

Demand for Grants 2023-24 Analysis

Agriculture and Farmers Welfare

The Ministry of Agriculture and Farmers’ Welfare has two Departments: (i) Agriculture, Cooperation and Farmers’ Welfare, which implements policies and programmes related to farmer welfare and manages agriculture inputs, and (ii) Agricultural Research and Education, which coordinates and promotes agricultural research and education.¹ This note examines the budget allocations to the Ministry and its expenditure, and discusses issues in the agriculture sector.

Overview of finances

The Ministry has been allocated Rs 1,25,036 crore in 2023-24, 5% greater than the revised estimates for 2022-23.^{2,3} The Ministry of Agriculture accounts for 2.8% of the total Union Budget. The increase in expenditure is on account of marginal increase in the allocation for schemes such as Modified Interest Subvention Scheme (5%) and the Pradhan Mantri Fasal Bima Yojana (10%).

Table 1: Budget Allocation for the Ministry of Agriculture and Farmers’ Welfare (in Rs crore)

	21-22 Actuals	RE 22- 23	BE 23-24	% change (RE to BE)
Farmers' Welfare	1,14,468	1,10,255	1,15,532	5%
Agriculture Research	8,368	8,659	9,504	10%
Ministry	1,22,836	1,18,913	1,25,036	5%

Sources: Demand for Grants 2023-24, Ministry of Agriculture and Farmers’ Welfare; PRS.

77% of the Ministry’s estimated expenditure is allocated towards three schemes (See Table 2). Allocation for Pradhan Mantri Kisan Samman Nidhi (PM-KISAN), which is the largest scheme under the Ministry has remained the same as the revised estimates of 2022-23 at Rs 60,000 crore. Allocation has reduced from the actual expenditure of 2021-22 and budgeted expenditure for 2022-23.

Table 2: Allocation to major schemes (in Rs crore)

	Actuals 21-22	RE 22-23	BE 23-24	% change (BE over RE)
PM KISAN	66,825	60,000	60,000	0%
Interest Subsidy*	21,477	22,000	23,000	5%
Fasal Bima	13,549	12,376	13,625	10%

Note: Interest subsidy for short term credit to farmers scheme was restructured in 2022 to the Modified Interest Subvention Scheme.

Sources: Demand for Grants 2023-24, Ministry of Agriculture and Farmers’ Welfare; PRS.

Policy proposals in the Budget Speech

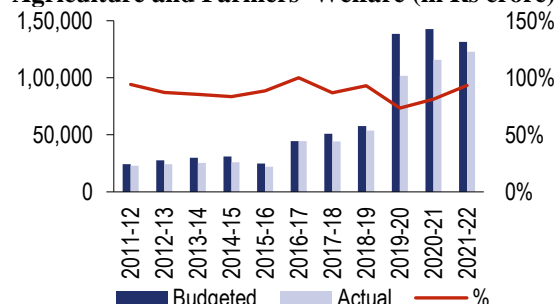
In her 2023-24 speech, the Finance Minister made the following proposals regarding agriculture:

- **Digital Public Infrastructure:** It will be built as an open source, open standard, and interoperable public good. This will enable inclusive, farmer-centric solutions through relevant information services for crop planning and health, and improved access to farm inputs, credit, and insurance.
- **Agriculture Accelerator Fund:** The Fund will be set-up to encourage agri-startups by young entrepreneurs in rural areas. It aims to bring modern technology to increase agricultural productivity and profitability.
- **Agriculture Credit:** The agriculture credit target will be increased to Rs 20 lakh crore with a focus on animal husbandry, dairy, and fisheries.
- **PM Matsya Sampada Yojana:** A new scheme with a targeted investment of Rs 6,000 crore has been launched to enable activities of fishermen and fish vendors and improve value chain efficiencies.
- **Storage:** A plan will be implemented to set up decentralised storage capacity to help farmers store their produce and realize real time remunerative prices through sale at appropriate times.
- **Cooperatives:** The government will also facilitate setting up of multipurpose cooperative societies, primary fishery societies, and dairy cooperative societies in uncovered panchayats and villages in the next five years.

Utilisation of Funds

In the past 10 years, fund utilisation of the Ministry has been above 70%. The Ministry was able to utilise 100% of the allocated funds in 2016-17. Allocation to the Ministry increased by 141% in 2019-20 on account of PM-KISAN. 48% of the allocation to the Ministry in 2023-24 is towards PM-KISAN. However, utilisation of funds reduced from 93% in 2018-19 to 73% in 2019-20. Utilisation was 93% in 2021-22.

Figure 1: Fund utilisation by the Ministry of Agriculture and Farmers' Welfare (in Rs crore)



Sources: Expenditure Budget for various years; PRS.

Rashtriya Krishi Vikas Yojana (RKVY) scheme was introduced in 2007 to ensure holistic development of agriculture and allied sectors.⁴ It is a centrally sponsored scheme that enables states to choose agriculture development activities as per their plans.⁴ It was restructured under the 2022-23 budget to subsume other schemes such as the Pradhan Mantri Krishi Sinchai Yojna-Per Drop More Crop, Paramparagat Krishi Vikas Yojna, National Project on Soil and Health Fertility, Rainfed Area Development and Climate Change, Sub-Mission on Agriculture Mechanization including Management of Crop Residue.⁵ In 2023-24, Rs 7,150 has been allocated under RKVY for transferring to states/UTs. The allocation for 2023-24 is 2% greater than the revised estimates for 2022-23. Between 2019-20 and 2021-22, projects worth Rs 518 crore have been approved across 18 states under the Scheme.⁶

Issues to consider

The agricultural sector faces several issues such as low growth, high incidence of indebtedness among farmers, high cost of inputs, fragmented landholdings, and a lack of capital investments in the sector. In the 2016-17 Union Budget the government announced that farmer incomes will be doubled by 2022-23, from 2015-16 levels.⁷

Doubling of farmers' income

A committee was formed to recommend strategies for achieving the target which submitted its report in September 2018.⁸ It recommended that policy focus must shift away from just increasing farm output, since increased output may not always lead to an increase in farmers' income. It noted that input prices, the level of input used, and the price of the output also has an impact of farmer incomes.⁹ Hence it recommended that with an increase in the level of output, the cost of production be reduced, remunerative prices for agricultural produce be ensured, and sustainable technology be used.⁹ The Ministry has several schemes in place such as PM-KISAN to provide income support to farmers, the Pradhan Mantri Fasal Bima Yojana which seeks to provide crop insurance, and the Pradhan Mantri Krishi Sinchayee Yojana, which promotes micro-irrigation techniques. Efforts have been made to improve access to agricultural credit, and improve agricultural markets through digitalisation, introduction of contract farming, and promoting Farmer Producer Organisations (FPO).

In the absence of recent data, it is unclear whether farmer incomes have doubled in 2022-23. Note that the latest farmer income data is as per 2018-19 (See Table 3). The average monthly income of an agricultural household was Rs 8,059 in 2015-16, which increased to Rs 10,218 in 2018-19.^{9,10}

Table 3: Average monthly income of agricultural households

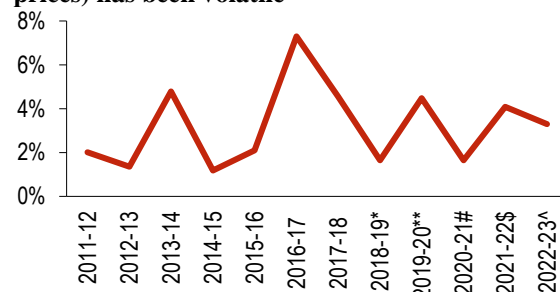
Year	Average monthly income per agricultural household
2002-03	2,115
2012-13	6,426
2015-16	8,059
2018-19	10,218
2022-23	NA

Note: Income for 2015-16 is derived from the annual income (at current prices) reported by the Committee on Doubling Farmers' Income. Sources: MOSPI; Committee on Doubling Farmers' Income, 2017; PRS.

In the absence of data, agricultural GDP may be examined to understand income growth. Agricultural GDP indicates the total income generated from producing agricultural goods and services. For farmer incomes to double, agricultural GDP should also have doubled, provided the number of farmers remained the same.

Between 2015-16 and 2022-23, the agricultural gross value added (GVA) at current prices (i.e., including inflation), doubled from Rs 25 lakh crore to Rs 51 lakh crore (11% growth).¹¹ Note that, agricultural GVA (at current prices) has doubled every eight years in the past 30 years.¹¹ In real terms, i.e., adjusting for inflation, agricultural GVA grew by 1.3 times. Agriculture growth has been volatile in real terms and the sector is estimated to grow at 3% in 2022-23 as compared to 4% in 2021-22.

Figure 2: Agricultural growth (at constant prices) has been volatile

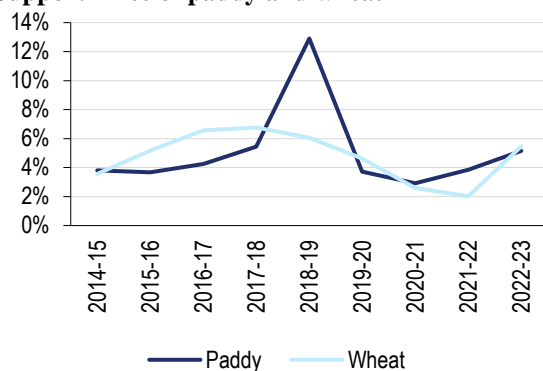


Notes: * Third revised estimates; ** Second revised estimates; # First revised estimates; \$ Provisional estimates; ^ Advance estimates. Growth includes agriculture, forestry, fishing, and mining and quarrying.

Sources: Economic Survey of India 2022-23; PRS.

Minimum Support Prices

The government has taken several measures to improve agricultural marketing and ensuring remunerative prices to farmers. These include procuring certain crops at the Minimum Support Price (MSP). Factors such as the cost of production, price trends, and ensuring a 50% margin over the cost of production are used to determine the MSP for a season. Wheat MSP for 2023-24 is fixed at Rs 2,125 per quintal.¹² The cost of cultivating wheat for the year is Rs 1,065. Paddy MSP for 2022-23 is fixed at Rs 2,040 per quintal, whose cost of cultivation is Rs 1,360.¹³

Figure 3: Percentage increase in Minimum Support Price of paddy and wheat

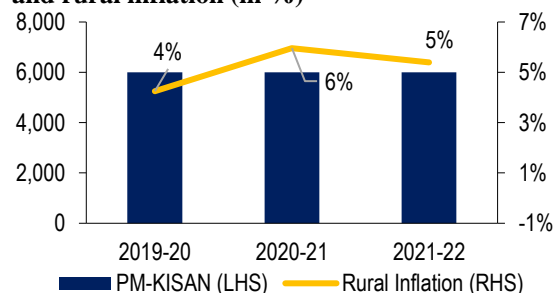
Sources: Commission for Agricultural Costs and Prices; PRS.

The National Commission on Farmers (2006) had recommended that MSP be at least 50% greater than the weighted cost of production. The Ministry adopted that recommendation in 2018-19, and MSP for all kharif and rabi crops was increased to reflect a return of at least 50% of the cost of production.¹⁴ The Ministry also fixes a Fair and Remunerative Price (FRP) for the purchase of sugarcane by sugar mills. FRP for 2022-23 was fixed at Rs 305 per quintal.¹⁵

Income support through transfers

To supplement the financial needs of farmers, they are being provided with income transfers. PM-KISAN is a direct benefit transfer scheme that was launched in February 2019.¹⁶ It provides landholding farmer families with income support of Rs 6,000 per year (in three instalments of Rs 2,000).¹⁷ In 2023-24, Rs 60,000 was allocated towards the scheme, same as the revised estimates for the previous year. The Scheme receives the highest allocation (48%) from the Ministry.

Constant income transfers with rising rural inflation: PM-KISAN was operationalised in December 2018 and aims to enable farmers to procure inputs to ensure crop health and yield.¹⁷ It is currently applicable to all landholding farmer families irrespective of the size of landholdings. Between 2019-20 and 2021-22, the amount to be disbursed to each family has remained constant (Rs 6,000). However, during this period rural inflation was between 4-6%.¹⁸ Rural inflation includes prices of vegetables, housing, and transport.

Figure 4: Transfers under PM-KISAN (in Rs) and rural inflation (in %)

Sources: Database on Indian Economy, Reserve Bank of India; Operational Guidelines, PM-KISAN; PRS.

In 2021-22, Rs 66,825 crore was spent on PM-KISAN. As per the revised estimates of 2022-23, only Rs 60,000 crore is estimated to be spent on the Scheme, lower than the budget estimates for the year at Rs 68,000 crore. Table 4 indicates the expenditure on the scheme since its inception.

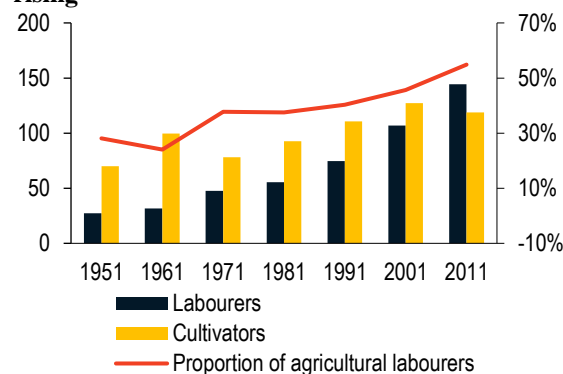
Table 4: Beneficiaries and amount released under PM-KISAN

Period	Number of beneficiaries (in lakh)	Actual Expenditure (in crore)
December 2018 – March 2019	316	6,322
April 2019 – July 2019	600	
August 2019 – November 2019	766	48,723
December 2019 – March 2020	820	
April 2020 – July 2020	927	
August 2020 – November 2020	972	61,927
December 2020 – March 2021	985	
April 2021 – July 2021	998	
August 2021 – November 2021	1,034	67,032
December 2021 – March 2022	1,041	

Sources: Lok Sabha Unstarred Question Nos. 1054 and 1150; PRS.

Agricultural labourers ineligible for transfers:

Beneficiaries of the PM-KISAN scheme include only farmers that own cultivable land. The scheme does not cover agricultural labourers who form 55% of the agricultural workers in the country.¹⁹ Agricultural **labourers** do not own land and work on another person's land. They earn income through wages or a share in the crop.²⁰ Agricultural **workers** include cultivators and labourers. The share of landless agricultural labourers in total agricultural workers has increased over the years from 28% in 1951 to 55% in 2011.¹⁹ The Standing Committee on Agriculture (2020) noted that tenant farmers, who are a significant part of landless farmers in many states, do not receive income support benefits.²¹ It recommended the government to examine this issue in coordination with states so that landless farmers can also receive benefits under the scheme.

Figure 5: Proportion of agricultural labourers rising

Sources: Agricultural Statistics at a Glance 2021; PRS.

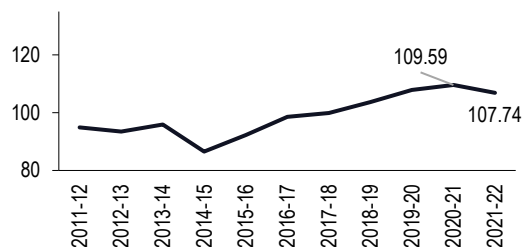
Farmer pensions

The Pradhan Mantri Kisan Maan Dhan Yojana (PMKMY), launched in 2019 is a central sector scheme to provide pensions to small and marginal farmers with cultivable land of up to two hectares.^{22,23} Eligible beneficiaries are entitled to a monthly pension of at least Rs 3,000. As of November 2019, 18.8 lakh farmers have registered under the Scheme.²⁴ Farmers within the 18-40 age bracket are eligible under the Scheme. In 2023-24, the Scheme has been allocated Rs 100 crore, against the revised estimates of Rs 50 crore in 2022-23, implying coverage of less than 15,000 farmers. In 2021-22, the Ministry spent Rs 40 crore.

Climate change and agriculture

Agricultural output is vulnerable to changes in the climate as higher temperatures tend to reduce crop yields and increase pest infestations.²⁵ Rainfed agriculture is primarily impacted due to variability in the number of rainy days.²⁶ As per a study by the National Innovations in Climate Resilient Agriculture (NICRA), climate change is expected to affect yields of crops such as rice, wheat, and maize.²⁷ Studies on rice and wheat suggest that wheat is sensitive to rising maximum temperatures and heatwaves, while rice is vulnerable to increased minimum temperatures in the region.²⁷

Figure 6: Wheat production (in million tonnes)



Sources: Department of Agriculture and Farmers' Welfare; PRS.

The total wheat production in the country has been steadily rising at 3% CAGR between 2014-15 and 2021-22.²⁸ As per the Indian Meteorological Department, certain areas in India experienced a heatwave in March 2022.²⁹ The maximum temperature was 33°C, 2°C greater than normal. As per a study by the US Foreign Agricultural Service, wheat yield in March 2022, in wheat growing areas was 11% lower than anticipated.³⁰ The report suggests that yield was not in line with the forecast as record high temperatures were observed during the grain filling (final) period for wheat.³⁰ Note that wheat production declined by two million tonnes in 2021-22.³¹

Similarly, in the first two weeks of October 2022, crops such as paddy, cotton, blackgram, vegetables, soybean, and bajra were affected across five states due to heavy rainfall.³² In Andhra Pradesh, agricultural area of 7,178 hectares was affected due to heavy rains during this period. The National Innovations in Climate Resilient Agriculture

(NICRA) project was launched in February 2011 to make Indian agriculture more resilient to changes in the climate.³³ NICRA conducts research on mitigation of climate impact on agriculture and field demonstrations of technologies.³⁴ In 2021-22 Rs 50 crore was budgeted for this initiative, of which Rs 47 crore was actually spent.³

The allocation declined to Rs 41 crore in 2022-23. From 2023-24 onwards, the NICRA project will be merged with the Natural Resource Management Institutes including Agro Forestry Research (NRAI), which examines farm productivity, profitability, and soil health deterioration.³ The overall allocation to Natural Resources Management (which includes NRAI and NICRA) has increased from Rs 186 crore in 2022-23, to Rs 240 crore in 2023-24 (29% increase).

Stubble burning

Several agricultural practices also contribute to local air pollution. For instance, burning stubble in states such as Punjab, Haryana and Uttar Pradesh contributes to higher pollution levels in states such as Delhi.³⁵ Farmers choose to burn stubble, in order to clear the fields to sow Rabi crops.³⁵

As per, the System of Air Quality and Weather Forecasting and Research portal, stubble burning was estimated to have contributed to the pollution levels between 2% to 44% for PM 2.5 levels in Delhi during October - November 2019.³⁶

In order to control stubble burning, the government implements the Promotion of Agricultural Mechanisation for In-Situ Management of Crop Residue, a central sector scheme in Punjab, Haryana, Uttar Pradesh and Delhi.³⁶ Punjab provides compensation of Rs 100 per quintal to small and marginal farmers to manage paddy residue without burning stubble. Haryana provided Rs 100 per quintal as incentive to farmers who sold paddy in November 2019 without burning crop residue.³⁶

Crop Insurance

The Pradhan Mantri Fasal Bima Yojana (PMFBY) and the Restructured Weather Based Crop Insurance Scheme (RWBCIS) were launched in 2016 to provide farmers with affordable crop insurance against non-preventable natural risks from pre-sowing to post-harvest stage.³⁷ Under PMFBY, farmers pay a premium of up to 2% (for Kharif crops), 1.5% (for Rabi crops), and 5% (for horticultural crops) of the sum insured. States (except for north-eastern states) and the central government share the premium burden equally. The scheme was made voluntary to farmers in 2020.

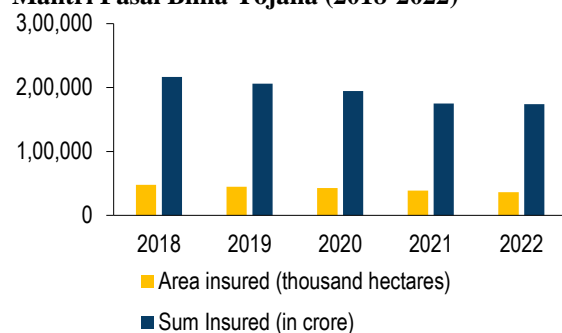
In 2023-24, Rs 13,625 crore is allocated to the scheme, 0.5% greater than the actual expenditure incurred in 2021-22. In 2022-23, Rs 15,500 crore was budgeted for the scheme, however estimated expenditure declined (by 20%) in the revised estimates to Rs 12,376 crore.

Table 5: Allocation towards Pradhan Mantri Fasal Bima Yojana (in Rs crore)

Actuals 21-22	BE 22-23	RE 22-23	BE 23-24	% change (BE 23-24 over RE 22-23)
13,549	15,500	12,376	13,625	10%

Sources: Demand No. 1, Ministry of Agriculture and Farmers' Welfare; PRS.

Between 2018 and 2022, the number of farmers covered under the scheme reduced by 9%.³⁸ Similarly, the sum and area insured have also reduced by 7% and 5%.

Figure 7: Area and sum insured under Pradhan Mantri Fasal Bima Yojana (2018-2022)

Sources: Pradhan Mantri Fasal Bima Yojana Dashboard; PRS.

Delays in payment is one of the biggest challenges in implementing the scheme.³⁹ The Ministry noted that delay in settlement of claims takes place due to: (i) delay in release of state share of subsidy, and (ii) delay in sharing yield data by states to insurance companies.⁴⁰ The Committee added that delays may also occur due to yield-related disputes between insurance companies and states, and non-receipt of account details of farmers.³⁹ It recommended implementing a timeline for settlement of claims by insurance companies. Between 2016 to 2020, a total of Rs 4,602 crore of state subsidy was pending, against which claims of Rs 3,008 crore were also pending.

The Committee also noted that revisions in the scheme may lead state governments to withdraw from it. It recommended revising amendments that: (i) prohibit participation of those states which delay the release of subsidies, and (ii) mandate state governments to bear the entire subsidy for crops which have a greater-than-specified premium rate. The Ministry noted that several states have opted out of the scheme due to their inability to pay the state share of premium subsidy.

Some states have their own crop insurance schemes. For instance, Jharkhand has a crop relief scheme, where financial assistance is provided in case of crop damage, without the insurance premium component.⁴¹ West Bengal also has its own crop insurance scheme that covers all farmers. It insures certain specified crops such as wheat, maize, moong, sugarcane, and paddy, with an indemnity of up to 90%.⁴²

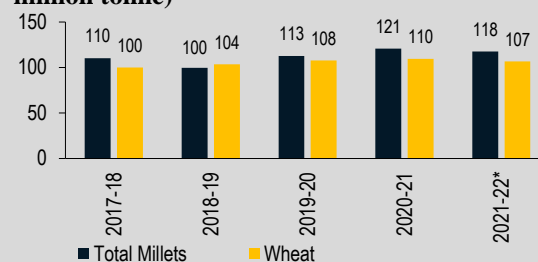
Anticipating the rise in demand for crop insurance due to the vulnerability of farming to climate change, the Ministry of Agriculture and Farmers' Welfare has noted that it may make necessary changes to PMFBYS.⁴³

International Year of Millets

In India, millets are primarily a kharif crop, requiring less water and agricultural inputs than other similar staples. Total millet production in 2021-22 was 118 million tonnes, as compared to 107 million tonnes of wheat.³¹

The United Nations General Assembly declared 2023 as the 'Year of Millets' to promote their production and consumption.⁴⁴ India has taken several steps to promote the use of millets. For instance, it contributed USD five lakh to the FAO for the international year of millets.⁴⁵ Millet products and startups are being supported for enhancing the domestic consumption and export millets.⁴⁵

The Production Linked Incentive Scheme for the Food Processing Industry was launched in March 2021.⁴⁶ It has an outlay of Rs 10,900 crore with manufacturing incentives for ready to eat foods which include millet-based products, marine products, and processed fruits and vegetables.⁴⁷

Figure 8: Production of millets and wheat (in million tonne)

* Fourth Advance Estimates. Sources: Ministry of Agriculture and Farmers' Welfare; PRS.

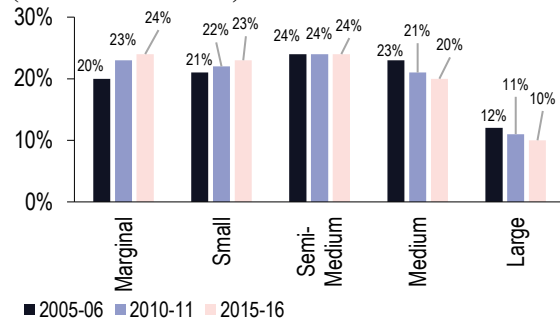
Fragmented landholdings

With fragmentation of landholdings, and rise in the absolute number of agricultural workers, farm productivity may be impacted. India's agricultural sector is dominated by marginal and small farm holdings.⁴⁸ Over the past several decades, the number of farm holdings have increased while the area under farming has declined. This has led to a reduction in the average size of a landholding.⁴⁹ Area under farming has declined due to its diversion for non-agricultural purposes.⁴⁸

Fragmented landholdings may affect agricultural growth as it implies reduced capital expenditure on a farm. Smaller farmers find it difficult to invest in tube wells, drip irrigation, bulk inputs or storage of produce.²¹ Farm productivity may be improved through land consolidation. Between 2005-06 and 2015-16, the share of marginal and small landholdings has increased, while the proportion of medium and large landholdings has reduced (See Figure 9). Marginal landholdings have an area of less than one hectare. Between 1951 and 2011, the number of agricultural workers increased by 1.7%.¹⁹ The Committee on Doubling Farmers' Income (2017) had recommended that to improve

farm productivity, agricultural workers need to move out of the sector.

Figure 9: Category-wise share of landholdings (2005-06 to 2015-16)



Sources: Pocketbook of Agricultural Statistics 2020; PRS.

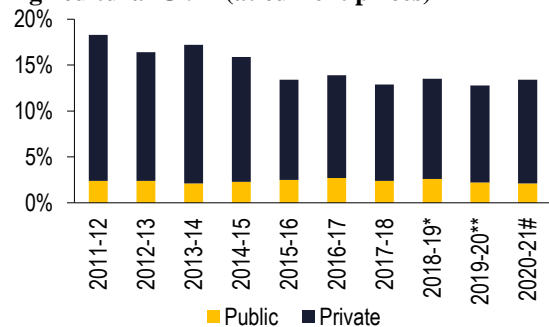
Land Reforms

The Committee on State Agrarian Relations and the Unfinished Task in Land Reforms (2017) noted that the need for land reforms is derived from the Constitutional mandate for equality, and the state’s duty to ensure redistributive justice.⁵⁰ It also noted that smaller farms are more efficient in the utilisation of land, ensure food security, and rural employment. It recommended that land ceilings must be implemented with retrospective effect, and at most two acres of wet land and five acres of dry land be allotted.

The National Commission on Farmers (2004) (Chair: M.S. Swaminathan) noted that land is a shrinking resource in agriculture. In order to improve production of grains, fruits, and vegetables, productivity per unit of arable land must improve. It recommended that ceiling surplus land be redistributed and prime agricultural land not be diverted to the corporate sector for non-agricultural purposes. It also recommended establishing a system to regulate the sale of agricultural land, based on the quantum of land, nature of proposed use, and category of buyer.

Gross capital formation indicates the level of investment in building assets. The share of gross capital formation in agricultural output has reduced from 18% in 2011-12 to 14% in 2020-21. The share of private investment has been much greater than the share of public investment (See Figure 10).

Figure 10: Share of Gross Capital Formation in Agricultural GVA (at current prices)



* Third Revised Estimates ** Second Revised Estimates # First revised estimates. Sources: Agricultural Statistics at a Glance 2021; PRS.

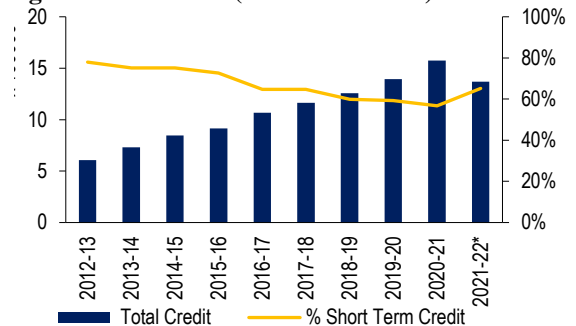
Agricultural Credit

Availability and accessibility to adequate, timely and low-cost credit is necessary for profitable

farming.⁵¹ The amount of institutional credit available to farmers has increased over the past few years. However, rural indebtedness has increased and loans are primarily being used to meet revenue expenditure in farming, or recurring household expenditure.

Over the past ten years, the total institutional credit availed by farmers has increased at CAGR 7.8%.¹⁹ In 2021-22, the Ministry had targeted to provide Rs 16.5 lakh crore worth of credit to the farmers.⁵² It exceeded its target by 13%. It aims to provide Rs 18.5 lakh crore as agricultural credit in 2022-23. As access to credit has increased, the proportion of short-term credit has been reducing since 2012-13 (See Figure 11). However, it rose from 57% in 2020-21 to 60% in 2021-22 (as of December 2022). A higher share of short-term credit indicates that farmers are borrowing to meet their recurring expenditure needs, rather than funding long-term investments.

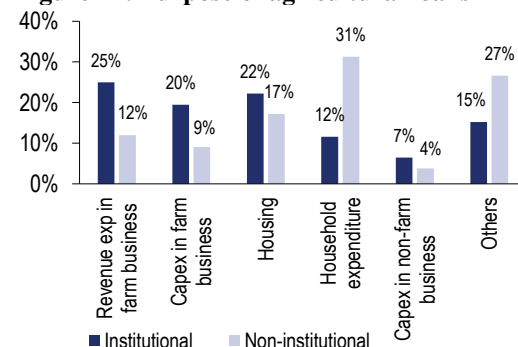
Figure 11: Flow of institutional credit availed by agricultural sector (in Rs lakh crore)



* As of December 12, 2021 Sources: Agricultural Statistics at a Glance (2021); PRS.

Institutional credit refers to loans taken from commercial banks, regional rural banks, insurance companies, employers, or non-banking financial institutions.⁵³ Non-institutional credit refers to loan taken from landlords, agricultural moneylenders, friends and family, or professional moneylenders. A significant portion of the total credit is not being spent in asset creation. As of December 2019, 25% of institutional credit was used to meet revenue expenditure in farm business, while 20% was used for capital expenditure.⁵⁴ 31% of non-institutional credit was used to meet household expenditure, followed by loans for housing (17%).⁵⁴

Figure 12: Purpose of agricultural loans



Sources: All India Debt and Investment Survey 2019; PRS.

Despite an increase in the availability of low-interest institutional credit, agricultural indebtedness has increased as compared to 2003.⁵⁴ As of December 2019, half of all agricultural households are indebted, with an average outstanding loan of Rs 74,121.

Table 6: Incidence of indebtedness in agricultural households

Year	Number (in lakh)	% indebted	Average outstanding loan amount
2003	894	49%	12,585
2013	902	52%	47,000
2019	930	50%	74,121

Sources: Situation Assessment Survey for various years; PRS.

Schemes for agricultural credit

The government launched the Interest Subvention Scheme in 2006-07, to provide short term agricultural loans up to three lakhs at an annual interest rate of 7% for farmers engaged in agriculture and allied activities.⁵⁵ Additional 3% subvention is also provided for prompt and timely repayment of loans. The scheme was modified in 2022.⁵⁶ Under the modified scheme, lending institutions such as public sector banks, regional rural banks, or cooperative banks are provided with 1.5% interest subvention from 2022-23 to 2024-25.

Table 7: Allocation towards agricultural credit schemes (in Rs crore)

	Actuals 21-22	RE 22-23	BE 23-24	% change (BE over RE)
Interest Subsidy*	21,477	22,000	23,000	5%

Note: The interest subsidy for short term credit to farmers scheme was restructured in 2022 to the Modified Interest Subvention Scheme.

Sources: Demand for Grants 2023-23, Ministry of Agriculture and Farmers' Welfare; PRS.

In 2015, the Committee on Medium-Term Path on Financial Inclusion under the Reserve Bank of India (RBI) observed that the scheme is for short-term crop loans, and hence it discriminates against long-term loans.⁵⁷ Short term crop loans are used for pre-harvest activities such as weeding, sorting, harvesting, and transporting. Long-term loans are taken to invest in agricultural machinery and equipment, or irrigation. The Committee stated that the scheme does not incentivise long-term capital formation, which is essential to boost productivity in the sector.

Table 8: Funds allocated and released under the Interest Subvention Scheme (in Rs crore)

Year	Allocated	Released	% of funds released
2016-17	15,000	13,397	89%
2017-18	15,000	13,046	87%
2018-19	15,000	11,496	77%
2019-20	18,000	16,219	90%
2020-21	21,175	17,790	84%
2021-22*	19,468	8,223	42%

* As of January 20, 2022

Sources: Expenditure Budget of various years; PRS.

The Committee on Doubling Farmers' Income (2017) recommended that the central and state governments should provide interest subsidy on long-term or investment credit taken by farmers, particularly small and marginal farmers.

The Kisan Credit Card scheme was introduced in 1998 to enable farmers to purchase agricultural inputs such as seeds, fertilisers, or pesticides.⁵⁸ It was extended in 2004 to meet the needs of farmers in allied and non-farm activities as well. The Revised Kisan Credit Card Scheme (2020) seeks to provide banking credit through a single window to meet needs such as: (i) short term credit requirement for cultivation of crops, (ii) post-harvest expenses, (iii) produce marketing loan, (iv) working capital to maintain farm assets, and (v) consumption requirements of a farmer household.

Small and marginal farmers, share-croppers, tenant farmers, and self-help groups are eligible as scheme beneficiaries. In 2022-23, as on November 11, 2022, 377 lakh applications have been sanctioned with a credit limit of Rs 4 lakh crore.⁵⁹

Table 9: Number of beneficiaries under Kisan Credit Card Scheme

Year	Number of cards issued (in lakh)	Amount sanctioned (in crore)
2019-20	109	36,350
2020-21	82	2,34,420
2021-22	75	3,19,751
2022-23	48	2,17,710

Note: Amount for 2019-20 does not include data of scheduled commercial banks as the data was not maintained at the time. Data for 2022-23 is as of September 2022.

Sources: Lok Sabha Unstarred Question No. 1051, answered December 13, 2022; PRS.

Inputs for production

Fertiliser subsidy and soil health

The Ministry of Chemicals and Fertilisers is responsible for the production, distribution and pricing of fertilisers. However, the Ministry of Agriculture and Farmers' Welfare is responsible for assessing its requirements.⁶⁰ The Agriculture Ministry is also responsible for promoting balanced use of fertilisers, i.e., ensuring that various nutrients and micronutrients are used in proper combinations. Three major nutrients used in fertilisers include Nitrogen (N), Phosphorous (P) and Potash (K).

Fertiliser subsidy: Fertilisers are subsidised through a urea subsidy (which contains nitrogen) and a nutrient-based subsidy for P and K fertilisers. Subsidy is provided to fertiliser manufacturers and importers so that farmers can directly purchase them at subsidised rates.⁶⁰ In 2023-24, Rs 1,75,103 crore was budgeted for fertiliser subsidies 22% less than the revised estimates of 2022-23. However, the subsidy for 2023-24 is 66% greater than the budget estimates for 2022-23.

In 2022-23, Rs 1,05,222 crore was budgeted for fertiliser subsidies, which increased to Rs 2,25,222 crore (114% increase) at the revised stage. In November 2022, the central government increased the subsidy rates for nutrient-based fertilisers for the Rabi season 2022-23 (October 1, 2022 to March 31, 2023). The increase was mainly on account of increased subsidy to indigenous urea, which was driven by an increase in international prices of fertilisers.

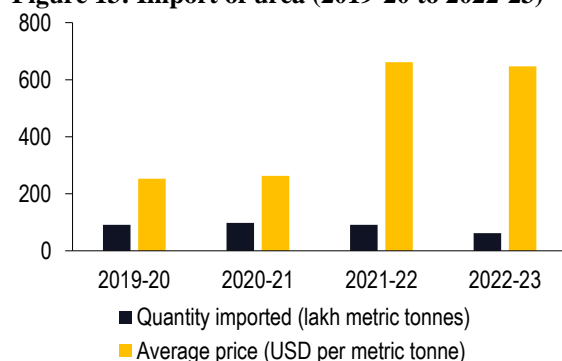
Table 10: Allocation towards fertiliser subsidy (in Rs crore)

Subsidy	BE 22-23	RE 22-23	BE 23-24	% change (RE 22-23 over BE 23-24)
Urea Subsidy	63,222	1,54,098	1,31,100	-15%
Nutrient based subsidy	42,000	71,122	44,000	-38%
Total Subsidies	1,05,222	2,25,222	1,75,103	-22%
<i>Of which imports</i>	37,390	67,927	49,500	73%

Sources: Demand for Grants 2023-24, Ministry of Chemicals and Fertilisers; PRS.

Fertiliser imports: The Ministry of Chemicals and Fertilisers noted that the international prices of raw materials and fertilisers have been increasing for the past year and a half, making imports costly.⁶¹ About 25-30% of urea is imported annually.⁶² Between January 2021 and December 2021, the international price of urea increased from 300 USD per metric tonne to 1,000 USD per metric tonne due to supply disruptions led by sanctions on Russia and export restrictions by China.^{62,63} As a result, a larger amount of money is being spent to import the same amount of fertilisers, which has led to an increase in the fertiliser subsidy.

Figure 13: Import of urea (2019-20 to 2022-23)



Note: Data for 2022-23 is up to December 2022.

Sources: Lok Sabha Unstarred Question 439; PRS.

Table 11: Approved subsidy rates for Rabi season (October 2022 - March 2023)

Nutrient	Subsidy (in Rs/kg)		% change
	2021-22	2022-23	
Nitrogen	18.79	98.02	422%
Phosphorous	45.32	66.93	48%
Potash	10.11	23.65	134%
Sulphur	2.37	6.12	158%

Sources: Press Information Bureau; PRS.

Import dependence: The Standing Committee on Chemicals and Fertilisers (2021) had observed that 25% of urea, 90% of phosphatic fertilisers, and 100% of potassic fertilisers are imported.⁶⁴ India is dependent on imports of different fertilisers due to the non-availability or scarce availability of resources. To cushion the effects of fluctuations in international prices, the Committee recommended the Ministry to: (i) diversify import sources by signing long-term agreements through PSUs, and (ii) monitor international prices and maintain a buffer stock to control for sudden fluctuations.⁶²

The Standing Committee (2020) also noted the increase in expenditure on fertiliser subsidies over the years.⁶⁵ It noted that while it is necessary to provide the subsidy, it is also the government's responsibility to contain this expenditure by adopting innovative ways without increasing the prices.⁶⁵ The Committee recommended that the government should take all possible steps to reduce its expenditure on subsidy by: (i) modernising fertiliser manufacturing plants, (ii) adopting best practices of manufacturing and strict energy norms, and (iii) building a strong research and development base for continuously upgrading the manufacturing technology, so as to reduce the manufacturing cost.⁶⁵

Soil Health: While examining the system of fertiliser subsidy, the Standing Committee on Chemicals and Fertilisers (2020) observed that agricultural productivity increased tremendously due to fertiliser subsidy, and helped ensure food security.⁶⁵ However, large amounts of subsidy has led to negative effects such as over-use and imbalanced use, which results in the degradation of soil. The Soil Health Card scheme was launched in 2015 to provide farmers with information regarding the quality of soil.⁶⁶ The Cards provide farmers with recommendations on appropriate nutrient dosage to improve soil health and fertility.⁶⁷

This scheme has now been merged with the Rashtriya Krishi Vikas Yojana, an umbrella scheme for ensuring holistic development in agriculture.² As per the Ministry of Chemicals and Fertilisers, the possibility of excessive use of fertilisers generally arises when it is applied without proper assessment of: (i) the nutrient requirement of a crop, (ii) contribution of nutrients from soil and other sources, (iii) nutrient use efficiency of the fertilizers, and (iv) mode, method and time of applications. As per a study by the National Productivity Council (2017) on soil

testing infrastructure, using fertiliser and micronutrients based on Soil Health Card recommendations resulted in 8-10% savings and a 5-6% overall increase in the yield of crop.⁶⁸

In order to prevent over-use of fertilisers, the Standing Committee on Chemicals and Fertilisers (2020) recommended that farmers must get the fertiliser subsidy directly in their bank accounts.⁶⁵ It noted that several manufacturing plants were operating with old technology which led to inefficiencies. The cost of such inefficiencies is being borne by the government through subsidies. It recommended that a direct transfer of subsidy would lead to a system where manufacture and import of fertilisers takes place as per market forces.⁶⁵ In October 2016, the Department of Fertilisers has implemented Direct Benefit Transfer (DBT) project for fertiliser subsidy payment. Under the fertilizer DBT system, 100% subsidy on various fertiliser grades is released to fertiliser companies on the basis of actual sales made by the retailers to the beneficiaries.⁶⁹ A Nodal Committee has been constituted in June, 2020 to formulate a policy for implementing Direct Cash Transfer of Fertiliser Subsidy to farmers. Two meetings were held in 2020.⁶⁹

Irrigation

A significant portion of Indian agricultural is rainfall dependant. Current sources of irrigation such as tubewells and canals lead to wastage of water. Further, water intensive crops such as sugarcane are being grown in water-scarce areas. The Ministry has launched the Pradhan Mantri Krishi Sinchayee Yojana to promote micro-irrigation techniques.

As of 2018-19, 51% of the country's net sown area was under irrigation.¹⁹ As of 2018-19, major irrigation sources include tubewells (49%) and other wells (15%), and canals (23%). Sources such as canals and tubewells use the flood irrigation technique, where water is allowed to flow in the field and seep into the soil. This results in wastage of water since excess water seeps into the soil or flows off the surface without being utilised. It has been recommended that farmers move from flood irrigation to micro-irrigation systems (drip or sprinkler irrigation systems) to conserve water.

The Pradhan Mantri Krishi Sinchai Yojana was launched in 2015 to increase the coverage of the area under irrigation. The Ministry implemented the 'Per Drop More Crop' component until 2021-22 under the scheme to increase water efficiency through micro-irrigation and other interventions. The component of the scheme now continues under Rashtriya Krishi Vikas Yojana, an umbrella scheme for farmer welfare, for 2022-23. Between 2013 and 2021, 60 lakh hectares of area has been covered under micro-irrigation.

Several crops such as paddy and sugarcane are grown in districts that face a scarcity of water. For

example, Maharashtra (which is one of the highest producers of sugar) faces groundwater stress and lacks perennial sources of irrigation.^{70,71} Other states which also produce sugar such as Karnataka and Tamil Nadu lack proper irrigation channels. In these states, sugarcane cultivation takes place in districts where the groundwater level is categorised semi-critical. The Swaminathan Commission on Farmers noted that land-use must be designed such that crops that are high value, but require low water must be encouraged in water scarce areas.

Power subsidies for farm use

Water intensive crops such as sugarcane and paddy require pumped irrigation. In order to reduce irrigation costs, electricity is subsidised in many parts of the country. In certain states, the supply of electricity for agriculture is totally free, without consumption limits. The Standing Committee on Water Resources (2022) noted that subsidised electricity encouraged farmers to grow water-intensive crops in water-scarce areas.⁷² For instance, 73% of the rechargeable groundwater area in Punjab is categorised as over-exploited (2022).^{73,74} Note that Punjab budgeted Rs 6,395 crore as expenditure on power subsidies in 2022-23.⁷⁵

Such subsidies also impact government finances. Power subsidy is provided in various ways: (i) directly transferring funds from the government to distribution companies (discoms) and (ii) by charging certain consumers higher (cross subsidy) than the cost of supply. In the past few years discoms have reported persistent losses, and have been bailed out by the state and central governments. Between 2017-18 and 2020-21, they accumulated losses worth three lakh crore rupees. Schemes such as the Ujwal Discom Assurance Yojana (UDAY), the liquidity infusion scheme (2020) and revamped distribution sector scheme (2022) were introduced to provide discoms with financial assistance. Reasons such as inadequate metering, delays in receiving government subsidy, inadequate recovery of fixed costs, and high cross subsidy components may have contributed to losses. Direct transfers to discoms contributed to 20% of discoms' revenue in 2020-21.⁷⁶ However, the release of such subsidy has witnessed delays.

To ensure competition in power distribution, the Electricity Act, 2003 specifies that cross subsidy be within a specified limit, and that it be reduced over the years.⁷⁷ To address the question of affordable electricity for farmers and a cost-reflective pricing mechanism, direct benefit transfer (DBT) of subsidy has been proposed.⁷⁸ A DBT seeks to address some issues with targeting and disbursement. Under a DBT model, farmers would have to pay for their power consumption, and a commensurate subsidy will be transferred to their bank accounts.

Agricultural Marketing

Agriculture markets in most states are regulated by the Agriculture Produce Marketing Committees (APMCs) established by the state governments. APMCs were set up to ensure fair trade between buyers and sellers for effective price discovery of farmers' produce. APMCs can: (i) regulate the trade of farmers' produce by providing licenses to buyers, commission agents, and private markets, (ii) levy market fees or any other charges on trade,

and (iii) provide necessary infrastructure within their markets to facilitate the trade.⁷⁹ The Standing Committee on Agriculture (2019) observed issues with the implementation of APMC laws and that they need urgent reforms.⁷⁹ Issues identified by the Committee include: (i) most APMCs have a limited number of traders operating, which leads to cartelisation and reduces competition, and (ii) undue deductions in the form of commission charges and market fees. Traders and commission agents organise themselves into associations, which does not allow easy entry of new persons into market yards, stifling competition.⁷⁹

Parliament enacted laws three laws in September 2020 to: (i) facilitate barrier-free trade of farmers' produce outside the markets notified under the various state APMC laws, (ii) define a framework for contract farming, and (iii) impose stock limits on agricultural produce only if there is a sharp increase in retail prices.^{80,81,82} The laws were repealed through the Farm Laws Repeal Bill, 2021 following large protests by farmers and a stay implemented by the Supreme Court.⁸³

Electronic National Agricultural Market

The National Agricultural Market (e-NAM) scheme was launched in 2015 to provide farmers with remunerative prices for their produce through a transparent online competitive bidding system.⁸⁴ e-NAM is envisaged as a national trading portal to create a unified market for agricultural commodities. States who wish to integrate their mandis with e-NAM are required to reform their APMC Acts to: (i) allow for a single trading license across the state, (ii) create a single point levy of market fee, and (iii) provide for e-auction and e-trading as a mode of price discovery.

e-NAM will be implemented by the Small Farmers' Agribusiness Consortium.⁸⁵ The e-NAM portal seeks to integrate markets across the country and provide more options to buyers and sellers. Registration of farmers and sellers, weighing, quality checks, auctions, and transactions will take place online. The Standing Committee on Agriculture (2022) observed whether all states/UTs can be integrated with the e-NAM platform, and recommended the Ministry to facilitate their integration.⁸⁶ As of November 30, 2022, 1,260 mandis across 25 states/UTs have been integrated with the portal.⁸⁷ The government provides training to farmers, traders, and APMC officials for using the portal. The government provides assistance of up to Rs 75 lakh for each mandi to create infrastructure for cleaning, sorting, and packaging.⁸⁸

As per a field study conducted in 10 mandis in Karnataka, only selected commodities on selected days of the week are traded on the platform.⁸⁹ Commission agents are registered as traders and there have been several power cuts. The study noted that unification of the market has not taken place as despite having a national trading license, a trader has to arrange for storage and transport of the commodities. Small farmers are reluctant to part with their produce for quality checks.⁸⁹ However, it noted that the e-NAM portal has made trading transparent, and has saved farmers' time.

The Standing Committee on Agriculture (2019) noted that the availability of a transparent, easily accessible, and efficient marketing platform is a pre-requisite to ensure remunerative prices for

farmers. Small and marginal farmers (who hold a majority of the agricultural landholdings in the country) face various issues in selling their produce in APMC markets such as inadequate marketable surplus, long distances to the nearest APMC markets, and lack of transportation facilities. There are several suggestions for reforming APMCs. These include digitalising the marketing process, contract farming, and promoting a futures market.

The central government released the model Agricultural Produce and Livestock Marketing (Promotion and Facilitation) Act 2017 in April 2017.⁹⁰ The model Act seeks to provide farmers with marketing channels other than the APMC. APMCs will be made responsible for: (i) ensuring payment to farmers on the same day, (ii) publicising the rates of agricultural produce brought into the market area for sale, and (iii) setting up public private partnerships for managing agricultural markets. Further, it has a provision to directly sell farm produce through a contract, without routing it through a notified market. As of November 2019, Arunachal Pradesh has adopted the model Act, while Uttar Pradesh, Chhattisgarh, and Punjab have adopted several provisions of the Act.⁹¹ Studies have noted that contract farming may provide benefits in terms of yield, prices, and incomes. However, it may exclude small farmers as contracting corporations demand large tracts of land. Under the APMC Act of Haryana, a contracted price cannot be lower than the MSP of the preceding year, which affects price discovery proposed by the arrangement.^{92,93}

An agricultural commodities exchange backed by a warehouse receipt system is expected to improve the efficiency in agricultural marketing. The National Commodity and Derivatives Exchange Limited (NCDEX) is an agricultural derivative exchange, incorporated in 2003.⁹⁴ Commodities such as soya oil, chana, jute, rubber, and turmeric are traded on NCDEX. As per the Standing Committee on Food, Consumer Affairs and Public Distribution (2010), futures markets lead to reducing seasonal price variations and help the farmer in realising a better price at the time of the harvest.⁹⁵ It allows a farmer to postpone the sale of his product as well, and moderate market arrivals. In 2021-22, NCDEX delivered 4.72 lakh tonnes of commodities, and represents 4 lakh farmers.⁹⁶

Agriculture Infrastructure Fund: The scheme was approved in July 2020 and it seeks to provide a medium to long term debt financing facility for creating post-harvest management infrastructure. The size of the Fund is one lakh crore rupees, and loans up to two crore rupees will receive annual interest subvention of 3% (for up to seven years).⁹⁷

Eligible beneficiaries under the scheme initially included entities such as primary agricultural credit societies, marketing cooperative societies, and farmer producers' organisations. Eligibility was extended to state agencies/APMCs, national and

state federations of cooperatives, federations of farmers producers' organisations and federations of self-help groups in 2021.

The scheme has been allocated Rs 500 crore in 2023-24, 233% greater than the revised estimates of 2022-23. The scheme was allocated Rs 500 crore in 2022-23 as well. As of January 2023, the Fund has 59,144 registered beneficiaries. Rs 10,082 crore has been disbursed since August 2020 across 16,000 projects.

The Standing Committee (2019) noted that Gramin Haats (small rural markets) can emerge as a viable alternative for agricultural marketing if they are provided with adequate infrastructure facilities.⁷⁹ It

recommended that the Gramin Agricultural Markets scheme (which aims to improve infrastructure and civic facilities in 22,000 Gramin Haats across India) should be made a fully funded central scheme and scaled to ensure the presence of a haat in each panchayat of the country. The central government has proposed development of basic infrastructure in Gramin Haats through the MGNREGS and of marketing infrastructure through the Agri-Market Infrastructure Fund. As of April 2022, infrastructure has been developed in 1,351 village haats under MGNREGS.⁹⁸ Subsequently, these haats will be linked to the e-NAM platform.

¹ Ministry of Agriculture and Farmers' Welfare, as accessed on February 7, 2023, <https://agricoop.nic.in/#gsc.tab=0>.

² Demand No. 1, Department of Agriculture and Farmers' Welfare, Expenditure Budget, Union Budget 2023-24, <https://www.indiabudget.gov.in/doc/eb/sbe1.pdf>.

³ Demand No. 2, Department of Agriculture and Farmers' Welfare, Expenditure Budget, Union Budget 2023-24, <https://www.indiabudget.gov.in/doc/eb/sbe2.pdf>.

⁴ Rashtriya Krishi Vikas Yojana, Ministry of Agriculture and Farmers' Welfare, <https://rkvy.nic.in/>.

⁵ Demand No.1, Department of Agriculture and Farmers' Welfare, Expenditure Budget, Union Budget 2023-24, <https://www.indiabudget.gov.in/budget2022-23/doc/eb/sbe1.pdf>.

⁶ Unstarred Question No. 2243, Lok Sabha, Ministry of Agriculture and Farmers' Welfare, December 20, 2022, <https://pqals.nic.in/annex/1710/AU2243.pdf>.

⁷ Budget Speech, Union Budget 2016-17, February 1, 2016, <https://www.indiabudget.gov.in/budget2016-2017/ub2016-17/bs/bs.pdf>.

⁸ "Progress in Doubling Farmers Income", Press Information Bureau, Ministry of Agriculture and Farmers' Welfare, July 19, 2022, <https://pib.gov.in/PressReleaseFramePage.aspx?PRID=1842783>.

⁹ "Status of Farmers' Income: Strategies for Accelerated Growth", Report of the Committee on Doubling Farmers' Income, Ministry of Agriculture and Farmers Welfare, August 2017, <http://farmer.gov.in/imagedefault/DFI/DFI%20Volume%202.pdf>.

¹⁰ Situation Assessment of Agricultural Households and Land and Livestock Holdings in Rural India, 2019, Ministry of Statistics and Programme Implementation, September 2021.

¹¹ Statistical Appendix, Economic Survey of India 2022-23, Ministry of Finance, <https://www.indiabudget.gov.in/economicsurvey/index.php>.

¹² "Cabinet approved Minimum Support Prices for all Rabi Crops for Marketing Season 2023-24", Press Information Bureau, Cabinet Committee on Economic Affairs, October 18, 2022, <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1868760>.

¹³ "CEA approves Minimum Support Prices (MSP) for Kharif Crops for Marketing Season 2022-23", Press Information Bureau, Cabinet Committee on Economic Affairs, June 8, 2022, <https://pib.gov.in/PressReleasePage.aspx?PRID=1832172>.

¹⁴ "Implementation of Swaminathan Committee Report", Press Information Bureau, Ministry of Agriculture and Farmers' Welfare, December 12, 2018, <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1555575>.

¹⁵ Price Policy for Sugarcane 2022-23 Sugar Season, Commission for Agricultural Costs and Prices, Ministry of Agriculture and Farmers' Welfare, December 2021, <http://cacp.dacnet.nic.in/ViewQuestionnaire.aspx?Input=2&DocId=1&PageId=41&KeyId=808>.

¹⁶ "PM Kisan Samman Nidhi Yojana", Press Information Bureau, Ministry of Agriculture and Farmers' Welfare, February

24, 2022,

<https://pib.gov.in/PressReleasePage.aspx?PRID=1800851>.

¹⁷ Pradhan Mantri Kisan Samman Nidhi (PM-KISAN), as accessed February 8, 2023, <https://pmkisan.gov.in/>.

¹⁸ Database on Indian Economy, Reserve Bank of India, as accessed on February 5, 2023,

<https://dbie.rbi.org.in/BOE/OpenDocument/1608101727/OpenDocument/openDoc/openDocument.faces?logonSuccessful=true&shareId=0>.

¹⁹ Agricultural Statistics at a Glance 2021, Ministry of Agriculture and Farmers' Welfare, May 2022,

[https://eands.dacnet.nic.in/PDF/Agricultural%20Statistics%20a%20a%20Glance%20-%202021%20\(English%20version\).pdf](https://eands.dacnet.nic.in/PDF/Agricultural%20Statistics%20a%20a%20Glance%20-%202021%20(English%20version).pdf).

²⁰ Statistical Profile on Women, Population – Census Data, Labour Bureau, Ministry of Labour and Employment, <http://labourbureau.gov.in/WL%20K5-6%20Chap%201.htm>.

²¹ Report no. 9, 'Demand for Grants (2020-21), Standing Committee on Agriculture and Farmers' Welfare', Lok Sabha, March 3, 2020,

https://loksabhadocs.nic.in/lssccommittee/Agriculture.%20Animal%20Husbandry%20and%20Food%20Processing/17_Agriculture_9.pdf.

²² Pradhan Mantri Kisan Maandhan Yojana, Ministry of Agriculture and Farmers' Welfare, <https://pmkmy.gov.in/>.

²³ "Year End Review 2019 – Ministry of Agriculture, Cooperation and Farmers Welfare", Press Information Bureau, Ministry of Agriculture and Farmers' Welfare, January 7, 2020, <https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1598628>.

²⁴ Unstarred Question No. 2358, Lok Sabha, Ministry of Agriculture and Farmers' Welfare, December 3, 2019, <https://pqals.nic.in/annex/172/AU2358.pdf>.

²⁵ Climate Change and Indian Agriculture: Impacts, Coping Strategies, Programmes and Policy, Indian Council of Agricultural Research, Ministry of Environment, Forestry and Climate Change, December 31, 2019, https://naarm.org.in/wp-content/uploads/2020/06/ICAR-NAARM-Policy-on-Climate-Change-and-Agriculture_compressed.pdf.

²⁶ Climate Change and Agriculture in India, Department of Science and Technology, Ministry of Science and Technology, January 2016, https://dst.gov.in/sites/default/files/Report_DST_CC_Agriculture.pdf.

²⁷ Climate Change – Agriculture and Policy in India, United States Department of Agriculture, May 26, 2021, https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Climate%20Change%20-%20Agriculture%20and%20Policy%20in%20India_New%20Dehli_India_05-25-2021.pdf.

²⁸ Fourth Advance Estimates of Production of Foodgrains for 2021-22, Ministry of Agriculture and Farmers Welfare, <https://agricoop.nic.in/Documents/Time%20Series%20%28English%29%20PDF.pdf>.

²⁹ Monthly Weather and Climate Summary for the month of March 2022, India Meteorological Department, April 2, 2022, https://internal.imd.gov.in/press_release/20220402_pr_1551.pdf.

- ³⁰ India – Extreme Temperatures Scorch Indian Wheat Production, United States Department of Agriculture, May 25, 2022, https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=India%20-%20Extreme%20Temperatures%20Scorch%20Indian%20Wheat%20Production_New%20Delhi_India_IN2022-0045.pdf.
- ³¹ First Advance Estimates of Production of Foodgrains for 2022-23, Ministry of Agriculture and Farmers' Welfare, September 21, 2022, [https://eands.dacnet.nic.in/Advance_Estimate/Time%20Series%201%20AE%202022-23%20\(English\).pdf](https://eands.dacnet.nic.in/Advance_Estimate/Time%20Series%201%20AE%202022-23%20(English).pdf).
- ³² Crop Weather Watch Group, Directorate of Economics and Statistics, Department of Agriculture and Farmers' Welfare, October 14, 2022, <https://agricoop.nic.in/sites/default/files/CWWG%20Report%20as%20on%2014.10.2022.pdf>.
- ³³ About NICRA, National Innovations in Climate Resilient Agriculture, <http://www.nicra-icar.in/nicrarevised/index.php/home1#:~:text=National%20Innovations%20on%20Climate%20Resilient,%20launched%20in%20February%2C%202011..>
- ³⁴ 'National Innovation on Climate Resilient Agriculture', Press Information Bureau, Ministry of Agriculture and Farmers Welfare, August 6 2021, <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1743354>
- ³⁵ Unstarred Question No. 1018, Lok Sabha, Ministry of Agriculture and Farmers' Welfare, December 13, 2022, <https://pqals.nic.in/annex/1710/AU1018.pdf>.
- ³⁶ Unstarred Question No. 4521, Lok Sabha, Ministry of Environment, Forest and Climate Change, March 20, 2020, <https://pqals.nic.in/annex/173/AU4521.pdf>.
- ³⁷ "Pradhan Mantri Fasal Bima Yojana (PMFBY), Ministry of Agriculture, https://pmfby.gov.in/pdf/Revamped%20Operational%20Guidelines_17th%20August%202020.pdf.
- ³⁸ Pradhan Mantri Fasal Bima Yojana Dashboard, Ministry of Agriculture and Farmers' Welfare, as accessed on February 6 2023, <https://pmfby.gov.in/adminStatistics/dashboard>.
- ³⁹ Report no. 35, Standing Committee on Agriculture: 'Demand for Grants (2017-18), Department of Agriculture, Cooperation and Farmers' Welfare', Lok Sabha, March 2017, http://164.100.47.193/lssccommittee/Agriculture/16_Agriculture_35.pdf.
- ⁴⁰ Report No. 43, Standing Committee on Agriculture (2022-23), 'Action Taken by the Government on the Observation/Recommendations contained in the Twenty-Ninth Report of the Standing Committee on Agriculture (2020-21)', Lok Sabha, December 2022, https://loksabhadocs.nic.in/lssccommittee/Agriculture.%20Animal%20Husbandry%20and%20Food%20Processing/17_Agriculture%20Animal%20Husbandry%20and%20Food%20Processing_43.pdf.
- ⁴¹ Jharkhand Rajya Fasal Rahat Yojana, as accessed on February 12, 2023, <https://jrfrty.jharkhand.gov.in/en/>.
- ⁴² 1256 – (Nab)/AG/O/Cropins/7C-06/2022, Department of Agriculture, Government of West Bengal, September 26, 2022, https://banglashasyabima.net/new_rabi23_nab.
- ⁴³ "Union Agriculture Ministry is open to taking pro-farmer changes in PMFBY in response to the recent climate crisis and rapid technological advances", Ministry of Agriculture and Farmers' Welfare, Press Information Bureau, November 24, 2022, <https://pib.gov.in/PressReleasePage.aspx?PRID=1878434>.
- ⁴⁴ "International Year of Millets (IYM) 2023 kick starts with Focussed Activities being undertaken by Central Ministries, State Governments and Indian Embassies", Ministry of Agriculture and Farmers' Welfare, Press Information Bureau, January 1, 2023, <https://pib.gov.in/PressReleasePage.aspx?PRID=1887847#:~:text=Spearheaded%20by%20the%20Prime%20Minister,forefront%20in%20celebrating%20the%20IYM.>
- ⁴⁵ Implementation of Budget Announcements 2022-23, Ministry of Finance, February 1, 2023, <https://www.indiabudget.gov.in/doc/impbud2022-23.pdf>.
- ⁴⁶ "Ministry of Food Processing Industries issues guidelines for 'Production Linked Incentive Scheme for the Food Processing Industry'", Ministry of Food Processing Industries, Press Information Bureau, May 3, 2021, <https://pib.gov.in/PressReleasePage.aspx?PRID=1715737>.
- ⁴⁷ Production Linked Incentive Scheme for Food Processing Industry, Ministry of Food Processing Industries, <https://www.mofpi.gov.in/PLISFPI/central-sector-scheme-production-linked-incentive-scheme-food-processing-industry-plisfpi>.
- ⁴⁸ Status of Farmers' Income: Strategies for Accelerated Growth, Committee on Doubling Farmers' Income, August 2017, <https://agricoop.nic.in/Documents/DFI%20Volume%202.pdf>.
- ⁴⁹ Indian Agriculture: Achievements and Challenges, Reserve Bank of India, January 17, 2022, https://www.rbi.org.in/Scripts/BS_ViewBulletin.aspx?Id=20750.
- ⁵⁰ Report of the Committee on State Agrarian Relations and the Unfinished Task in Land Reforms, Ministry of Rural Development, <https://dolr.gov.in/sites/default/files/Committee%20Report.pdf>.
- ⁵¹ State of Indian Agriculture 2017, Ministry of Agriculture and Farmers' Welfare, June 22, 2018, https://eands.dacnet.nic.in/PDF/State_of_Indian_Agriculture_2017.pdf.
- ⁵² Economic Survey of India 2022-23, <https://www.indiabudget.gov.in/economicsurvey/doc/eschapter/echap08.pdf>.
- ⁵³ Report of the Committee on Medium-term Path on Financial Inclusion, Reserve Bank of India, December 2015, <https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/FFIRA27F4530706A41A0BC394D01CB4892CC.PDF>.
- ⁵⁴ All India Debt and Investment Survey 2019, Ministry of Statistics and Programme Implementation, September 2021.
- ⁵⁵ "Cabinet approves Interest subvention of 1.5% per annum on Short Term Agriculture Loan upto Rupees Three lakh", Cabinet, Press Information Bureau, August 17, 2022, <https://www.pib.gov.in/PressReleaseDetail.aspx?PRID=1852523>.
- ⁵⁶ "Cabinet approves Interest subvention of 1.5% per annum on Short Term Agriculture Loan upto Rupees Three lakh", Cabinet, Press Information Bureau, August 2022, <https://pib.gov.in/PressReleasePage.aspx?PRID=1852523>.
- ⁵⁷ Report of the Committee on Medium-term Path on Financial Inclusion, Reserve Bank of India, December 2015, <https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/FFIRA27F4530706A41A0BC394D01CB4892CC.PDF>.
- ⁵⁸ "Kisan Credit Card", Ministry of Agriculture and Farmers Welfare, Press Information Bureau, January 17, 2022, <https://pib.gov.in/FactsheetDetails.aspx?Id=148600>.
- ⁵⁹ Unstarred question no. 1015, Lok Sabha, Ministry of Agriculture and Farmers' Welfare, December 13, 2022, <https://pqals.nic.in/annex/1710/AU1015.pdf>.
- ⁶⁰ Report No. 32, 'Demands for Grants 2022-23', Standing Committee on Chemicals and Fertilizers, Lok Sabha, March 17 2022, https://loksabhadocs.nic.in/lssccommittee/Chemicals%20&%20Fertilizers/17_Chemicals_And_Fertilizers_32.pdf.
- ⁶¹ Unstarred Question Number 439, Lok Sabha, Ministry of Chemicals and Fertilizers, February 3, 2023, <https://pqals.nic.in/annex/1711/AU439.pdf>.
- ⁶² Report No. 32, 'Demand for Grants 2022-23', Standing Committee on Chemicals and Fertilizers, Lok Sabha, March 21, 2022, https://loksabhadocs.nic.in/lssccommittee/Chemicals%20&%20Fertilizers/17_Chemicals_And_Fertilizers_32.pdf.
- ⁶³ "Fertiliser Prices expected to remain higher for longer", World Bank Data Blog, May 11, 2022, <https://blogs.worldbank.org/opendata/fertilizer-prices-expected-remain-higher-longer>.
- ⁶⁴ Report No. 20, 'Demands for Grants 2021-22', Standing Committee on Chemicals and Fertilisers, Lok Sabha, March 17, 2021, https://loksabhadocs.nic.in/lssccommittee/Chemicals%20&%20Fertilizers/17_Chemicals_And_Fertilizers_20.pdf.

- ⁶⁵ Report No. 5, 'Study of System of Fertiliser Subsidy', Standing Committee on Chemicals and Fertilizers, Lok Sabha, March 2020, https://loksabhadocs.nic.in/Isscommittee/Chemicals%20&%20Fertilizers/17_Chemicals_And_Fertilizers_5.pdf.
- ⁶⁶ "Soil Health Card", Press Information Bureau, Ministry of Agriculture and Farmers' Welfare, January 17, 2022, <https://pib.gov.in/FactsheetDetails.aspx?Id=148602>.
- ⁶⁷ Unstarred Question No. 934, Lok Sabha, Ministry of Agriculture and Farmers' Welfare, December 13, 2022, <https://pqals.nic.in/annex/1710/AU934.pdf>.
- ⁶⁸ Unstarred Question No. 248, Lok Sabha, Ministry of Agriculture and Farmers' Welfare, November 30, 2021, <https://pqals.nic.in/annex/177/AU248.pdf>.
- ⁶⁹ Direct Benefit Transfer, Ministry of Chemicals and Fertilisers, as accessed on February 11, 2023, <https://www.fert.nic.in/dbt>.
- ⁷⁰ Brief Note on Sugarcane, National Food Security Mission, Ministry of Agriculture and Farmers' Welfare, https://www.nfsm.gov.in/BriefNote/BN_Sugarcane.pdf.
- ⁷¹ 12th Five Year Plan, Planning Commission, 2013 http://planningcommission.gov.in/plans/planrel/fiveyr/12th/pdf/12fyp_vol1.pdf.
- ⁷² Report No. 18, 'Action Taken by the Government on the Observations/Recommendations contained in the Fifteenth Report of the Standing Committee on Water Resources', Standing Committee on Water Resources, December 20, 2022, https://loksabhadocs.nic.in/Isscommittee/Water%20Resources/17_Water_Resources_18.pdf.
- ⁷³ Block wise Ground Water Resources Assessment 2022, Central Ground Water Board, <https://cgwb.gov.in/GW-Assessment/Categorization%20of%20Assessment%20Units-GWRA2022.pdf>.
- ⁷⁴ Dynamic Ground Water Resources Assessment of India – 2022, Central Ground Water Board, October 2022, <https://cgwb.gov.in/documents/2022-11-11-GWRA%202022.pdf>.
- ⁷⁵ Demands for Grants 2022-23, Department of Finance, https://finance.punjab.gov.in/uploads/05Jul2022/72d0aa79-6050-4a24-bdd4-66c92ad81389_20220705152332.pdf.
- ⁷⁶ State of State Finances 2022-23, https://prsindia.org/files/policy/policy_analytical_reports/State%20of%20State%20Finances%202022-23.pdf.
- ⁷⁷ Electricity Act, 2003, <https://www.indiacode.nic.in/bitstream/123456789/2058/1/a2003-36.pdf>.
- ⁷⁸ The Draft Electricity (Amendment) Bill, 2020, Ministry of Power, April 17, 2020, <https://prsindia.org/billtrack/draft-electricityamendment-bill-2020>.
- ⁷⁹ Report No. 62, Standing Committee on Agriculture (2018-19): 'Agriculture Marketing and Role of Weekly Gramin Haats', Lok Sabha, January 3, 2019, https://loksabhadocs.nic.in/Isscommittee/Agriculture.%20Animal%20Husbandry%20and%20Food%20Processing/16_Agriculture_e_62.pdf.
- ⁸⁰ The Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Bill, 2020, [https://prsindia.org/files/bills_acts/bills_parliament/2020/Farmers%20\(Empowerment%20and%20protection\)%20bill.%202020.pdf](https://prsindia.org/files/bills_acts/bills_parliament/2020/Farmers%20(Empowerment%20and%20protection)%20bill.%202020.pdf).
- ⁸¹ The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Bill, 2020, https://prsindia.org/files/bills_acts/bills_parliament/2020/Farmers%20Produce%20Trade%20and%20Commerce%20bill.%202020.pdf.
- ⁸² The Essential Commodities (Amendment) Act, 2020, [https://prsindia.org/files/bills_acts/bills_parliament/2020/Essential%20Commodities%20\(Amendment\)%20Act.%202020.pdf](https://prsindia.org/files/bills_acts/bills_parliament/2020/Essential%20Commodities%20(Amendment)%20Act.%202020.pdf).
- ⁸³ The Farm Laws Repeal Bill, 2021, https://prsindia.org/files/bills_acts/bills_parliament/2021/Farm%20Laws%20Repeal%20Bill.2021.pdf.
- ⁸⁴ Operational Guidelines for Promotion of National Agriculture Market through Agri-Tech Infrastructure Fund, Ministry of Agriculture and Farmers' Welfare, September 2016, <https://enam.gov.in/web/docs/namguidelines.pdf>.
- ⁸⁵ Frequently Asked Questions, e-NAM, as accessed on February 11, 2023, <https://enam.gov.in/web/resources/FAQs-of-eNam/>.
- ⁸⁶ Report No. 37, 'Demands for Grants 2022-23', Standing Committee on Agriculture, Animal Husbandry and Food Processing, Lok Sabha, March 24, 2022, https://loksabhadocs.nic.in/Isscommittee/Agriculture.%20Animal%20Husbandry%20and%20Food%20Processing/17_Agriculture_Animal_Husbandry_and_Food_Processing_37.pdf.
- ⁸⁷ Unstarred Question No. 2099, Lok Sabha, Ministry of Agriculture and Farmers' Welfare, December 20, 2023, <https://pqals.nic.in/annex/1710/AU2099.pdf>.
- ⁸⁸ "2177 FPOs onboard eNAM Trading Module", Press Information Bureau, Ministry of Agriculture and Farmers' Welfare, August 2, 2022, <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1847509#:~:text=Under%20the%20e%2DNAM%20scheme.packaging%20and%20compost%20unit%20etc>.
- ⁸⁹ Indian Agricultural Markets Policy, Challenges and Alternatives, Focus on the Global South, December 2019, https://focusweb.org/wp-content/uploads/2020/03/Ag_Market_Report_Final.pdf.
- ⁹⁰ Salient Features of the Model Act on Agricultural Marketing, <https://agricoop.nic.in/sites/default/files/apmc.pdf>.
- ⁹¹ Unstarred Question No. 291, Lok Sabha, Ministry of Agriculture and Farmers' Welfare, November 19, 2019, <https://loksabha.nic.in/Questions/QRresult15.aspx?qref=6495&isno=17>.
- ⁹² Punjab Agricultural Produce Markets Act, 1961, <http://hsamb.org.in/sites/default/files/documents/newact.doc>.
- ⁹³ Punjab Agricultural Produce Markets (General) Rules, 1962, http://hsamb.org.in/sites/default/files/documents/newrules_0.doc.
- ⁹⁴ NCDEX Overview, National Commodity & Derivatives Exchange Limited, <https://ncdex.com/about/ncdex-overview>.
- ⁹⁵ "Linking Farmers with Markets", Press Information Bureau, Ministry of Agriculture and Farmers' Welfare, February 4, 2020, <https://pib.gov.in/PressReleasePage.aspx?PRID=1601897>.
- ⁹⁶ Annual Report 2021-22, National Commodities and Derivatives Exchange, <https://ncdex.com/downloads/About-us/Annual-Reports/NCDEX%20-%20Annual%20Report%202021-22.pdf>.
- ⁹⁷ Unstarred Question No. 1529, Lok Sabha, Ministry of Agriculture and Farmers' Welfare, July 26, 2022, <https://pqals.nic.in/annex/179/AU1529.pdf>.
- ⁹⁸ Starred Question No. 479, Lok Sabha, Ministry of Agriculture and Farmers' Welfare, April 5, 2022, <https://pqals.nic.in/annex/178/AS479.pdf>.

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