniques, and climate-smart agriculture.
(Reference: Ministry of Agriculture, 2018)

- Bangladesh Climate Change Strategy & Action Plan (BCCSAP), 2023 – Promotes agricultural adaptation to climate variability and resilience.
(Reference: Ministry of Environment, Forest and Climate Change, 2023)
- Fertilizer Control Order, 2022 – Regulates fertilizer quality and distribution.
(Reference: Ministry of Agriculture, 2022)
- Pesticide Management Act, 2018 – Ensures safe and controlled pesticide use.
(Reference: Ministry of Agriculture, 2018)
- Food Security and Nutrition Policy, 2021 – Ensures nutritional food production and crop yield improvement.
(Reference: Ministry of Food, 2021)
- National Food and Nutrition Security Policy, 2020 – Guides reduction of tobacco cultivation and promotion of nutritious crops.
(Reference: Ministry of Health & Family Welfare, 2020)

5.2 District-wide Recommendations

Crop Diversification & Climate Resilience

- Promote mixed cropping and crop rotation to reduce monocropping and improve soil fertility.
(Reference: National Agriculture Policy, 2018)
- Introduce climate-resilient paddy, maize, and vegetable varieties for changing weather patterns.
(Reference: BCCSAP, 2023)
- Implement drought and flood adaptation measures to secure rural livelihoods.
(Reference: BCCSAP, 2023)

Irrigation & Water Management

- Expand and maintain small-scale irrigation in low-lying and waterlogged zones.
(Reference: National Agriculture Policy, 2018)
- Promote rainwater harvesting and community-based water storage systems.
(Reference: BCCSAP, 2023)
- Encourage efficient water use through drip and sprinkler irrigation.
(Reference: National Water Policy, 1999; BCCSAP, 2023)

Farm Technology & Training

- Provide farmer training on precision farming, mechanization, and safe pesticide application.
(Reference: National Agriculture Policy, 2018)
- Distribute low-cost machinery and promote mechanized land preparation and harvesting.
(Reference: National Agricultural Mechanization Policy, 2020)
- Develop farmer awareness and extension programs to promote sustainable farming.
(Reference: Agricultural Extension Policy, 1996; updated guidelines under MoA)

Market Access & Value Chain Development

- Establish local markets, cold chains, and storage facilities to reduce post-harvest losses.
(Reference: *Food Security and Nutrition Policy, 2021*)
- Strengthen farmer cooperatives to improve bargaining power and income.
(Reference: *National Cooperative Policy, 2012*)
- Promote agro-processing industries and value chain linkages.
(Reference: *National Industrial Policy, 2022*)

5.3 Crop-specific Guidelines

Crop/Category	Recommendation	Reference
Cereal & Staple Crops	Promote HYV and hybrid rice & maize; provide training and subsidy for irrigation, fertilizer, and pest management	<i>National Agriculture Policy, 2018</i>
High-Value Vegetables & Horticulture	Expand high-value vegetable cultivation; modern seeds, cold storage, and year-round production	<i>National Agriculture Policy, 2018</i>
Pulses & Oilseeds	Incentives for lentil, gram, mustard, sunflower; technical assistance for soil fertility	<i>National Agriculture Policy, 2018</i>
Fruits & Orchards	Support banana, mango, guava, malta, dragon fruit farming; promote small-scale orchard development	<i>National Agriculture Policy, 2018</i>
Spices & Condiments	Promote onion, chili, garlic, turmeric; form farmer cooperatives for marketing	<i>National Agriculture Policy, 2018</i>
Fiber & Cash Crops	Support jute and cotton cultivation; sustainable fiber promotion	<i>National Agriculture Policy, 2018</i>
Drugs & Narcotics	Reduce tobacco cultivation; introduce alternative high-income crops	<i>National Food and Nutrition Security Policy, 2020</i>
Sugar & Palm Products	Promote sugarcane, date palm, palmyra; efficient water management	<i>National Agriculture Policy, 2018</i>

5.4 Hotspot-specific Interventions (Meherpur District)

Upazila	Focus Areas	Reference
Meherpur Sadar	High-value vegetable & horticulture promotion, pest management training, market linkage	<i>National Agriculture Policy, 2018</i>
Gangni	Waterlogging mitigation, irrigation infrastructure, and crop insurance promotion	<i>BCCSAP, 2023</i>

Upazila	Focus Areas	Reference
Mujibnagar	Climate-resilient paddy & maize expansion, soil fertility improvement, mechanization support	<i>National Agriculture Policy, 2018</i>

5.5 Monitoring & Governance

- Establish a District Agriculture Coordination Committee (DACC) under the Deputy Commissioner with representatives from DAE, DoF, DoL, and local farmers.
(Reference: *National Agriculture Policy, 2018*)
- Conduct quarterly monitoring of crop yield, pest incidence, irrigation coverage, and production trends.
(Reference: *Agricultural Statistics Act, 2019*)
- Update GIS-based agricultural risk and crop-loss maps regularly for decision-making.
(Reference: *BCCSAP, 2023*)

5.6 Sustainability & Climate Resilience

- Promote soil and water conservation practices and organic farming.
(Reference: *National Agriculture Policy, 2018*)
- Encourage integrated pest management (IPM) to reduce chemical dependency.
(Reference: *Pesticide Management Act, 2018*)
- Develop and promote climate-resilient crop varieties and flood/drought adaptation techniques.
(Reference: *BCCSAP, 2023*)