Demand for Grants 2022-23 Analysis

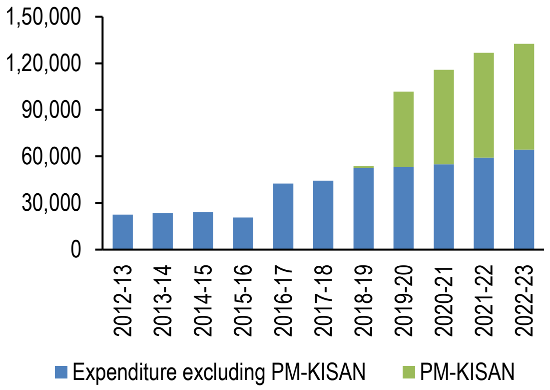
Agriculture and Farmers' Welfare

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

Overview of Finances

The Ministry has been allocated Rs 1,32,514 crore in 2022-23, a 4.5% increase over the revised estimates of 2021-22.[1] Allocation to the Ministry accounts for 3.4% of the government's budget. 55% of the allocation to the Ministry in 2022-23 is for the PM-KISAN scheme (Rs 68,000 crore). All other programmes of the Ministry, including interest subsidy and crop insurance, have been allocated Rs 64,514 crore in 2022-23. In 2021-22, the expenditure of the Ministry is estimated to be Rs 1,26,808 crore as per the revised estimate, which is 4% lower than the budget estimate.[2]

Figure 1: Expenditure of the Ministry (Rs crore)



Note: Revised estimate in 2021-22; Budget estimate in 2022-23.
Sources: Expenditure Budget, Union Budgets (2014-22); PRS.

Before PM-KISAN, the Ministry's expenditure saw a large increase in 2016-17 due to the interest subsidy provided on short-term credit to farmers. The subsidy, earlier provided by the Ministry of Finance, is being provided by the Ministry of Agriculture and Farmers' Welfare since 2016-17. This year, the subsidy has been provided under the Modified Interest Subvention Scheme (MISS).

Policy Proposals in the Budget Speech

In the 2022-23 budget speech, the Finance Minister made the following proposals regarding agriculture:

- A fund will be set up to finance start-ups relevant for farm produce supply chains, under the co-investment model. It will be facilitated through the National Bank for Agriculture and Rural Development.
- Legislative changes will be brought in to promote agro-forestry.
- A scheme in Public-Private Partnership (PPP) model will be launched for the delivery of digital and hi-tech services to farmers. It will include public sector research and extension institutions, private agri-tech players and stakeholders of agri-value chain.

Departments of the Ministry of Agriculture and Farmer's Welfare

Within the two departments under the Ministry, the Department of Agriculture, Cooperation and Farmers' Welfare has received 94% of the allocation to the Ministry in 2022-23, while 6% has been allocated to the Department of Agricultural Research and Education (Table 1).

Table 1: Allocation to the Ministry (in Rs crore)

Department	2020-21 Actuals	2021-22 Revised	2022-23 Budget	% change 2022-23 over 2021-22
Agriculture, Cooperation and Farmers' Welfare	1,08,273	1,18,294	1,24,000	5%
Agricultural Research and Education	7,554	8,514	8,514	0%
Ministry	**1,15,827**	**1,26,808**	**1,32,514**	**5%**

Sources: Expenditure Budget, Union Budget 2022-23; PRS.

The Department of Agriculture, Cooperation and Farmers' Welfare has been allocated Rs 1,24,000 crore in 2022-23, which is a 5% increase over the revised estimates of 2021-22. 83% of the Ministry's budget is proposed to be spent on three schemes under this Department: (i) the income support scheme, i.e., PM-KISAN (55%), (ii) Modified Interest Subvention Scheme (MISS) (16%), and (iii) the crop insurance scheme, i.e., Pradhan Mantri Fasal Bima Yojana (13%).

The Department of Agricultural Research and Education has been allocated Rs 8,514 crore in 2022-23, the same amount as the revised estimate for 2021-22.[3] Allocation to the Indian Council of Agricultural Research (ICAR) accounts for 69% of

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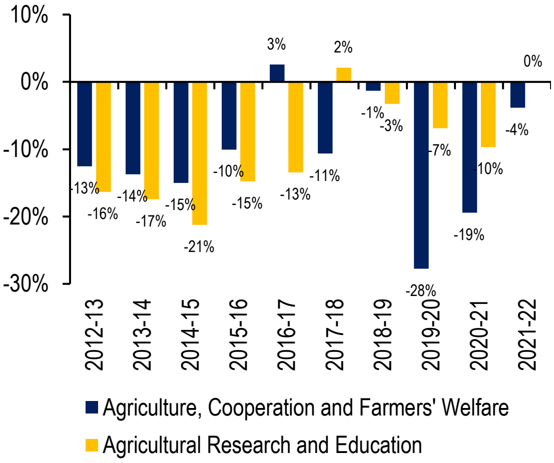
the Department's allocation in 2022-23. See Table 8 and Table 9 in the Annexure for more details.

Allocation vs actual expenditure: Expenditure of both the Departments has been lower than their budget allocations in almost all years during the period 2012-22 (Figure 2). The Ministry spent 19% less than its budget allocation in 2020-21. The Standing Committee on Agriculture (2020-21) noted in March 2021 that large amount of funds surrendered adversely affect the implementation of the schemes under the department and the flow of expenditure should be resolved with state governments.[4]

Figure 2: Deviation from budgeted expenditure



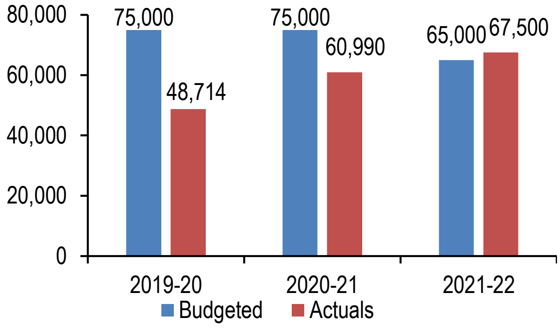
Note: Figures for 2021-22 are revised estimates.
Sources: Expenditure Budget, Union Budgets (2012-23); PRS.

Major Schemes of the Ministry

PM-KISAN

In February 2019, the government launched the PM-KISAN scheme to provide income support of Rs 6,000 per year to farmer families (disbursed in three instalments of Rs 2,000). The scheme aims to supplement the financial needs of farmers in procuring inputs for appropriate crop health and yields.[5] Earlier, only small and marginal landholder farmer families, i.e., families with total cultivable landholding of up to two hectares, were eligible for the scheme. In May 2019, the Union Cabinet approved the extension of the scheme to all farmer families irrespective of their size of landholdings. With this increase in coverage, expenditure on the scheme was estimated to increase from the budget allocation of Rs 75,000 crore to Rs 87,218 crore in 2019-20.[6] However, in 2019-20, the Ministry spent Rs 48,714 crore on the scheme, 35% lower than the budget allocation. Figure 3 shows the difference in the budgeted and actual expenditure under the scheme. For 2022-23, the allocation has been increased to Rs 68,000 crore, 1% increase over the revised estimate in 2021-22 (Rs 67,500 crore).

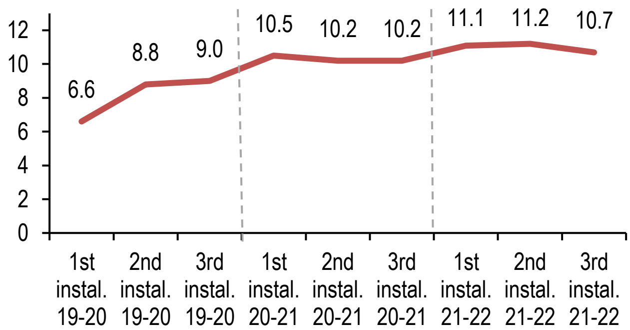
Figure 3: Budgeted and actual expenditure under PM-KISAN (Rs crore)



Note: Figures for 2021-22 are revised estimates.
Sources: Expenditure Budget, Union Budgets (2019-23); PRS.

Implementation: Initially, the scheme was expected to cover 12.5 crore beneficiaries.[6] With the increase in coverage, this was revised to 14.5 crore beneficiaries.[6] Till December 2022, 11.61 crore beneficiaries have been covered (farmers registered and seeking benefit under the scheme) which is close to 3 crore below the estimated beneficiaries .[7] However, the coverage under different instalments vary. Figure 4 depicts the number of payments from 2019-20 to 2021-22 per instalment.[8] 2021-22 has highest number of instalments across the three periods from 2019-22.

Figure 4: Number of payments instalment-wise (in crore)

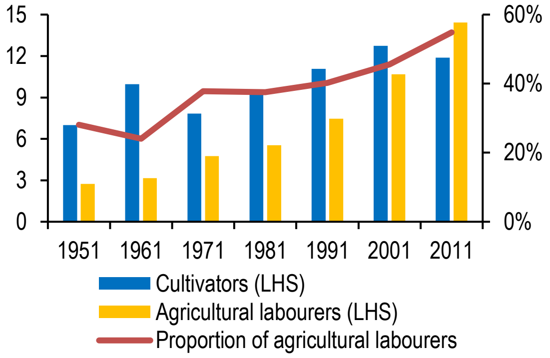


Sources: PM-KISAN Scheme dashboard; PRS.

The Standing Committee (2021) recommended that necessary steps should be taken to register all eligible farmers under the scheme.[9] The Standing Committee on Agriculture (2020) had noted that the scheme is facing the following issues in implementation: (i) non-availability of proper land records in some states, (ii) slow identification of beneficiaries and delay in the uploading of data by states, (iii) issues with the matching of demographic data between the PM-KISAN database and Aadhaar data, (iv) incorrect bank accounts, and (v) poor internet connectivity in rural areas hampering the uploading of data.[10] In a response to the Standing Committee in 2021, the Ministry re-iterated that many of the above issues still prevail. The Committee recommended that the government should hold regular consultation with states to resolve issues and take corrective steps.

Land as an eligibility criterion: Farmer families owning cultivable landholding are eligible for receiving income support under the scheme. The beneficiaries are identified by states based on their land records. The scheme does not cover landless agricultural labourers who form 55% of the agricultural workers in the country (Figure 5).[11] Agricultural workers include cultivators and labourers working in the agriculture sector. The share of landless agricultural labourers in total agricultural workers has increased over the years from 28% in 1951 to 55% in 2011. The Standing Committee (2020) noted that tenant farmers, who are a significant part of landless farmers in many states, do not receive the income support benefits.[10] 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: Breakup of agricultural workers into cultivators and agricultural labourers (in crore)



Sources: Agricultural Statistics at a Glance 2020, Ministry of Agriculture and Farmers' Welfare; PRS.

Rashtriya Krishi Vikas Yojana

The Rashtriya Krishi Vikas Yojana (RKVY) umbrella scheme was initiated in 2007 for ensuring holistic development of agriculture and allied sectors by allowing states to choose their own development activities as per district and state agriculture plans.[12] With the aim of making farming a remunerative economic activity, the Ministry provides financial assistance to states to spend on sub-schemes such as: (i) pre-harvest and post-harvest infrastructure, (ii) value addition using agri-business models, and (iii) projects based on local and national priorities. It was revised in 2017 as RKVY- Remunerative Approaches for Agriculture and Allied sector Rejuvenation (RKVY-RAFTAAR) with similar objectives to be completed until 2019-20.[13] The scheme was further extended till March 31, 2022.[14,15] While the administrative approval for 2022-23 is pending, it is likely to be provided by the end of March, 2022.

The allocation for Rashtriya Krishi Vikas Yojana, has seen a significant jump in allocation from Rs 2,000 crore in 2021-22 (revised estimate) to Rs 10,433 crore in 2022-23 (budget estimate). This is because the scheme has been restructured and erstwhile schemes viz. 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. have been merged with RKVY.[16] Table 11 in the Annexure provides details on the components of RKVY and their previous allocations. The Standing Committee on Agriculture (2017) observed that the allocations for the scheme under the Green Revolution Programme are not utilised optimally and timely.[25] This is due to a delay in the approval of projects and funds by states and consequent slow pace of implementation, causing a reduction in the release of funds. For instance, in 2021-22, budget allocation of Rs 3,712 crore to the scheme has been revised down to Rs 2,000 crore.[17]

The Standing Committee on Agriculture (2020) noted that the scheme's allocation gets cut at the revised stage as states are not able to timely submit their utilisation certificates, due to the delays in completion of infrastructure projects.[10] The Standing Committee on Agriculture (2021) recommended that the guidelines of the scheme should be changed to ensure that the states are provided funds for their upcoming projects in the agriculture sector.[9] It recommended that there is a need to increase the time period for submission of utilisation certificates for schemes involving infrastructure projects.

Soil Health Cards: In order to provide farmers with information regarding the quality of their soil, the Soil Health Card scheme was launched in 2015.[18] Under the scheme, farmers are issued soil health cards, which contain information such as nutrient status of soil and recommended dose of nutrients to be provided to improve its fertility. This scheme has now been merged with RKVY.

In 2021-22, Rs 315 crore had been allocated for the National Project on Soil Health and Fertility which decreased by 68% at the revised stage (at Rs 100 crore). During the first cycle (2015-17) of the scheme, 10.74 crore soil health cards were provided as per the target.[19] During the second cycle (2017-19), 11.87 crore soil health cards were provided against the target of 12.41 crore cards. During the period 2019-21, 19.6 lakh soil health cards have been distributed under the Model Village Programme (84% of the target).[20]

Pradhan Mantri Fasal Bima Yojana

Pradhan Mantri Fasal Bima Yojana (PMFBY) was launched in 2016-17 to provide crop insurance to farmers.[21] All farmers, including sharecroppers and tenant farmers, who are growing notified crops in notified areas are eligible under the scheme. In 2022-23, the scheme has been allocated Rs 15,500 crore, a 3% decrease over the 2021-22 revised estimate.

Participation of states: The Standing Committee on Agriculture (2021) noted that some recent revisions in the scheme guidelines may lead state governments to withdraw from it. The Committee has recommended revising amendments which: (i) prohibit states which delay the release of subsidies (beyond specified timeline) from participating in the scheme, and (ii) mandate state governments to bear the entire subsidy for areas/ crops which have a higher premium rate than the specified rates.[25] The Committee further noted that several states such as Bihar and West Bengal have withdrawn from the scheme, while Punjab never implemented it. It attributed this to financial constraints and low claim ratios during the normal seasons. It recommended enacting measures to increase participation by states.

Delays in settlement: The Standing Committee (2021) recognised delays in settlement of insurance claims as one of the biggest challenges in implementation of the scheme.[24] It recommended implementing a timeline for settlement of claims by insurance companies. In cases where delays are caused by failure of the state governments to pay subsidy, it suggested returning the premium with interest to farmers within a fixed time frame.

Coverage of farmers: During the period 2016-19, the scheme covered 36-40% of the farmers.[22] Note that before Kharif season 2020, enrolment was mandatory for farmers with loans and optional for others. To address the demand of farmers, the scheme has been made voluntary for all farmers.[23] Further, the Standing Committee on Agriculture (2021) noted that farmers who have taken loans can opt out of the scheme by submitting a declaration form.[24] However, due to lack of awareness, several farmers do not submit the requisite form and face mandatory deduction of premium from their bank accounts. It recommended amending this provision to require such farmers who have taken a loan and want to avail the scheme, to opt in separately.

Assessment of losses: The Standing Committee on Agriculture (2017) observed that states are not readily accepting and adopting the technologies used for assessing yield loss.[25] The Committee recommended the Ministry to pursue states to adopt technology aids and satellite imagery for crop cutting experiments. Under the revised guidelines of the scheme, the government has proposed a two-step process of using weather and satellite indicators for an early assessment of yield loss.[23] However, the Standing Committee (2021) observed that yield-related disputes and delayed transmission of yield data are now a major reason for delays in settlement of claims.[24] It noted that this data is provided by state governments based on crop cutting experiments which are highly time consuming and labour intensive. It recommended the adoption of smart sampling techniques by all states to address this.

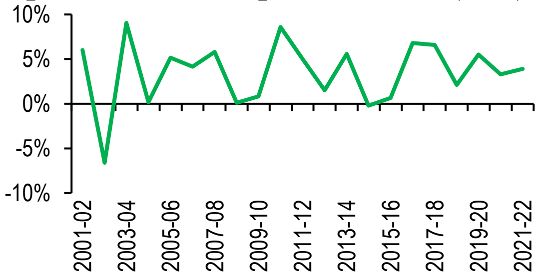
Grievance redressal: The Standing Committee on Agriculture (2019) observed that farmers are facing issues in lodging complaints with the insurance companies due to the absence of local offices of the companies at the district and block-level.[22] It recommended that the Ministry should ensure the availability of a common helpline number for lodging of complaints. Under the revised scheme guidelines, states have to constitute grievance redressal committees at the district and state level.[26] However, in 2021, the Standing Committee on Agriculture noted that only 15 states and union territories have notified Grievance Redressal Committees at both the state and district level. It recommended ensuring the formulation of these Committees in all other states.[24]

Key Issues in the sector

Growth of the agriculture sector

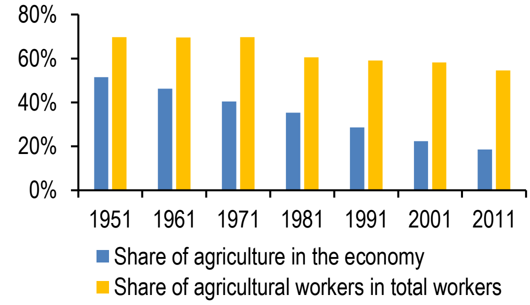
Growth of the sector comprising of agriculture and allied activities has been volatile over the years (Figure 6). In 2021-22, the sector is estimated to grow at 3.9%, as compared to a 3.3% growth in 2020-21.[27,28]

Figure 6: Growth of agriculture sector (in %)



Sources: MOSPI; PRS.

Figure 7: Share of agriculture in the economy and in the total number of workers (in %)



Sources: Agricultural Statistics at a Glance 2020, Ministry of Agriculture and Farmers' Welfare; CSO, MOSPI; PRS.

The contribution of the agriculture sector in the economy has significantly decreased from 51% in 1951 to 19% in 2011, and further to an estimated 16% in 2020-21.[28] Meanwhile, the share of workers who are dependent on agriculture has decreased at a lower rate from 70% in 1951 to 55% in 2011. This implies that the average income of these workers grew at a slower pace than that of workers in other sectors.

The Committee on Doubling Farmers' Income (Chair: Mr. Ashok Dalwai, 2017) observed that one way of significantly improving income of farmers, and hence, growth of the sector is by shifting the agricultural workforce to more productive employment in non-farm sectors.[29] However, as of 2018-19, receipts from non-farm businesses only contributed to 6% of an agricultural household's average monthly income. Table 2 provides details on the growth in the farmer's income, including income from crop production and farming of animals, from 2012-13 to 2018-19.

Table 2: Estimated average monthly income (in Rs) from different sources per agricultural household

Year	2012-13	2018-19	% change
Income: wages	2071	4063	96%
Net receipt: crop production	3081	3798	23%
Net receipt: farming animals	763	1582	107%
Net receipt: non-farm business	512	641	25%
Total Income	**6426**	**10218**	59%

Note: In 2018-19, total income includes Rs 134 per month from leasing of land. Data for the same is unavailable for 2012-13. CP stands for crop production, NFB for non-farm business.
Sources: NSS 70th and NSS 77th Round, MOSPI; PRS.

Agricultural credit

Agriculture credit is provided to farmers at a subsidised cost through interest subsidy.[30] An interest subsidy of two percent is provided to farmers on their short-term crop loans of up to three lakh rupees. An additional interest subsidy of three percent is provided to farmers repaying their loan on time, i.e., within a year. Under the Agricultural Infrastructure Fund, interest subsidies on loans for long-term credit are provided to farmers.

In 2022-23, Rs 19,500 crore has been allocated for interest subsidy under a new Modified Interest Subvention Scheme (MISS). The previous scheme on interest subsidy for short-term credit to farmers scheme from previous years has not been allocated an amount this year. The allocation for MISS is an increase of 7% over the 2021-22 revised estimate for the interest subsidy for short-term credit to farmers scheme (Rs 18,142). However, a significant difference has been observed in the last few years between the estimates presented in the budget (even the revised estimate) and the actual expenditure at the end of the year (Table 3).

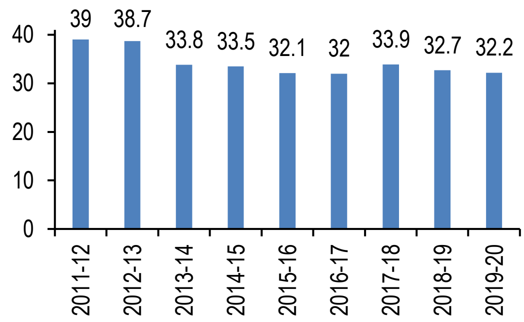
Table 3: Comparison of the estimates with the actual expenditure on interest subsidy (Rs crore)

Year	Budgeted	Revised	Actuals	% shortfall
2016-17	15,000	13,619	13,397	-11%
2017-18	15,000	14,750	13,046	-13%
2018-19	15,000	14,987	11,496	-23%
2019-20	18,000	17,863	16,219	-10%
2020-21	21,175	19,832	17,790	-16%
2021-22	19,468	18,142	-	-7%

Sources: Expenditure Budget, Union Budgets (2016-21); PRS.

Short-term vs long-term loans: In 2015, the Committee on Medium-term Path on Financial Inclusion under the Reserve Bank of India (RBI) observed that the interest subsidy provided for short-term crop does not incentivise farmers to take up long term loans for capital formation.[31] Short-term crop loans are used for pre-harvest activities such as weeding, harvesting, sorting, and transporting. Long-term loans are taken to invest in agricultural machinery and equipment, or irrigation system. The Committee observed that the scheme does not incentivise long-term capital formation in agriculture, which is essential to boost productivity in the sector. Capital formation through investment in agriculture helps in improving the stock of equipment, tools and productivity of natural resources, which, in turn, enables the farmers to use their resources, particularly land and labour, more productively.[32] However, the rate of capital formation over the past few years has been decreasing. Figure 8 provides details on the rate of capital formation from 2011-12 to 2019-20.

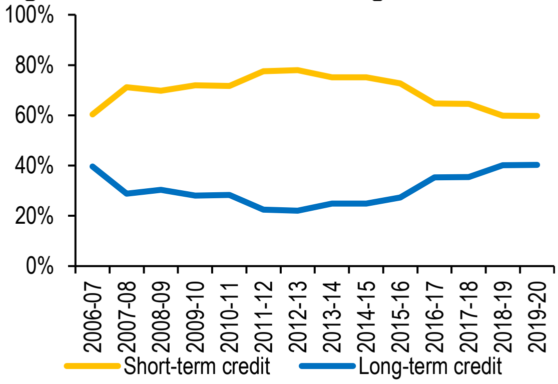
Figure 8: Rate of gross capital formation at current prices (in %)



Source: Agricultural Statistics at a Glance 2020, Ministry of Agriculture and Farmers' Welfare; CSO, MOSPI; PRS

Over the past few decades, the trend of short-term and long-term agricultural credit has reversed. In 1990-91, a majority of the agricultural credit were long-term loans, whereas short-term loans were only about a quarter of the total credit.[33] In 2019-20, the share of long-term loans in total agricultural credit was at 40% (Figure 9).[34] A lower share of long-term agricultural credit implies that farmers are taking more loans for recurring expenditure rather than to fund long-term investments.

Figure 9: Share of short and long-term credit



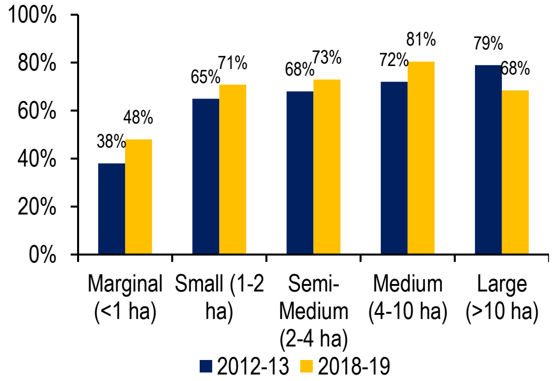
Sources: Reports of the Standing Committee on Agriculture (2020) and the RBI Working Group on Agriculture Credit; PRS.

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.[35] In May 2020, under the Aatmanirbhar Bharat Economic Package, the central government announced the setting up of an Agriculture Infrastructure Fund (AIF) of one lakh crore rupees for financing farm-gate infrastructure.[36] Under the AIF, the government provides an interest subsidy of 3% on loans of up to two crore rupees issued under the Fund. This subvention will be available for a maximum period of seven years.[37] In case of loans beyond two crore, the interest subvention will be limited up to two crore.[37] AIF has been allocated Rs 500 crore in 2022-23, which is a 150% increase from the revised estimates of 2021-22 (Rs 200 crore).

Small and marginal farmers: Farmers with landholdings of less than a hectare primarily borrow from informal sources of credit such as moneylenders, whereas those with landholdings of one or more hectares primarily borrow from banks (Figure 10).[31] Informal sources of credit are typically offered at higher rates of interests, and may not have proper documentation.

Note that 68% of the agricultural landholdings in the country belong to the marginal (less than one hectare) category.[38] Another 18% belong to the small category (between one to two hectare). Further, the share of the marginal category in total agricultural landholdings has been increasing over the years, from 51% in 1970-71 to 68% in 2015-16.[38] The RBI Internal Working Group on Agricultural Credit (2019) noted that only 41% of the small and marginal farmers have been covered by banks.[40]

Figure 10: Share of borrowings from institutional sources across various landholding households (2012-13 and 2018-19)



Sources: NSS 77th Round, MoSPI; PRS.

Land ownership: Access to agricultural credit is linked to formal land titles. The RBI Committee on Financial Inclusion (2015) observed that the owner of the land is often not the cultivator, even in the case of small and marginal holdings. For example, a landowner may get the benefit of subsidised credit at times and may be the moneylender to his cultivator.[31] The Committee recommended that agricultural credit must flow to the actual cultivator for which substantial reform is necessary.[31] Further, it stated that the subsidised credit increases the probability of misuse. The Committee on Comprehensive Financial Services for Small Businesses and Low-Income Households (2016) also recommended the transfer of benefits to farmers directly, instead of subsidy and waivers that are implemented through other authorities.[39]

An Internal Working Group of the RBI constituted to review Agricultural Credit (2019) noted that the absence of a proper land leasing framework and a lack of land records restricted access to institutional credit.[40] It recommended the central government to encourage states to digitise and update land records in a time-bound manner.

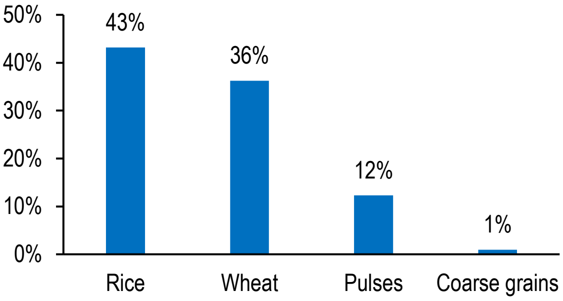
The 2015 RBI Committee on Financial Inclusion recommended that credit eligibility certificates, which would act as tenancy or lease certificates, should be issued to tenant farmers.[31] These certificates would enable landless tenant cultivators to obtain agricultural credit.

Minimum Support Prices (MSPs)

MSP is the assured price announced by the central government at which foodgrains are procured from farmers by the central and state governments and their agencies, for the central pool of foodgrains.[41] The central pool is used for providing foodgrains under the Public Distribution System and other welfare schemes at subsidised prices and also kept as reserve in the form of buffer stock. The cost of procuring from farmers at MSP and distributing under PDS at subsidised prices is borne by the Department of Food and Public Distribution. However, MSPs are notified based on the recommendations of the Commission for Agricultural Costs and Prices, an attached office of the Ministry of Agriculture and Farmers' Welfare.[42] The Union Budget for 2018-19 had announced the pre-determined principle to keep MSP at levels of 1.5 times of the cost of production.[43]

While MSPs are annually announced for 23 crops, public procurement is limited to a few crops such as paddy, wheat, and, to a limited extent, pulses.

Figure 11: Percentage of crop production procured at MSP in crop year 2019-20



Sources: Unstarred Question No. 331, Lok Sabha, September 15, 2020; PRS.

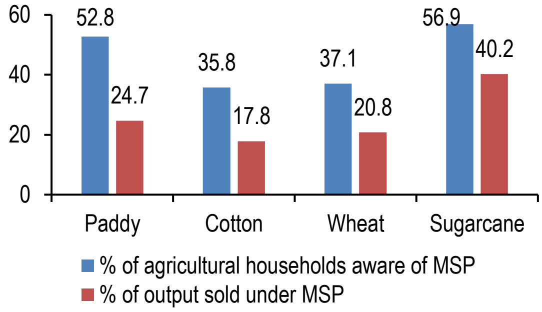
The foodgrain procurement is largely concentrated in a few states. Three states (Madhya Pradesh, Punjab, and Haryana) producing 46% of the wheat in the country account for 85% of its procurement. For rice, six states (Punjab, Telangana, Andhra Pradesh, Chhattisgarh, Odisha, and Haryana) with 40% production have a 74% share in procurement.

According to the central government's procurement policy, the objective of public procurement is to ensure that farmers get remunerative prices for their produce and do not have to resort to distress sale.[44] If farmers get a better price in comparison to MSP, they are free to sell their produce in the open market. The Economic Survey 2019-20 observed that the regular increase in MSP is seen by farmers as a signal to opt for crops which have an assured procurement system (for example, rice and wheat).[45] It also noted that this indicates market prices do not offer remunerative options for farmers, and MSP has, in effect, become the maximum price that the farmers are able to realise.

Thus, MSP incentivises farmers to grow crops which are procured by the government. As wheat and rice are major food grains provided under the PDS, the focus of procurement is on these crops. This skews the production of crops in favour of wheat and paddy (particularly in states where procurement levels are high) and does not offer an incentive for farmers to produce other items such as pulses. Further, this puts pressure on the water table as these crops are water-intensive crops.

In a report to measure the efficacy of MSPs, NITI Aayog (2016) found that a low proportion of farmers (10%) were aware of MSPs before the sowing season.[46] 62% of the farmers were informed of MSPs after sowing their crops. Figure 12 depicts the percentage of agricultural households that were aware about MSP in 2019.

Figure 12: Agricultural households reporting sale of crops and awareness about MSP for selected crops (2019)



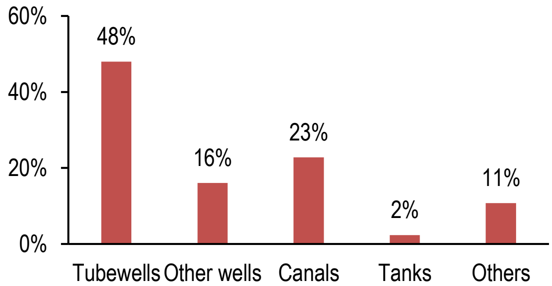
Sources: NSS 77th Round, MoSPI; PRS.

The pricing policy of MSPs would be effective only if farmers are aware of it at the time of deciding what crops to grow. NITI Aayog recommended that the awareness level of farmers regarding MSPs must be increased and the mediums of dissemination of this information must be strengthened.[46] Other issues with the implementation of the MSP regime include long distances to the procurement centres, increasing transportation cost for farmers, irregular hours of the procurement centres, lack of covered storage godowns and inadequate storage capacity, and delays in the payment of MSPs to farmers.

Irrigation

As of 2020-21, 49% of the country's net sown area was under irrigation.[47] The remaining agricultural area in the country depends on rainfall. As of 2016-17, major irrigation sources for agriculture include tubewells (48%) and other wells (16%), and canals (23%).

Figure 13: Sources of irrigation (2016-17)



Sources: Land Use Statistics at a Glance (2018-19), Ministry of Agriculture and Farmers' Welfare; PRS.

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.[48] 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.[49]

The Pradhan Mantri Krishi Sinchai Yojana was launched in 2015 to increase the coverage of the area under irrigation.[50] 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 RKVY for 2022-23. During the period 2013-21, 60.3 lakh hectares of area has been covered under micro-irrigation (Table 4).[51]

Table 4: Area covered under micro-irrigation in lakh hectares (as of February 1, 2022)

Year	Target	Achievement	Achievement %
2013-14	6.6	4.3	66%
2014-15	5.7	4.3	74%
2015-16	5.0	5.7	115%
2016-17	8.0	8.4	105%
2017-18	12.0	10.5	87%
2018-19	16.0	11.6	72%
2019-20	14.0	11.7	84%
2020-21	-	9.4	-
2021-22	-	2.7	-
Total	**67.3**	**72.4**	**90%**

Sources: Pradhan Mantri Krishi Sinchai Yojana website; PRS.

Shortfall in funds: Allocation to the scheme for 2021-22 has been revised down by 50% from Rs 4,000 crore to Rs 2,000 crore (revised estimate). Over the years, the budget of the scheme is usually cut down at the revised stage, resulting in a lower expenditure than the allocation (Table 5).

Table 5: Comparison of the allocation to the scheme with its actual expenditure (in Rs crore)

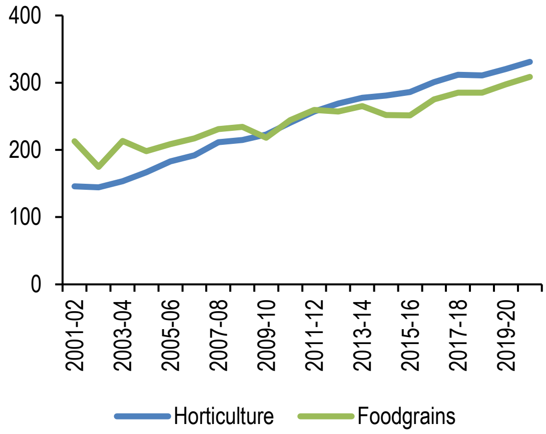
Year	Allocation*	Expenditure	% shortfall
2015-16	1,800	1,556	14%
2016-17	2,340	1,991	15%
2017-18	3,400	2,819	17%
2018-19	4,000	2,918	27%
2019-20	3,500	2,700	23%
2020-21	4,000	2,562	36%
2021-22	4,000	2,000#	50%

Note: *Budget estimate; #Revised estimate used as expenditure.
Sources: Expenditure Budget, Union Budgets (2015-22); PRS.

Horticulture

Between 2001-02 and 2020-21, the production of horticulture crops increased from 146 million tonnes to 331 million tonnes (Figure 14).[52] This implies that the horticulture production increased at an average rate of 4.4%. Production of food grains increased at a rate of 2% during the same period. In 2020-21, vegetables and fruits are estimated to contribute to 60% and 31% of the total horticultural production, respectively.[53]

Figure 14: Comparison of horticulture and food grain production during 2001-21 (million tonne)



Sources: Directorate of Economics and Statistics, Ministry of Agriculture and Farmers' Welfare; PRS.

The National Mission on Horticulture seeks to promote horticulture by providing availability of quality inputs such as planting material, and post-harvest interventions such as reduction in losses and access to markets. This Mission has been subsumed as Integrated Development of Horticulture component under the Krishionnati Yojana. The component has been allocated Rs 1,900 crore in 2022-23, 19% higher than the allocation for the horticulture mission in 2021-22 (Rs 1,594 as per the revised estimate). However, over the past few years, the actual expenditure on horticulture schemes has been lower than the allocation made in the budget (Table 6).

Table 6: Comparison of the allocation to the scheme with its actual expenditure (in Rs crore)

Year	Allocation*	Expenditure	% shortfall
2016-17	1,620	1,493	8%
2017-18	2,320	2,027	13%
2018-19	2,536	1,997	21%
2019-20	2,225	1,331	40%
2020-21	2,300	1,423	38%
2021-22	2,385	1,594#	33%

Note: *Budget estimate; #Revised estimate used as expenditure.
Sources: Expenditure Budget, Union Budgets (2016-22); PRS.

Use of fertilisers

While the Ministry of Chemicals and Fertilisers is responsible for monitoring the production, distribution, and prices of fertilisers, the Ministry of Agriculture and Farmers' Welfare is responsible for the promotion of balanced use of fertilisers.[54] Balanced use refers to the use of a proper combination of various nutrients and other micro-nutrients. Three major nutrients are primarily used: Nitrogen (N), Phosphatic (P), and Potassic (K). The government subsidises fertilisers through: (i) subsidy for urea (containing N fertiliser), and (ii) nutrient-based subsidy for P and K fertilisers. The fertiliser subsidy is provided to the fertiliser manufacturers and importers so that farmers can directly buy them at affordable or subsidised prices.

In 2022-23, Rs 1,05,262 crore has been allocated to the Department of Fertilisers for fertiliser subsidy, a decrease of 25% over the revised estimates of 2021-22 (Table 7). Further, the allocation for subsidies of Urea and nutrient-based fertiliser in 2022-23 is 17% and 35% lower than the revised estimates of 2021-22. In 2021-22, the department has been allocated Rs 1,40,122 crore at the revised stage, which is 75% higher than budget estimate (Rs 80,011 crore). Note that the government had increased the subsidy rate for Phosphate by 204% from Rs 14.9 per kg in 2020-21 to Rs 45.3 per kg in 2021-22.[55,56,57] This was in response to a sharp increase in international prices of raw materials used in the manufacture of fertilisers.[58] In 2020-21, the actual expenditure included one-time allocation of Rs 32,155 crore to clear off pending dues of fertiliser subsidy of previous financial years.[59] Dues had built up due to insufficient budget allocation over the years. Adjusted for this one-time expenditure in 2021-22 RE, the decrease in allocation for 2022-23 BE is 2.5%.

Table 7: Fertiliser subsidy allocation (Rs crore)

Subsidy	2020-21 Actuals	2021-22 Revised	2021-22 Budgeted	% change in BE 2022-23 over RE 2021-22
Urea	90,549	75,930	63,222	-16.7%
Nutrient based	37,372	64,192	42,000	-34.6%
Fertiliser subsidy	**1,27,922**	**1,40,122**	**1,05,262**	**-24.9%**

Sources: Expenditure Budget No.6, Union Budget 2022-23; PRS.

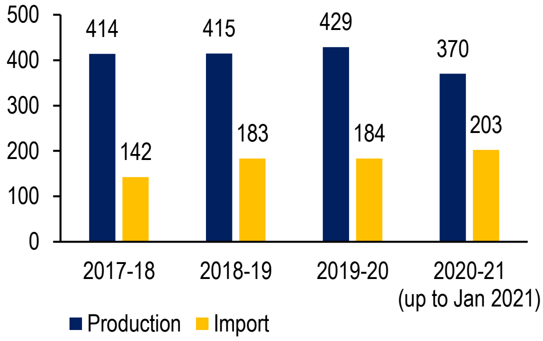
Subsidy policy of government

The Standing Committee on Chemicals and Fertilisers (2020) observed that many fertiliser manufacturing plants are operating with very old technology and systems, and not at their highest efficiency.[60] The government bears the cost of their inefficiency in the form of higher subsidy. The Committee recommended that the companies should be set free to manufacture and sell fertilisers as per their own system. A farmer should have the choice to buy from various brands of fertilisers while getting the subsidy directly in his bank account. This will push manufacturers to produce and sell their fertilisers in the most cost-effective manner and push the inefficient ones out. It recommended that the government should set out a clear and firm roadmap for switching to a direct subsidy system, where the manufacturing and importing of fertilisers is set free to market forces.

Import Dependence for fertilisers

The Standing Committee on Chemicals and Fertilisers (2021) had observed that India is dependent on imports of different fertilisers either in the form of finished fertilisers or their raw material.[61] This is due on non-availability or scarce availability of resources in cases of phosphatic and potassic fertilisers. Import dependence is up to 25% in case of urea, 90% in case of phosphatic fertilisers (either as raw material or finished fertilisers) and 100% in case of potassic fertilisers. Figure 15 provides details on the production and import of major fertilisers during the last few years. The Standing Committee (2020) took note of the rise in import of fertilisers and recommended that the department should take measures to augment domestic production of urea.[61] It should find ways to increase domestic production of potassic and phosphatic fertilisers through: (i) import of necessary raw material or (ii) setting up of production facilities in those countries where raw material including potash and phosphates are available in plenty. Table 13 in Annexure give fertiliser-wise details on consumption, import and production.

Figure 15: Production of major fertilizers (in lakh metric tonne)



Note: comprises Urea, DAP, MOP, NPKS, and SSP.
Source: Report no. 20, Standing Committee On Chemicals & Fertilizers (2020-21): 'Demands for Grants (2020-21)', Lok Sabha, March 17, 2021; PRS

Prices of urea are controlled by the government, whereas that of P and K fertilisers are market-driven.[54] This has led to lower prices of urea (N) over the years, whereas the market prices of P and K fertilisers have remained higher. This is one of the reasons for imbalanced use of nutrients as urea is used more than other fertilisers.[54] While the ratio recommended for use of the N, P, and K fertilisers is 4:2:1, the ratio was 6.3:2.5:1 in 2019-20.[62] Table 12 in the Annexure shows their consumption trend.

Non-availability of fertilisers

The Standing Committee on Chemicals and Fertilisers (2021) had observed that there are numerous reports of non-availability or delayed availability of fertilisers in different parts of the country, particularly during peak cultivation seasons. The Department in its response had noted that it makes fertilisers available to states. State government distribute fertilisers as per their own distribution plans. The Committee recommended that: (i) the department should implement ground level monitoring mechanism up to block and village levels, (ii) conduct periodic review of district and state level availability of fertilisers, and (iii) ensure that states are taking necessary action in cases of artificial scarcity, black marketing, or hoarding.

Balanced use of fertilisers

With the usage of urea more than other fertilisers, there has been an imbalance use of nutrients for soil fertilisation. This is because of lower prices of urea (N) over the years, whereas the market prices of P and K fertilisers have remained higher. Prices of urea are controlled by the government, whereas that of P and K fertilisers are market-driven.[54] While the ratio recommended for use of the N, P, and K fertilisers is 4:2:1, the ratio was 6.3:2.5:1 in 2019-20.[63] Table 12 in the Annexure shows their consumption trend.

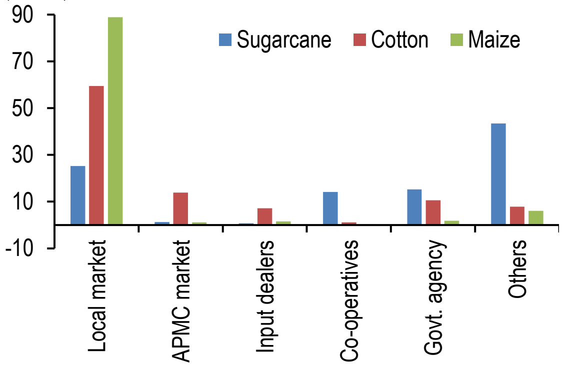
Agricultural Marketing

The Integrated Scheme on Agriculture Marketing (ISAM) includes sub-schemes such as: (i) agriculture marketing infrastructure, to create storage capacity and farmer consumer markets, (ii) market research and information network, (iii) strengthening of Agmark grading facilities, (iv) agro-business development to provide market linkages to farmers, and (v) e-NAM (National Agriculture Market), which is a national electronic market platform on which farmers can sell their produce. It will now be continued as the Agricultural Marketing Scheme under Krishionnati Yojana in 2022-23.

In 2022-23, the scheme has been allocated Rs 500 crore. This is a 89% increase over 2021-22 revised estimate for ISAM. However, the allocation for 2021-22 has been revised down by 36%, from Rs 410 crore to Rs 264 crore. Till February 11, 2022, 1,000 mandis across 18 states and three union territories have been integrated with e-NAM.[64,65]

Regulation: 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.[66] 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. Figure 16 provides details of percentage of agricultural households reporting sale of crops according to market type for major foodgrain crops.

Figure 16: % of agricultural households reporting sale of crops sold by agency type (2019)



Source: NSS 77th Round, MOSPI; PRS

The Standing Committee on Agriculture (2019) observed that the APMC laws are not implemented in their true sense and need urgent reforms.[66] Issues identified by the Committee include: (i) most APMCs have a limited number of traders operating, which leads to cartelization and reduces competition, and (ii) undue deductions in the form of commission charges and market fees.[66] Traders, commission agents, and other functionaries organise themselves into associations, which do not allow easy entry of new persons into market yards, stifling competition.[67] The Acts are highly restrictive in promotion of multiple channels of marketing and competition in the system.[66]

Parliament enacted three laws in September 2020: (i) the Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020, (ii) the Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Act, 2020, and (iii) the Essential Commodities (Amendment) Act, 2020.[68,69,70] These laws collectively sought 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. The three laws together aimed to increase opportunities for farmers to enter into sale contracts, increase the availability of buyers, and permit buyers to purchase bulk produce. However, following protests against the laws, in January 2021, the Supreme Court stayed their implementation until further orders.[71] In November 2021, these Acts were repealed with the passage of the Farm Laws Repeal Bill, 2021.[72]

Marketing infrastructure: 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.[66] Most farmers lack access to government procurement facilities and APMC markets.[66] Small and marginal farmers (who hold 86% of the agricultural landholdings in the country) face various issues in selling their produce in APMC markets such as inadequate marketable surplus, long-distance to the nearest APMC markets, and lack of transportation facilities.[66] The average area served by an APMC market is 496 sq. km., much higher than the 80 sq. km. recommended by the National Commission on Farmers (Chair: Dr. M. S. Swaminathan) in 2006.[66]

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.[66] 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.[66]

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.[73] The Fund will be set up by NABARD to provide Rs 1,000 crore to states at a concessional interest rate for development of marketing infrastructure in Gramin Haats.

Agricultural Research

The Indian Council of Agricultural Research (ICAR) is an autonomous organisation under the Department of Agricultural Research and Education (DARE).[74] The Council is the apex body for co-ordinating, guiding and managing research and education in agriculture including horticulture, fisheries and animal sciences in the entire country.

Of the Rs 8,013 crore allocated to research and education under DARE, ICAR has been allocated Rs 5,877 crore (73%) for the year 2022-23. This is 7% higher than the revised estimate of 2021-22. The allocation is primarily for salaries, pensions, administrative expenses, and different schemes under ICAR. The Standing Committee on Agriculture (2019) noted that almost 75% of the allocation to the Department of Agricultural Research and Education is incurred on items such as salaries and pensions, and only 25% is available for research activities.[75] The Committee recommended that more funds should be provided to the Department to promote agricultural research and education. It also recommended the Department to work towards attracting Corporate Social Responsibility (CSR) funds for investment in agricultural research.

Research under crop sciences and animal sciences has been allocated Rs 719 crore and Rs 343 crore in 2022-23, respectively. Both allocations have decreased by more than 14% over their revised estimates of 2021-22. This is despite the recommendation of Standing Committee on Agriculture (2021) that the Department should continue to make persistent efforts to ensure the allocations to the department are adequately increased and are not reduced at any stage.[76]

International comparison: The Committee on Doubling Farmers' Income (Chair: Mr. Ashok Dalwai, 2017) observed that the expenditure on agricultural research in India has remained around 0.3-0.4% of the agriculture GDP since 2001 (except in 2011 when it was 0.52% because of higher plan allocations by the government).[77]

The Committee observed that this is substantively lower in comparison to many developed countries, and also vis-à-vis comparable developing economies. The share of agricultural research in agriculture GDP is much higher in Brazil (1.8%), Mexico (1.05%), Malaysia (0.99%), and China (0.62%). It observed that in the high-income countries, the share stands at 3.01%. The Committee recommended that expenditure on agricultural research should be increased to up to one percent of agriculture GDP.

Agricultural machinery

Mechanisation is another aspect which has a significant impact on agricultural productivity. The use of agricultural machinery in agriculture enables agricultural labour to be used in other activities. It makes activities such as tilling, spreading of seeds and fertilizers and harvesting more efficient, so that the cost of inputs is offset. It can also make the use of labour in agriculture more cost-effective.

The status of mechanisation in agriculture varies for different activities: as of 2018, the penetration of powered machines in various farm activities is assessed in the range of 40 to 45 per cent.[78] The highest level of mechanisation is observed in harvesting and threshing activities and irrigation. The lowest level of mechanisation is found in seeding and planting. To increase productivity, durable, light-weight, and low-cost farm equipment, specific to different crops and regions, should be made available for small and marginal farmers.

Some challenges faced in farm mechanisation include: (i) different soil and climatic zones which require customised farm machinery, and (ii) dominance of small and marginal landholdings which makes investment in mechanisation unviable. To promote an inclusive growth of farm mechanization in the country, a Sub Mission on Agricultural Mechanization (SMAM) was launched in the year 2014-15.[78] Under the scheme, assistance is given to state governments for: (i) providing training and demonstration of agricultural machinery, (ii) assisting farmers in procurement of various agricultural machinery and equipment, and (iii) setting up setting up of Custom

Centre (CHC). During 2014-15 to 2020-21, a total of 27,828 CHC were established under the SMAM scheme.[78] The Government has also developed and launched Multi lingual Mobile App called Farm Machinery Solutions (FARMS) which helps the farmers in getting rented farm machinery and implements through CHC in their area.

Annexure

Allocation to major expenditure heads under the Departments

Table 8: Allocation under the Department of Agriculture, Cooperation and Farmers' Welfare (Rs crore)

Item	2020-21 Actuals	2021-22 Budgeted	2021-22 Revised	2022-23 Budgeted	% change in BE 2022-23 over RE 2021-22
PM-KISAN	60,990	65,000	67,500	68,000	1%
Interest subsidy for short-term credit to farmers/ Modified Interest Subvention Scheme (MISS)#	17,790	19,468	18,142	19,500	7%
Pradhan Mantri Fasal Bima Yojana	14,161	16,000	15,989	15,500	-3%
Pradhan Mantri Krishi Sinchai Yojana (Per Drop More Crop)	2,562	4,000	2,000	-	-
Market Intervention Scheme and Price Support Scheme (MIS-PSS)	1,358	1,501	3,596	1,500	-58%
Agriculture Infrastructure Fund	22	900	200	500	150%
Formation and Promotion of 10,000 Farmer Producer Organisations	241	700	250	500	100%
Green Revolution/ RKVY and Krishionnati Yojana	9,748	13,408	8,889	17,616	98%
Department	**1,08,273**	**1,23,018**	**1,18,294**	**1,24,000**	**-4%**

Note: Expenditure and estimates of Rashtriya Krishi Vikas Yojna for 2020-22 were allocated as a part of Green Revolution.
**: RKVY and Krishionnati Yojana for 2022-23 includes the merged schemes of National Project on Soil Health and Fertility, Sub-Mission on Agriculture Mechanisation, National Project on Agro- Forestry etc. moved from Green Revolution.*
[#]:The Interest Subsidy for short-term credit to farmers has been discontinued in 2022-23. Instead, the Modified Interest Sub-Scheme (MISS) has been launched in 2022-23.
Sources: Demand no. 1, Expenditure Budget, Union Budget 2022-23; PRS.

Table 9: Allocation under the Department of Agricultural Research and Education (Rs crore)

Item	2020-21 Actuals	2021-22 Budgeted	2021-22 Revised	2022-23 Budgeted	% change in BE 2022-23 over RE 2021-22
ICAR headquarters	4,985	5,322	5,561	5,877	6%
Crop sciences	805	968	840	719	-14%
Agricultural education	526	613	553	455	-18%
Central agricultural universities	428	471	563	599	6%
Animal and Fisheries sciences	400	462	400	343	-14%
Department	**7,554**	**8,514**	**8,514**	**8,514**	**0%**

Sources: Demand no. 2, Expenditure Budget, Union Budget 2022-23; PRS.

Table 10: Restructuring of Green Revolution in 2022-23

Previous Umbrella Scheme	Schemes	New Umbrella Scheme
Green Revolution	Information Technology	Krishionnati Yojana
Green Revolution	Integrated Scheme on Agriculture Census and Statistics	
Green Revolution	Integrated Scheme on Agriculture Marketing	
Green Revolution	National Food Security Mission	
Green Revolution	Sub- Mission on Seed and Planting Material	
Green Revolution	National Mission on Horticulture	
Green Revolution	National Bamboo Mission	
Green Revolution	National Mission on Oil Seed and Oil Palm	
Green Revolution	Organic Value Chain Development for North East Region	
Green Revolution	Sub - Mission on Agriculture Extension	
Green Revolution	Integrated Scheme on Agricultural Cooperation	Integrated Scheme on Agricultural Cooperation
Pradhan Mantri Krishi Sinchai Yojna	Pradhan Mantri Krishi Sinchai Yojana (PMKSY)- Per Drop More Crop	Rashtriya Krishi Vikas Yojna
Green Revolution	National Project on Soil Health and Fertility	
Green Revolution	Paramparagat Krishi Vikas Yojana	
Green Revolution	Rashtriya Krishi Vikas Yojna	
Green Revolution	Rainfed Area Development and Climate Change	
Green Revolution	Sub- Mission on Agriculture Mechanisation	
Green Revolution	Sub- Mission on Plant Protection and Plant Quarantine	Moved to Establishment Expenditure
Green Revolution	National Project on Agro- Forestry	Subsumed in other CSS
Green Revolution	National Project on Organic Farming	Moved to Establishment Expenditure

Source: Statement 4AA, Expenditure Profile, Union Budget 2022-23; PRS.

Table 11: Components of RKVY in 2022-23 and their allocation across the years (in Rs crore)

Scheme	2021-22 Budgeted	2021-22 Revised	2022-23 Budgeted
Rashtriya Krishi Vikas Yojna	3,712	2,000	10,433
Pradhan Mantri Krishi Sinchai Yojana (PMKSY)- Per Drop More Crop	4,000	2,000	-
National Project on Soil Health and Fertility	315	100	-
Rainfed Area Development and Climate Change	180	110	-
Sub-Mission on Agriculture Mechanisation	1,050	850	-
Paramparagat Krishi Vikas Yojana	450	100	-
Total	9,707	5,060	10,433

Sources: Demand no. 1, Expenditure Budget, Union Budget 2022-23; PRS.

Consumption of Fertilisers

Table 12: Consumption of fertilisers in terms of N, P, and K nutrients (in lakh tonnes)

Year	Urea (N)	Phosphatic (P)	Potassic (K)	Total (N+P+K)
2006-07	137.7	55.4	23.3	216.5
2007-08	144.2	55.1	26.4	225.7
2008-09	150.9	65.1	33.1	249.1
2009-10	155.8	72.7	36.3	264.9
2010-11	165.6	80.5	35.1	281.2
2011-12	173.0	79.1	25.8	277.9
2012-13	168.2	66.5	20.6	255.4
2013-14	167.5	56.3	21.0	244.8
2014-15	169.4	60.9	25.3	255.8
2015-16	173.7	69.8	24.0	267.5
2016-17	167.4	67.1	25.1	259.5
2017-18	169.6	68.5	27.8	265.9
2018-19	176.3	69.7	27.8	273.8
2019-20	191.0	76.6	26.1	293.7

Sources: Agricultural Statistics at a Glance 2020, Ministry of Agriculture and Farmers' Welfare; PRS.

Table 13: Import, production, and consumption of fertilisers (in lakh metric tonne)

Year	Urea	DAP	MOP	NPK-S	SSP	Total
			Production			
2017-18	240	47	-	88	39	414
2018-19	240	39	-	95	41	415
2019-20	245	46	-	96	43	429
2020-21*	210	34	-	85	41	370
			Import			
2017-18	60	43	35	5	-	142
2018-19	76	69	30	7	-	183
2019-20	92	54	29	9	-	184
2020-21*	98	57	33	15	-	203
			Consumption			
2017-18	303	90	30	91	54	568
2018-19	320	95	27	96	43	582
2019-20	337	101	28	105	44	615
2020-21*	305	108	28	106	40	587

Note: * Figures for 2020-21 is up to January 2021. DAP stands for Di-Ammonium Phosphate, MOP stands for Muriate of Potash, NPK-S stands for Nitrogen, Phosphorus and Potassium-S , SSP stands for Single Super Phosphate-Powder.
Source: Report no. 20, Standing Committee On Chemicals & Fertilizers (2020-21): 'Demands for Grants (2020-21)', Lok Sabha, March 17, 2021

[1] Ministry-wise Summary of Budget Provisions, Union Budget 2022-23, https://www.indiabudget.gov.in/doc/eb/sumsbe.pdf.

[2] Demand No. 1, Department of Agriculture, Cooperation and Farmers' Welfare, Expenditure Budget, Union Budget 2022-23, https://www.indiabudget.gov.in/doc/eb/sbe1.pdf.

[3] Demand No. 2, Department of Agricultural Research and Education, Expenditure Budget, Union Budget 2022-23, https://www.indiabudget.gov.in/doc/eb/sbe2.pdf.

[4] Report no. 23, Standing Committee on Agriculture: 'Demand for Grants (2021-22), Department of Agriculture, Cooperation and Farmers' Welfare', Lok Sabha, March 2021, http://164.100.47.193/lsscommittee/Agriculture,%20Animal%20Husbandry%20and%20Food%20Processing/17_Agriculture_24.pdf.

[5] Operational Guidelines of "Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)", Ministry of Agriculture and Farmers Welfare, http://agricoop.gov.in/sites/default/files/operational_GuidePM.pdf.

[6] "PM-KISAN Scheme extension to include all eligible farmer families irrespective of the size of landholdings", Press Information Bureau, Cabinet, May 31, 2019.

[7] Starred Question no. 43, Lok Sabha, December 12, 2021, http://loksabhaph.nic.in/Questions/QResult15.aspx?qref=31718&lsno=17.

[8] PM-KISAN scheme dashboard, Ministry of Agriculture and Farmers' Welfare, as on February 10, 2022, https://pmkisan.gov.in/.
[9] Report no. 31, Standing Committee on Agriculture: 'Demand for Grants (2021-22), Department of Agriculture, Cooperation and Farmers' Welfare', Lok Sabha, December 2021, http://164.100.47.193/lsscommittee/Agriculture,%20Animal%20Husbandry%20and%20Food%20Processing/17_Agriculture_Animal_Husbandry_and_Food_Processing_31.pdf.
[10] Report no. 9, Standing Committee on Agriculture: 'Demand for Grants (2020-21), Department of Agriculture, Cooperation and Farmers' Welfare', Lok Sabha, March 2020, http://164.100.47.193/lsscommittee/Agriculture/17_Agriculture_9.pdf.
[11] "March of Agriculture since Independence and Growth Trends", Report of the Committee on Doubling Farmers' Income, Ministry of Agriculture and Farmers Welfare, August 2017, http://farmer.gov.in/imagedefault/DFI/DFI%20Volume%201.pdf.
[12] Revised guidelines, Rashtriya Krishi Vikas Yojana, Department of Agriculture, Cooperation and Farmers' Welfare, https://rkvy.nic.in/static/download/pdf/RKVY_14th_Fin._Comm.pdf.
[13]Awareness on Agri-Business Incubation, , Press Information Bureau, Ministry of Agriculture and Farmers Welfare, February 12, 2022.
[14] F. No. 7-1/2020-RKVY, Ministry of Agriculture and Farmer's Welfare, January 2020, https://rkvy.nic.in/static//download/cirlular_notifications/Imp_of_RKVY-20-21.pdf
[15]No. 5-l/2021-RKVY, Ministry of Agriculture and Farmer's Welfare, May 2021, http://rkvy.nic.in/static//download/cirlular_notifications/Admn_aprvl_2021-22.pdf.
[16] Annual report 2020-21, Ministry of Agrilculture and Farmer's Welfare, https://agricoop.nic.in/sites/default/files/Web%20copy%20of%20AR%20%28Eng%29_7.pdf
[17] Year End Review: 2021- Ministry of Agriculture and Farmers Welfare, Press Information Bureau, Ministry of Agriculture and Farmers Welfare ,December 2021.
[18] "Soil health card Scheme Completes 5 years on 19-2-2020", Press Information Bureau, Ministry of Agriculture and Farmers' Welfare, February 17, 2020.
[19] Website of the Soil Health Card scheme, Ministry of Agriculture and Farmers' Welfare, as on February 12, 2022, https://www.soilhealth.dac.gov.in/.
[20]Soil Health Card Scheme, Press information Bureau, Ministry of Agriculture and Farmers' Welfare, November 30, 2021.
[21] "Pradhan Mantri Fasal Bima Yojana (PMFBY), Ministry of Agriculture, http://agricoop.nic.in/imagedefault/whatsnew/sch_eng.pdf; "Cabinet approves New Crop Insurance Scheme – Pradhan Mantri Fasal Bima Yojana", Press Information Bureau, Ministry of Agriculture, January 13, 2016.
[22] Report no. 6, Standing Committee on Agriculture: 'Demand for Grants (2019-20), Department of Agriculture, Cooperation and Farmers' Welfare', Lok Sabha, December 2019, http://164.100.47.193/lsscommittee/Agriculture/17_Agriculture_6.pdf.
[23] Lok Sabha Unstarred Question No. 97, Ministry of Agriculture and Farmers' Welfare, February 2, 2021, http://164.100.24.220/loksabhaquestions/annex/175/AU97.pdf.
[24] Report no. 29, Standing Committee on Agriculture: 'Demand for Grants (2021-22), Department of Agriculture, Cooperation and Farmers' Welfare', Lok Sabha, December 2021, http://164.100.47.193/lsscommittee/Agriculture/17_Agriculture_29.pdf.
[25] 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/lsscommittee/Agriculture/16_Agriculture_35.pdf.
[26] Report no. 17, Standing Committee on Agriculture: Action taken by the government on the report: 'Demand for Grants (2019-20), Department of Agriculture, Cooperation and Farmers' Welfare', Lok Sabha, February 2021, http://164.100.47.193/lsscommittee/Agriculture/17_Agriculture_17.pdf.
[27]Statement 4.2, First Revised Estimates Of National Income, Consumption Expenditure, Saving And Capital Formation For 2020-21, https://static.pib.gov.in/WriteReadData/specificdocs/documents/2022/jan/doc202213111301.pdf.
[28] First Advance Estimates of National Income 2021-22, National Statistical Office, https://mospi.gov.in/documents/213904/416359/Press%20Note%20FAE%202021-22m1641557278684.pdf/d4df7f8c-779a-ed1c-9d6b-146064dc63ba.
[29] "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.
[30] "Cabinet approves Interest Subvention to banks on short-Term crop loans to farmers", Press Information Bureau, Ministry of Agriculture and Farmers' Welfare, June 14, 2017.
[31] 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.
[32] Capital Adequacy in Indian Agriculture: A Riposte, Reserve Bank of India, https://www.rbi.org.in/scripts/bs_viewcontent.aspx?Id=1911#:~:text=Capital%20formation%20through%20investment%20in,land%20and%20labour%2C%20more%20productively.
[33] Report of the Internal Working Group to Revisit the Existing Priority Sector Lending Guidelines, Reserve Bank of India, March 2, 2015, https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/PSGRE020315.pdf.
[34] Report no. 19, Standing Committee on Agriculture: Action taken by the government on the report: 'Demand for Grants (2020-21), Department of Agriculture, Cooperation and Farmers' Welfare', Lok Sabha, February 2021, http://164.100.47.193/lsscommittee/Agriculture/17_Agriculture_19.pdf.
[35] "Input Management for Resource Use Efficiency and Total Factor Productivity", Report of the Committee on Doubling Farmers' Income, Volume 7, Ministry of Agriculture and Farmers' Welfare, March 2018, https://farmer.gov.in/imagedefault/DFI/DFI%20Volume%207.pdf.
[36] "Setting up of Agriculture Infrastructure Fund", Press Information Bureau, Ministry of Agriculture and Farmers' Welfare, September 18, 2020.
[37] Scheme Guidelines for Central Sector Scheme of Financing Facility under "Agriculture Infrastructure Fund", Ministry of Agriculture & Farmers' Welfare, https://agricoop.nic.in/sites/default/files/FINALSchemeGuidelinesAIF%20%282%29.pdf.
[38] Agriculture Census 2015-16, Ministry of Agriculture and Farmers Welfare, September 2018, https://agcensus.nic.in/document/agcen1516/T1_ac_2015_16.pdf.
[39] Committee on Comprehensive Financial Services for Small Businesses and Low-Income Households, Reserve Bank of India, January 2016, https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/CFS070114RFL.pdf.
[40] Report of the Internal Working Group to Review Agricultural Credit, Reserve Bank of India, September 2019, https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/WGREPORT101A17FBDC144237BD114BF2D01FF9C9.PDF.
[41] The National Food Security Act, 2013, India Code, Ministry of Law and Justice, as on February 11, 2022, https://www.indiacode.nic.in/bitstream/123456789/2113/1/201320.pdf.
[42] Commission for Agricultural Costs and Prices, Ministry of Agriculture and Farmers' Welfare, https://cacp.dacnet.nic.in/content.aspx?pid=32.

[43]Year End Review: 2021- Ministry of Agriculture and Farmers Welfare, , Press Information Bureau, Ministry of Agriculture and Farmers Welfare, December 31, 2021.
[44] Procurement policy, Department of Food and Public Distribution, https://dfpd.gov.in/Procurement-Policy.htm.
[45] Economic Survey 2019-20, Chapter 4, Volume 1, January 2020, https://www.indiabudget.gov.in/budget2020-21/economicsurvey/doc/vol1chapter/echap04_vol1.pdf.
[46] Evaluation Report on Efficacy of Minimum Support Prices (MSPs), NITI Aayog, January 2016, http://www.niti.gov.in/writereaddata/files/document_publication/MSP-report.pdf.
[47] Land Use Statistics at a Glance, Directorate of Economics and Statistics, Ministry of Agriculture and Farmers' Welfare, as on February 1, 2022, https://eands.dacnet.nic.in/LUS_2016-17/final%20lus%202007-08%20to%202016-17.xls.
[48] "Agriculture: More from less", Economic Survey 2015-16, http://unionbudget.nic.in/es2015-16/echapvol1-04.pdf.
[49] Natural Resource Management, State of Indian Agriculture 2015-16, Ministry of Agriculture and Farmers' Welfare, May 2016, http://agricoop.nic.in/imagedefault/state_agri_1516.pdf.
[50] State of Indian Agriculture 2015-16, Ministry of Agriculture and Farmers Welfare, http://eands.dacnet.nic.in/PDF/State_of_Indian_Agriculture,2015-16.pdf.
[51] Website of the Pradhan Mantri Krishi Sinchai Yojana, Ministry of Agriculture and Farmers' Welfare, as on February 9, 2022, https://pmksy.gov.in/mis/frmDashboard.aspx.
[52] Agricultural Situation in India 2020, Directorate of Economics and Statistics, October 2021, https://eands.dacnet.nic.in/PDF/Agricultural%20Situation%20in%20India%20October,%202021.pdf.
[53] Third Advance Estimates of Horticultural Production in 2020-21, Ministry of Agriculture and Farmers' Welfare, https://pib.gov.in/PressReleasePage.aspx?PRID=1767513#:~:text=(3rdAdv.,Est.)&text=Total%20Horticulture%20production%20in%202020,Tonne%20achieved%20in%202019%2D20.
[54] Report no. 43, Standing Committee on Chemicals and Fertilisers: 'Demand for Grants (2018-19), Department of Fertilisers', Lok Sabha, March 2018, http://164.100.47.193/lsscommittee/Chemicals%20&%20Fertilizers/16_Chemicals_And_Fertilizers_43.pdf.
[55] "Cabinet approves fixation of Nutrient Based Subsidy (NBS) rates for Phosphatic and Potassic (P&K) fertilizers for the year 2020-21", Press Information Bureau, Ministry of Chemicals and Fertilizers, April 22, 2020.
[56] Office Memorandum No. 23011/1/2021-P&K, Department of Fertilizers, Ministry of Chemicals and Fertilizers, May 20, 2021, https://fert.nic.in/sites/default/files/What-is-new/NBSNotification.pdf.
[57] "Cabinet approves Nutrient Based Subsidy (NBS) rates for Phosphatic & Potassic (P&K) Fertilisers for the year 2021-22 (from 1st October, 2021 to 31st March, 2022)", Press Information Bureau, Ministry of Chemicals and Fertilizers, October 12, 2021.
[58] "Notification on enhancing subsidy rates for DAP and other P & K fertilisers for upcoming Kharif season issued today", Press Information Bureau, Ministry of Chemicals and Fertilizers, May 20, 2021.
[59] Report No 25, Action Taken Report on Report No 20: Demands for Grants (2021-22), Standing Committee on Chemicals and Fertilisers, December 2021, http://164.100.47.193/lsscommittee/Chemicals%20&%20Fertilizers/17_Chemicals_And_Fertilizers_25.pdf.
[60] Report no. 5, Standing Committee on Chemicals and Fertilisers: 'Study of System of Fertiliser Subsidy', Lok Sabha, March 2020, http://164.100.47.193/lsscommittee/Chemicals%20&%20Fertilizers/17_Chemicals_And_Fertilizers_5.pdf.
[61] Report no. 20, Standing Committee On Chemicals & Fertilizers (2020-21): 'Demands for Grants (2020-21)', Lok Sabha, March 17, 2021, http://164.100.47.193/lsscommittee/Chemicals%20&%20Fertilizers/17_Chemicals_And_Fertilizers_20.pdf.
[62] Agricultural Statistics at a Glance 2019, Ministry of Agriculture and Farmers' Welfare, March 2020, https://eands.dacnet.nic.in/PDF/Agricultural%20Statistics%20at%20a%20Glance%20-%202020%20(English%20version).pdf.
[63] Agricultural Statistics at a Glance 2019, Ministry of Agriculture and Farmers' Welfare, March 2020, https://eands.dacnet.nic.in/PDF/Agricultural%20Statistics%20at%20a%20Glance%20-%202020%20(English%20version).pdf.
[64] Lok Sabha Starred Question No. 20, Ministry of Agriculture and Farmers' Welfare, February 2, 2021, http://164.100.24.220/loksabhaquestions/annex/175/AS20.pdf.
[65] E-NAM portal, Ministry of Agriculture and farmers' Welfare, as on February 11, 2022, https://enam.gov.in/web/mandis-online.
[66] Report No. 62, Standing Committee on Agriculture (2018-19): 'Agriculture Marketing and Role of Weekly Gramin Haats', Lok Sabha, January 3, 2019, http://164.100.47.193/lsscommittee/Agriculture/16_Agriculture_62.pdf.
[67] Report of Committee of State Ministers, In-charge of Agriculture Marketing to Promote Reforms, January 2013, https://dmi.gov.in/Documents/stminprreform.pdf.
[68] The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020, Gazette of India, Ministry of Agriculture and Farmers' Welfare, September 27, 2020, http://www.egazette.nic.in/WriteReadData/2020/222039.pdf.
[69] The Essential Commodities (Amendment) Act, 2020, Gazette of India, Ministry of Consumer Affairs, Food and Public Distribution, September 27, 2020, http://www.egazette.nic.in/WriteReadData/2020/222038.pdf.
[70] The Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Act, 2020, Gazette of India, Ministry of Agriculture and Farmers' Welfare, September 27, 2020, http://www.egazette.nic.in/WriteReadData/2020/222040.pdf.
[71] Order dated January 12, 2021, Rakesh Vaishnav vs Union of India, W.P.(C) No. 1118/2020, Supreme Court of India, https://main.sci.gov.in/supremecourt/2020/21097/21097_2020_31_19_25372_Order_12-Jan-2021.pdf.
[72]The Farm Laws Repeal Act, 2021, http://164.100.47.4/BillsTexts/LSBillTexts/PassedLoksabha/143_2021_LS_E.pdf.
[73] Report No. 8, Standing Committee on Agriculture (2019-20): Action taken by the government on the report 'Agriculture Marketing and Role of Weekly Gramin Haats', Lok Sabha, December 12, 2019, http://164.100.47.193/lsscommittee/Agriculture/17_Agriculture_8.pdf.
[74] ICAR At a Glance, Indian Council of Agricultural Research, as on February 22, 2022. https://icar.org.in/content/about-us.
[75] Report no. 3, Standing Committee on Agriculture: 'Demand for Grants (2019-20), Department of Agricultural Research and Education', Lok Sabha, December 2019, http://164.100.47.193/lsscommittee/Agriculture/17_Agriculture_3.pdf.
[76] Report no. 32, Standing Committee On Agriculture, Animal Husbandry And Food Processing: 'Demands for Frants (2021-22), Lok Sabha, December 2021, http://164.100.47.193/lsscommittee/Agriculture,%20Animal%20Husbandry%20and%20Food%20Processing/17_Agriculture_Animal_Husbandry_and_Food_Processing_32.pdf.
[77] "Science for Doubling Farmers' Income", Report of the Committee on Doubling Farmers' Income, Ministry of Agriculture and Farmers Welfare, February 2018, http://farmer.gov.in/imagedefault/DFI/DFI%20Vol-12A.pdf.
[78] Agriculture and Food Management, Chapter 7, Prices, Agriculture and Food Management, Volume 1, Economic Survey 2020-21.