

A study on farm mechanization level of farmers of Junagadh taluka

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ABSTRACT

In modern usage, "agricultural mechanization" has come to mean the use of engines, especially tractors, for farm operations, but the word as used in this paper is in its fuller meaning to include all tools, implements and machines which can help the farmer or agricultural practitioner to use his muscles and mind to better advantage. The role of mechanization in enhancing agricultural productivity is well recognized. This paper reveals the status of agricultural mechanization in Junagadh Taluka. To study the available mechanization inputs and utilization questionnaires that were carefully designed to obtain information on the type power source available and their levels of utilization by the farmer of Junagadh taluka. It was revealed from the results of the data. As a result of these, the farm mechanization Level of farm mechanization horse power per unit cultivated land in Junagadh taluka from all sources is 3.30 hp/ha.

Key words: Agricultural mechanization, farm implements, technology, tractor, thresher, Crop, Irrigation

In the past three decades, agricultural output in India increased rapidly mainly through the introduction of high yielding varieties, increase in irrigated areas and increased use of fertilizers and pesticides. Along with the increase in food production, the use of from machinery in agriculture also increased. Many researchers have discussed the benefits of mechanization of agriculture in this region. A similar increase in the level of mechanization of the cultivation of paddy and other crops did not occur in the India. Patel (1981) studied farm mechanization in India. He observed that per unit cost of operation declined sharply under mechanization and there was time saving in tillage operation. He also reported that mechanized farms had more labour hour use than the non-mechanized farms. Dash et al. (1988) studied constraints in the use of agricultural implements and machinery in the state of Orissa. They observed that mechanization in agriculture was not up to mark because of problems which were mostly social, economic and technical in nature. Mittal et al. (1989) reported that the production and availability of food crops can be increased by about 40 per cent in the Punjab state through the farm mechanization of

sowing, intensive cropping, plant protection, post-harvest practices and reclamation of cultural wastes. Srivastava (1985) reported on the energy required for different field operations using animal and tractor power and availability of power and work output for crop production. The KW work done by using animal power was about 4.75 times that of tractor power. Thus, in terms of work output, the contribution of animals as compared to tractor power was much more.

Several reasons can be attributed to the slow progress of agricultural mechanization in state. The small sized fields make it difficult for the use of heavy mobile machinery. Small and fragmented land holdings, high capital investment, low purchasing power of the farmers, traditional methods of farming, abundance of unemployed labour and lack of clear government policies are some other factors hindering the pace of agricultural mechanization in the state. So, there is great need to know the level of mechanize farming. Therefore a study was conducted in selected villages of Junagadh taluka to make an assessment of the level of mechanization practised presently by the farmers and to determine the scope for further mechanization in that region. This paper should help researchers, Agro-industries and government

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organizers to make long-term strategies on the mechanization for overall development of the farmers.

MATERIALS AND METHODS

The study was carried out in Junagadh taluka. It is located between 20° 44' to 21° 40' north latitude and 69° 40' to 71° 05' east longitude. The major crops

grown in this region are Groundnut, sugarcane, and cotton.

For this study Dervan, Khalilpur, Majewadi, Choki, Makhiyada, Kathrota, Vadai, Bamangam, Ivnagar, Jamka, Dunderpur, Bela, Navagam, Toraniya, Semrala, Plaswa, Vijapur, Khadiya, Bilkha and Bagdu, total 20 sample villages were selected randomly from the 52 villages of the Junagadh taluka. Sarpanch and



Fig. 1 Map of Junagadh taluka

talatimantri were interviewed using a structured questionnaire in every sample village. Additional information on agricultural mechanization practised by the farmers were also gathered. The specific information asked in the questionnaires were: 1. Total agricultural Land (ha); 2. Irrigation source; 3. Use of tractors and implements; 4. Labour utilization and requirement; 5. No. of bullock.

The assessment of mechanization was done on energy basis. Irrigation sources, human, animal and tractor power were determined from the gathered information and calculate the farm mechanization level of Junagadh taluka with help of bellow equation.

$$\text{Total farm power (hp)} = (0.1 \times \text{no. of labour}) + (1 \times \text{no. of pair of bullock}) + (30 \times \text{no. of tractor}) + (5 \times \text{no. of electrical pump}) + (7.5 \times \text{no. of diesel engine})$$

$$\text{Total farm power (hp)}$$

$$\text{Level of farm mechanization} = \frac{\text{Total farm power (hp)}}{\text{Total cultivated land (ha)}}$$

RESULTS AND DISCUSSION

This analysis representation of experimental data collected during investigation.

Availability of Tractor and Cultivated Land in Junagadh Taluka

The purpose of this study, information regarding availability of various power sources in the Junagadh taluka were collected and presented in Table 1. In Junagadh taluka more tractor available in range of 35-45 hp and less tractor available in range of 20-25 hp. Now a day's demand of mini tractor is increased. In Junagadh taluka, land holding capacity of farmers is less, therefore more than 45hp tractors are not utilized by farmers. Use of 35-45hp tractor is more because we can use it in every operation and operating cost also preferable. Trend of tractors population increasing day by day.

Availability of Bullock in Junagadh Taluka

Table 1 shows that more bullock in Majewadi and less bullock in Dunderpur. Bullock has been traditionally the major farm power source in Indian agriculture. Energy from animal power is not only inadequate for modernization of agriculture but also slow. To ensure timeliness in field operation it would be require higher energy input to be supplemented by mechanical power. It was revealed in a study that, use of bullock power is declining due to introduction of mechanical power sources. The study also revealed that animal power use declined mainly in those villages where use of tractor is more.

Table 1. Analysis of Variance

Sr. No.	Name of Village	Land (ha)	No. of Labour	No. of Bullock	No. of tractor	No. of electrical	No. of diesel pump	Farm Power engine	hp/ha (hp)
1	Dervan	93	70	80	16	135	4	1272	13.67
2	Khalilpur	448	321	90	25	163	4	1717	3.83
3	Majewadi	1946	1153	436	56	987	5	7203	3.70
4	Choki	1500	638	300	61	260	38	3778	2.51
5	Makhiyada	331	438	135	27	327	2	2638	7.97
6	Kathrota	369	234	220	15	117	4	1308	3.54
7	Vadal	1946	185	272	55	732	3	5623	2.88
8	Bamangam	369	20	50	16	146	5	1299	3.52
9	lnagar	506	1800	100	31	150	15	2072	4.09
10	Jamka	330	131	160	32	171	7	2040	6.18
11	Dungerpur	10	10	0	12	2	0	371	37.10
12	Bela	455	46	104	8	70	10	773	1.70
13	Navagam	298	300	50	19	82	1	1067	3.58
14	Toraniya	80	1080	60	10	7	0	503	6.28
15	Semrala	205	120	135	25	140	3	1619	7.90
16	Plaswa	570	500	140	15	215	3	1737	3.04
17	Vijapur	565	290	56	15	100	2	1050	1.85
18	Khadiya	1200	700	100	35	80	2	1635	1..36
19	Bilkha	984	3000	300	15	264	200	3870	3.93
20	Bagdu	1000	650	80	30	200	5	2082	2.08
	Average	660	584	143	25	217	15	2183	3.30

Availability of Farm Labour in Junagadh Taluka

In Junagadh taluka more labour in Bilkha and less labour in Dungerpur. In most of the villages, labours come from the outside of the Junagadh taluka like Godhara, Madhya Pradesh etc. at harvesting time. They are usually employed for field operation inter culture, sowing, weeding, harvesting etc. In hilly areas even land preparation is usually done manually.

Over the last 50 years on farm mechanization has increased resulting in a decrease in the employed farm labour forces. This was caused to a certain extent by increases in wage payments.

Availability of Electrical Pump and Diesel Engine in Junagadh Taluka

Availability of electrical pump is more as compare to diesel engine which shows in table 1. Electrical pump need minimum maintenance and repairing as compare to diesel engine. Diesel is more costly as compare to electricity, So Electrical pump is more used by the farmer as compare to diesel engine. The government policies: encouraged the farmers to have their own

assured irrigation facilities by providing subsidy and credit for drilling of tube-wells and purchase of pumping system.

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