

MECHANISATION AND TECHNOLOGY

For promotion of agricultural mechanisation, the strategy and programmes of the Department of Agriculture and Cooperation have been directed towards the promotion of eco-friendly and selective agricultural equipment. The aim is to optimally and efficiently utilise the different sources of human, animal and mechanical/electrical power; increasing productivity of land and labour; seeds, fertilizers, pesticides and irrigation water; improving the quality of the farm operations by promoting equipment having appropriate technology thereby reducing the cost of production and the drudgery associated with various agricultural operations. As a result of different programmes implemented by the Government of India over the years, the total farm power availability is estimated to have been increased from 0.295 kw/ha in 1971-72 to 1.502 kw/ha in 2005-06.

13.2 As a result of the joint efforts made by the Government and the private sector, the level of mechanisation has been increasing steadily over the years. This is evident from the sale of tractors and power tillers, taken as indicator of the adoption of the mechanised means of farming, during the last five years, as given in the Table below:

(In Nos.)

Year	Tractors Sale	Power Tillers Sale
2000-01	254825	16018
2001-02	225280	13563
2002-03	173098	14613
2003-04	190336	15665
2004-05	247693	18985
2005-06	292908	22303
2006-07 (up to 31 December 2006)	263146*	13375*

* (Provisional)

13.3 **Training and Testing:** The Farm Machinery Training & Testing Institutes (FMTTIs) located at Budni (Madhya Pradesh), Hissar (Haryana), Garladinne (Andhra Pradesh), and Biswanath Chariali (Assam), have been imparting training to farmers, technicians, retired/retiring defence personnel etc., in the selection, operation, maintenance, energy conservation and management of agricultural equipments. These Institutes have also been conducting testing and performance evaluation of various agricultural implements and machines. During the year 2006-07, 4159 persons were trained till 31 December 2006 against the annual target of 5000 in different courses. The target of training during the Tenth Plan has been increased to 25,000 from 17,500 during the Ninth Plan. To supplement the efforts of the FMTTIs in human resource development, outsourcing of the training through the SAUs, agricultural engineering colleges, polytechnics, etc., has been approved during the current plan. For training of farmers, the identified institutions are reimbursed Rs 2500 per trainee per month, which also includes a stipend of Rs 600 and to and fro travel expenses by normal mode of

transport. The target of training by outsourcing during the Tenth Plan is 10,000 persons. The physical target for the current year is to train 3000 farmers. During 2006-07, Rs 0.59 crore has been released for outsourcing components (30 December 2006). The feedback from the States indicates that the State Government of Chhattisgarh has trained 104 farmers through outsourcing; Goa 80; Madhya Pradesh 167; Maharashtra 2884; Manipur 135; Orissa 20; Tamil Nadu 2554; and Tripura 49 farmers, during 2005-06.

13.4 The FMTTIs have continued to test farm machines and equipment: The Institute at Budni has been authorised to conduct tests on tractors, power-tillers and other agricultural machines; while the institute at Hissar conducts tests on self-propelled combine harvesters, irrigation pumps, plant protection equipment, agricultural implements and other machines. The Institute at Garladinne has been authorised to test power-tillers and also conduct tests on various agricultural implements/equipment components. This Institute is being developed as a specialty institute for meeting the mechanisation demand in rain-fed/dryland farming systems. The institute at Biswanath Chariali (Assam) tests bullock-drawn implements, manually operated equipment and small hand tools. For the Tenth Plan, the target of testing was increased to 550 machines/tools from 350 machines/tools during the Ninth Plan.

13.5 The four FMTTIs altogether have tested 82 machines of various categories, including tractors, power-tillers, combine harvesters, rice transplanters, reapers, rotavators and implements, till 31 December 2006, against the target of 110 for the year 2006-07.

13.6 Demonstration of Newly Developed Agricultural/Horticultural Equipment at Farmers' Fields: For enhancing production and productivity, as well as for reducing the cost of production, the induction of improved/new technology in the agricultural production system is inescapable. Therefore, with this aspect in view, the demonstration of newly developed agricultural equipment including horticultural equipment at farmers' fields has been included as a component of the restructured scheme, Promotion and Strengthening of Agricultural Mechanisation through Training, Testing and Demonstration, during the Tenth Plan. This scheme envisages conduct of demonstration of improved/newly developed agricultural/horticultural equipment, identified by the State Governments/Government Organisations at farmers' fields, to acquaint them about their use and utility for production of different types of crops. During the year 2006-07, funds to the tune of Rs 5.52 crore have been released to the State Governments of Chhattisgarh, Arunachal Pradesh, Haryana, Himachal Pradesh, Jammu and Kashmir, Manipur, Nagaland, Punjab, Orissa, Tamil Nadu, Uttar Pradesh, Sikkim and West Bengal (till 31st December 2006), for conducting the demonstration of new equipment, viz. seed-cum-fertilizer drill, strip-till-drill, raised bed planter, rotavator, reapers, etc. This includes an amount of Rs 0.93 crore provided to ICAR during the year.

13.7 It has been reported by 13 State Governments and ICAR that 8698 demonstrations on different types of equipment covering about 12683 hectares with field machines, and 51099 hours on stationary machines were conducted during 2005-06, as against the annual target of 1000 demonstrations. Over 348200 farmers participated in these

demonstrations. During the year 2006-07 (up to 31 December 2006), the number of demonstrations conducted is 962 covering 1079 hectares with field machines and 3658 hours with stationary machines in which over 47100 farmers participated.

13.8 Farm Mechanisation Programmes under Macro Management of Agriculture schemes: Assistance in the form of subsidy at the rate of 25 per cent of the cost with permissible ceiling limits is made available to the farmers for the purchase of agricultural equipment including hand tools, bullock-drawn/power-driven implements, planting, reaping, harvesting and threshing equipment, tractors, power-tillers and other specialised agricultural machines under the centrally sponsored scheme of Macro Management of Agriculture.

13.9 The feedback from the State Governments indicates that 7292 tractors, 16500 power tillers, 64610 hand tools, 41854 bullock-drawn implements, 15236 tractor-driven implements, 6080 self-propelled/power-driven equipment, 81496 plant protection equipment, 6587 irrigation equipment, and 66464 gender-friendly equipment were supplied to the farmers under the Macro Management of Agriculture Scheme during 2005-06. During the year 2006-07 (up to 31 December 2006), 2782 tractors, 2990 power tillers, 34960 hand tools, 9649 bullock-drawn implements, 19393 tractor-driven implements, 631 self-propelled/power-driven equipment, 18751 plant protection equipment, 1310 irrigation equipment and 9350 gender-friendly equipment have been reported to have been supplied to the farmers.

13.10 Conducting Study and Formulating Long-term Mechanization Strategies for each Agro-climatic Zone: The scheme envisages an in-depth study at the micro level, keeping in view technological, agro-economical, sociological and other relevant factors for formulating effective and balanced strategies for all-round development of agricultural mechanisation, for each agro-climatic zone of India. The study was entrusted to the IASRI, New Delhi, under ICAR. The study report has since been received. Based on the findings and the recommendations contained in the report, the Government will formulate suitable strategies and programmes for the promotion of agricultural mechanisation in different agro-climatic zones of India. In the meantime, the report has also been forwarded to all the State Governments/UT Administrations and FMTTIs for implementation of such recommendations as can readily be put in operation.

13.11 State Agro Industries Corporations: The Government of India had advised the State Governments in the year 1964, to set up State Agro Industries Corporations (SAICs) in the public sector to act as catalysts in providing access to industrial inputs for farmers, for their use in agriculture. Thus, 17 SAICs were set up in the joint sector with equity participation of the Government of India and respective State Governments, namely Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Uttar Pradesh, Tamil Nadu and West Bengal during 1965 to 1970. Many of the State Governments have increased their equity participation as a result of which the Government of India, at present, is a minority shareholder. SAICs have since expanded their basic functions by commencing manufacture and marketing of agricultural inputs,

implements, machines, after-sales-service, promotion and development of agro-based units/industries. The Government of India is implementing a policy of disinvestment of its shares in SAICs with a view to giving greater decision making power to the state governments by allowing transfer of its shares to state governments on following guidelines:

- Where the net worth of the SAIC is positive, the Government of India would be willing to consider offering the shares to the State Governments at a price 25 per cent less than the book value of the shares on the basis of the latest available audited balance sheet.
- In the case of SAICs whose net worth is negative, the Government of India would be willing to pass on its stake for a token consideration of Rs 1000 for the value of the shares.

13.12 So far, the Government of India's shares in SAICs of Gujarat, Karnataka, Uttar Pradesh, Tamil Nadu, Rajasthan and West Bengal have been transferred to the State Governments concerned. The State Governments of Madhya Pradesh and Assam have since agreed, in principle, for transfer of the Government of India's shares held in these SAICs.

13.13 **Activities in the North-Eastern States:** An FMTTI has been established at Biswanath Chariali in the Sonitpur district of Assam, to cater to the needs of human resource development in the field of agricultural mechanisation and also to assess the quality and performance characteristics of different agricultural implements and machines in the region. The Institute imparted training to 623 persons and tested seven machines up to 31 December 2006, during the year 2006-07.

13.14 During the year 2005-06, funds amounting to Rs 1.27 crore were released to the State Governments of Arunachal Pradesh (Rs 0.20 crore); Manipur (Rs 0.17 crore), Mizoram (Rs 0.15 crore); Sikkim (Rs 0.50 crore); and Tripura (Rs 0.25 crore), under the central sector scheme for the demonstration of new equipment. In addition, Rs. 2.50 lakhs were released to Tripura for outsourcing of training of farmers during 2005-06. During 2006-07, funds amounting to Rs 0.79 crore have been released to Arunachal Pradesh (Rs 0.39 crore) Manipur (Rs 0.12 crore); and Nagaland (Rs 0.39 crore); for demonstration components.

13.15 The details of various programmes launched in the North-Eastern states during the year 2006-07 are indicated in **Annexure - 13.1**.