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ASSES THE CURRENT LEVEL OF MECHANIZATION PRACTICES FOR THE MAJOR CROPPING PATTERN ON FARMERS FIELD IN ETAWAH DISTRICT (U. P.), INDIA

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Abstract

The survey was carried out in the month of January, 2014 to May, 2014 find the current level of mechanization practices followed by the farmers for the major cropping system in three blocks *viz*., Jaswant Nagar, Barpura and Basrehar of Etawah district of U.P. 108 farmers were selected from nine villages, considering the owning improved implements of bullocks, tractors and power operated categories. The data regarding farm machines and implements have also been collected from development office Etawah, the survey data indicate that the numbers of tractors per 1000 ha cultivated area in different selected blocks was 61.05 ha, 53.7 ha and 29.6 ha in Jaswant Nagar, Barpura and Basrehar, respectively. The annul use of tractor varied from 699 hr to 866 ha. The number of chaffcutter in select block varied from 391.53, 239.18 and 391.53 numbers per 1000 ha in blocks, plant protection equipments was very low as the number of sprayer 56.80-110.47 and duster 13.45-30.86 numbers per 1000 ha cultivated are in surveyed block.

However, most of the farmers were using plant protection equipments and other machines on custom haring basis. About 21.0% farmers were using bullocks drown three tyne cultivators (tifara) in surveyed area. Power operated centrifugal pump sets were most common for underground water pumping and its availability was highest in Jaswant Nagar Block 99.73 unit per 1000ha cultivated area followed by 89.35 and 53.81 in Basrenar and Barpura Block respectively.

Key words : Agricultural mechanization, implements, mechanical power, plant protection.

Introduction

Agriculture being the backbone of Indian economy needs a thrust, as recent surveys show that agricultural growth rate seems to be stagnant. Agriculture and immense effect on our GDP growth rates. As about 13.6 of our GDP comes from agriculture nearly 58% of our country population depends upon agriculture as sources of their livelihood. It is now realized all over word that in order to meet the food requirement of growing population rapid industrialization of agriculture are in escapable.

The package of modern technology includes the use of more efficient and economical farm implements and machines and suitable farms power. It was absorbed that many farms, the population suffers because proper seedbed could not be prepared in time. Thus, the timeliness of operation is the essence of better and prosperous agriculture. There is miss conception about agricultural mechanization in Indian farmers mind. The misunderstand agricultural mechanization with use power operated machinery, specially tractors there are three technological level of mechanization, hand tools technology, drought animal technology, mechanical power technology with different degrees of sophistication in each level of mechanization status (Rijk, 1989).

"Agricultural mechanization embraces the operation of hand tools, implements and machines for agricultural land development, production, harvesting and on-farm processing''. It includes three main power sources; human, animal, mechanical. Natural power (wind and water) has been included under mechanical power.

It has been reported by the research workers (Srivastawa *et al*., 2000) that timely and proper seed bed preparation results in increase of production by 20-30 per cent. Similarly proper placement of seeds results 10-20% higher yields. The scope of farm mechanization has generated demands for design and manufacture of new agricultural implement and machinery in the country. It

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has been observed that tools, implements, machines developed as a result of research and development s efforts of ICAR and Agricultural Universities have not been adopted by the farmers to the desired level. Farmers need analysis has to take account the cropping system and farming practices prevalent and socio-agro-economic condition in the region.

The present status of mechanization of major cropping system and agricultural practices followed in the selected blocks of Etawah district which is one district of central zone U.P. to identify mechanization status of farm tools machines along with their broad specification for development.

Materials and Methods

The basic village data was also collected through questionnaire and secondary data (Anonymous, 1993). In the first phase out of the total eight blocks of Etawah district stratified multistage random sampling design was adopted for collection of data to assess the current level of mechanization practices followed the farmers for the major cropping system in three blocks (one from each higher, average, and lower mechanization index group) were selected for this survey on the basis of their mechanization index level. The list of all block of Etawah district is given in following table 1 with their mechanization index from each selected blocks, three villages were selected randomly for this survey.

Table 1 : Mechanization index of etawah blocks and selected villages.

S. no.	Name of block	Mechanization index & village	
1.	Mahewa	816.55	
2.	Jaswant Nagar*	783.05	Sishat, Kaist and Pathakpura
3.	Bharthana	673.10	
4.	Basrehar*	519.60	Pachawali, Itgoan and Nagla hiralal
5.	Takha	397.20	
6.	Chakar Nagar	309.20	
7.	Barpura*	273.85	Butar, Saraiaser and Alampura
8.	Saifai	241.67	
***Average**		**525.50**	

*indicate the blocks chosen for surveyor.

Table 2 : List the status of agricultural implements use in U.P.

S. no.	Farm machine and tools	Weightage (%)
1.	Tractor	60
2.	Thresher	10
3.	Seed drill	10
4.	Sprayer	05
5.	Harrow and Cultivator	05
6.	Rotavator	05
7.	Potato planter	05
Total		**100**

A list of blocks was prepared and block wise number of major farm implements *e.g.* tractor, thresher, seed drill, sprayer, harrow and cultivator were recorded from the district statical bulletin mechanization index was prepared by giving following weightage to different farm machine and tools as suggested in status of agricultural implements use in U.P. conducted by Narendra Dev University of Agriculture & Technology, Kumargaj, Faizabad, U.P., India (table 2).

On the basis of mechanization index the block of district were enlisted in descending order. One block was selected randomly from blocks having mechanization index more than average index value, one block was selected randomly from blocks having mechanization index less than average index value and one block was selected randomly having mechanization index nearest to the average index value. Thus, three blocks from Etawah district were chosen for the survey.

Now from each selected block, three villages were randomly selected for the survey with the consultation of block officials and village Pradhan. One hundred eight farmers owning improved implement of bullocks, tractors and power operated categories. The data regarding from tools and implements have also been collected from Block Development Office, Etawah.

Results and Discussion

For the purpose of this survey, information regarding availability of improves tools and implement used by formers in selected village have been collected and presented below:

Status of manually operated equipments used

The block wise data (table 3) regarding the use of manually operated tools and equipments based on sample survey on the basis of numbers per 1000 ha of cultivated area. In Etawah district serrated sickle, Punjab sickle type was used by 90 to 95 per cent farmers. The cost of serrated, sickle (Hansiya) was Rs. 25 to 30 per sickle. Farmers said was the serrated sickles blade teeth worn out after 150 h use and charge for re-teething of sickle blade was Rs. 5.00 per sickle and it could be done easily in the local market.

Table 3 : Status of manually operated equipment in selected blocks of Etawah (based on sample survey).

S. no.	Name of equipment	Number per 1000 ha cultivated area in selected blocks		
		Jaswantnagar	Basrehar	Barhpura
1.	Sprayer	72.64	110.47	56.80
2.	Winnower	107.12	121.84	79.22
3.	Chaff-cutter	337.37	391.53	239.18
4.	Wheel hoe	Nil	Nil	Nil
5.	Duster	20.93	30.86	13.45
6.	Serrated sickle	1284.22	1494.64	1076.32

The number of chaff cutters in different blocks varied from 239.18 to 391.53 nos. per 1000 ha. The number of winnowers owned by farmers is also very less 79.22 to 121.84 ha. The use of self purchased plant protection equipment was very low as the number of sprayer and duster varied from 56.80 to 110.47 numbers and 13.45 to 30.86 numbers per 1000 ha only in different surveyed blocks. The common tendency of about 36% farmers surveyed was to hire plant protection equipments from their neighbours as per their requirement.

Table 4 : Status of bullock and animal operated equipment in selected blocks of Etawah district (based on Sample survey).

S. no.	Name of equipment	Number per 1000 ha cultivated area in selected blocks		
		Jaswantnagar	Basrehar	Barhpura
1.	Bullock (pair)	14.76	29.29	31.39
2.	M.B. plough	34.47	35.74	44.84
3.	Disk Horrow	24.62	14.62	22.42
4.	Cultivator	34.47	50.36	47.83
5.	Seed drill	29.55	16.24	19.43
6.	Chaff cutter	Nil	Nil	Nil
7.	Bullock Cart	22.16	30.86	26.90
8.	Sugarcane Crusher	13.54	16.24	13.45
9.	Oil expeller	Nil	Nil	Nil
10.	Allpad thresher	Nil	Nil	Nil
11.	Potato planter	Nil	Nil	Nil
12.	Potato digger	Nil	Nil	Nil

Table 5 : Status of tractor & tractor drawn implement in selected blocks of Etawah (based on sample survey).

S. no.	Name of equipment	Number per 1000ha cultivated area in selected blocks of Etawah district			
		Jaswantnagar	Basrehar	Barhpura	Average value of district
1.	Tractor	67.72	71.48	43.35	60.85
2.	Disc harrow	56.63	51.98	34.38	47.66
3.	Cultivator	67.72	71.48	43.35	60.85
4.	Cage wheel	50.48	45.48	26.90	40.95
5.	Bund former	N.A.	N.A.	N.A.	NIL
6.	Seed drill	49.25	35.74	20.92	35.30
7.	Potato digger	36.93	24.36	8.96	23.41
8.	Potato planter	51.71	29.24	10.46	30.47
9.	Thresher	64.02	45.48	28.40	45.96
10.	Trolley	62.79	66.60	38.86	56.08
11.	M.B. plough	32.01	34.11	22.42	29.51
12.	Disc plough	18.46	14.62	17.93	17.00

Status of animal operated equipment use

The availability of animal operated (table 4) improved implements like disc harrow, cultivator, seed-drill, thresher, sugarcane crusher as per 1000 ha of cultivated area in selected villages. The position of improved implements use was very poor, except soil turning plough (M B Plough). Animal operated mould board plough was available with each bullock owner farmers of surveyed villages. The number of bullock drawn 3-tyne cultivator (locally called Tifara) was found in considerable numbers about 65% farmers owned this implements. In some villages disc horrow also round in its number varied between 15 to 25 per 1000 ha.

Status of tractor and tractor drawn equipment

The position in the numbers of (table 5) tractors and tractor drawn equipments *viz*., disc harrow, cultivator,

Table 6 : Status of engine operated equipment in different selected blocks (based on sample survey).

S. no.	Name of equipment	Number per 1000 ha cultivated area in selected blocks		
		Jaswantnagar	Basrehar	Barhpura
1.	Centrifugal pump (engine)	99.73	89.35	53.81
2.	Thresher	56.63	53.61	41.85
3.	Chaff cutter	34.47	82.85	35.87
4.	Rice huller	9.85	1.62	1.49
5.	Cane crusher	NIL	NIL	NIL
6.	Winnower	NIL	NIL	NIL
7.	Atta chakki	16.00	6.49	5.97
8.	Oil expeller	6.15	4.87	1.49

cage wheel, leveller, bund former, seed cum ferti drill, potato digger, ridger, harvester, thresher, trolley and puddler. The number of tractor per 1000 ha cultivated area was 43.35, 67.72 and 71.48 in Barhpura, Jaswantnagar and Basrehar respectively, with the district average of 60.85. The tractor drawn primary tillage implement like ploughs, sub soiler etc. were almost nonexistent throughout the all selected villages. The tractor drawn cultivator is the only equipment which is available with almost every tractor owners. The harrow which is one of the most important secondary tillage implements was also owned by 89.5% of tractor owner farmers. The trolley an equipment which was very much popular, 88% tractor farmers were found to be own it. The number of seed cum ferti drill varied from 21 to 49 per 1000 ha in surveyed blocks. The number of potato planter varied from 10 to 52 per 1000 ha and 98% of potato cropped area was planted by tractor drawn 2 to 4 row semi automatic potato planter.

Status of Engine operated equipment use

The power operated (table 6) equipment *viz.,* centrifugal pumps, threshers, rice hullers, cane crushers, winnowers etc. collected from selected villages.

The centrifugal pumps were the most common engine operated irrigation equipment used for underground water pumping as well as lifting of water from shallow water sources. The availability of these pumps was highest in Jaswantnagar block (99.73 units per 1000 ha) followed by Basrehar (89.35 per 1000 ha) and Barhpura (53.81 units per 1000 ha). The number of centrifugal pumps in Barhpura and Basrehar blocks was less. The adoption of engine operated thresher was generally by tractor owners. The some engine operated chaff cutters had been seen during survey in selected blocks. The maximum number of chaff cutter was 82.85 units per 1000 ha in Basrehar block.

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