

CHAPTER 10

AGRICULTURAL EQUIPMENT

Mechanization of agriculture in Nepal is at very low level. There were about 315.1 thousand holdings using the most common agricultural equipment, iron plough in 1991/92. This number increased to 870.3 thousand holdings in 2001/02.

The use of tractors has been increasing slowly. From 1.2 percent of the total holdings using tractors in 1991/92 it increased to 8.2 percent in 2001/02. Thresher occupies a very important place among equipment used in farming operation. The use of thresher in farming

operation has also been increasing. From 3.2 percent of the total holdings using it in 1991/92 it increased to 7.5 percent in 2001/02. Pumping set, which is also very important agricultural equipment for the purpose of irrigation, has increased from 3 percent holdings using it in 1991/92 to 6.3 percent holdings in 2001/02. Though farm mechanization in Nepal is still at incipient stage, there are indications of improvement. Use of equipment such as power tillers, sprayers, rower pumps is on the rise. However, the number of animal drawn carts has stagnated over the decade.

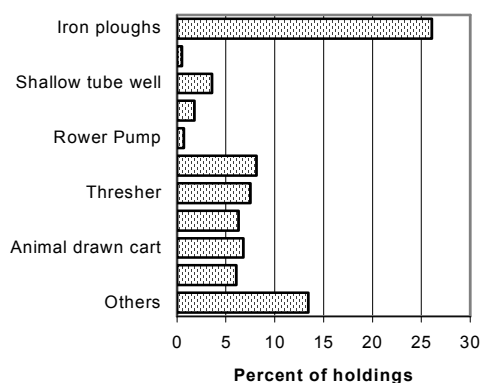
Table 10.0 Summary Statistics

Types of equipment	1991/92		2001/02	
	Holdings using equipment ('000)	Number of Items ('000)	Holdings using equipment ('000)	Number of Items ('000)
Iron ploughs	315.1	354.5	870.3	890.2
Power tillers	5.6	1.6	15.6	11.8
Shallow tube well	50.9	48.2	119.7	109.5
Deep Tube Well	20.1	15.7	58.6	51.5
Rower Pump	3.5	3.8	22.7	21.8
Tractor	35.2	5.5	272.9	150.6
Thresher	85.6	19.9	249.5	129.1
Pumping set	81.3	41.3	210.4	146.1
Animal drawn cart	204.6	198.1	226.4	199.1
Sprayer	50.2	23.4	203.0	145.9
Others	296.5	878.4	449.0	1,072.7

10.1 Agricultural equipment

For the purpose of the Agriculture Census, agricultural equipment refers to machinery and equipment used on the holding, wholly or partly for agricultural production. Machinery and equipment in usable condition whether owned or not owned but used on the holding were included. Excluded were machinery and equipment used exclusively for non-agricultural purposes.

FIGURE 10.1: USE OF AGRICULTURAL EQUIPMENT, NEPAL, 2001/02



10.2 Type of equipment

Capital formation in agriculture in Nepal is rather limited, although there has been some improvement in the number and kind of equipment available and used on the land holding between 1991/92 and 2001/02. The number of equipment by type is shown in TABLE 10.5.

The iron plough was the most popular equipment available on the holding both in 1991/92 and 2001/02. In 1991/92 only 315,100 or 11.7% of the total holdings used iron ploughs in their farming operations. The number of holdings using this equipment more than double in 2001/02 with 870,300 holdings reporting. This number represented 26.1% of the total holdings in the country. While the number

of users increased within the ten-year period, the ownership of the equipment has declined from 98.8% in 1991/92 to 90.4% in 2001/02.

There was also an increase in the use of tractors, from only 35,200 holdings that used tractor in 1991/92 (1.3% of the total holdings) to 272,900 holdings in 2001/02 that was 8.2% of the total. There was also a decrease in the proportion of holdings that owned the tractor, from 85.5% in 1991/92 to only 18.5% in 2001/02. The decrease in the proportion of owners of tractors is not surprising considering the cost of acquisition. While there was a decrease proportionally, there was actually an increase in the number available from 4,700 tractors owned in 1991/92 to 27,900 tractors owned in 2001/02. Investment in the purchase of tractor has greatly increased the capital formation in agriculture.

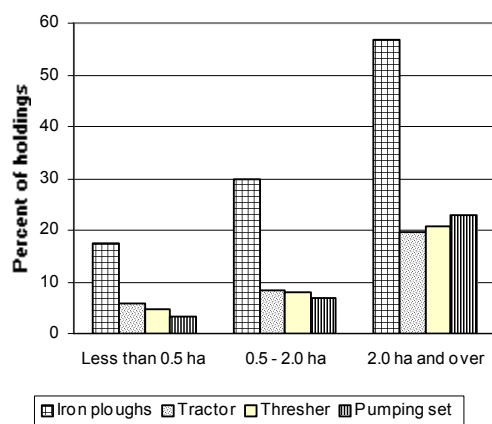
Another type of equipment which is important in farming operations that was observed to have significant increase is thresher, from 85,600 holdings reporting as having used it in 1991/92 to 249,500 holdings in 2001/02. This number is 7.5% of the total holdings in the country. Like the tractor, ownership also has gone down from 96.5% in 1991/92 to only 44.2% in 2001/02 but the actual number of threshers owned had increased from 19,200 to 57,100.

Another important piece of equipment that increased in usage proportionally is the pumping set equipment, from 3% of the holdings using this equipment in 1991/92 to 6.3% of holdings in 2001/02. Ownership of the equipment proportionally decreased but the number available actually increased from 40,000 sets in 1991/92 to 93,400 sets in 2001/02.

While the proportion of ownership of agricultural equipment may have decreased, in general, the accessibility and availability of these machinery and equipment to more holdings have been noted. Farm

mechanization of holdings in Nepal is still in its infant stage but there are indications of improvement during the ten-year period observed.

FIGURE 10.2: USE OF AGRICULTURAL EQUIPMENT BY SIZE OF HOLDING, NEPAL, 2001/02



10.3 Geographical distribution of equipment

TABLE 10.3 shows the distribution of equipment by ecological belts and TABLE 10.4 shows the distribution by development regions.

Of the 870.3 holdings that reported the use of iron ploughs in 2001/02, 810.3 holdings or 93.1% were found in Tarai belt. Among, holdings within Tarai belt, 55.5% reported of having used iron ploughs compared with only 1.8% within Mountain belt and 3.5% within Hill belt.

Furthermore, the use of tractors, threshers and pumping set equipment, Tarai belt holdings had higher incidence of usage compared to the holdings in Hill and Mountain belts.

Among development regions, Eastern region reported the highest proportion of holdings using iron ploughs with 40.3% compared with 27.9% in Far-Western region, 23.4% in Central region, 19.0% in Western region and 17.3% in Mid-Western region. The use of tractor and thresher, however, was observed to be highest in Central region although all regions have reported the use of the equipment.

Proportionally, Far-Western region holdings reported the highest usage of pumping set at 8.3% compared with 7.8% among those in Central region and 6.3% in Eastern region.

10.4 Comparisons of small and large holdings

Proportionally, the large holdings have higher percentage of usage of the different machinery and equipment used in their agricultural operation, see TABLE 10.7

It is significant to note that whatever pieces of equipment used in the large holdings in 2001/02 were also used in the small holdings, except that the available supply was limited in scale. For instance, tractors were also used in small holdings but only 6% of the total small holdings had access to tractors compared with 19.7% of holdings among the large holdings. The use of thresher was reported by 4.9% among small holdings while the large holdings reported 20.8% as having used thresher. This situation holds true for all the listed equipment found in TABLE 10.7, including animal-drawn cart.

TABLE 10.1: USE OF AGRICULTURAL EQUIPMENT OF LAND HOLDINGS BY TYPE, NEPAL, 1991/92 AND 2001/02

Type of equipment	1991/92			2001/02		
	Holdings using equipment		Number of items ('000)	Holdings using equipment		Number of items ('000)
	No. ('000)	% to total		No. ('000)	% to total	
Total land holdings	2703.9	100.0	...	3,337.4	100.0	...
Iron ploughs	315.1	11.7	354.5	870.3	26.1	890.2
Power tillers	5.6	0.2	1.6	15.6	0.5	11.8
Shallow tube well	50.9	1.9	48.2	119.7	3.6	109.5
Deep Tube Well	20.1	0.7	15.7	58.6	1.8	51.5
Rower Pump	3.5	0.1	3.8	22.7	0.7	21.8
Tractor	35.2	1.3	5.5	272.9	8.2	150.6
Thresher	85.6	3.2	19.9	249.5	7.5	129.1
Pumping set	81.3	3.0	41.3	210.4	6.3	146.1
Animal drawn cart	204.6	7.6	198.1	226.4	6.8	199.1
Sprayer	50.2	1.9	23.4	203.0	6.1	145.9
Others	296.5	11.0	878.4	449.0	13.5	1,072.7

NOTE: Use of equipment refers to use during the census year. Number of items is the number of equipment on the holding at the time of the census.

TABLE 10.2: SOURCE OF EQUIPMENT USED BY LAND HOLDINGS, NEPAL,
1991/92 AND 2001/02

Type of equipment	Number of equipment by source ('000)					
	Owned by holding	Not owned by holding	Total	Owned by holding	Not owned by holding	Total
	1991/92			2001/02		
Iron ploughs	350.1	4.3	354.5	804.8	85.4	890.2
Power tillers	1.0	0.6	1.6	8.9	3.0	11.8
Shallow tube well	46.6	1.6	48.2	88.4	21.1	109.5
Deep Tube Well	14.6	1.2	15.7	40.8	10.7	51.5
Rower Pump	3.3	0.5	3.8	19.9	1.9	21.8
Tractor	4.7	0.8	5.5	27.9	122.7	150.6
Thresher	19.2	0.8	19.9	57.1	72.0	129.1
Pumping set	40.0	1.3	41.3	93.4	52.7	146.1
Animal drawn cart	194.1	4.0	198.1	180.3	18.8	199.1
Sprayer	22.1	1.3	23.4	93.8	52.1	145.9
Others	872.0	6.3	878.4	1,041.6	31.1	1,072.7
	Percent to total					
Iron ploughs	98.8	1.2	100.0	90.4	9.6	100.0
Power tillers	62.5	37.5	100.0	74.9	25.1	100.0
Shallow tube well	96.7	3.3	100.0	80.7	19.3	100.0
Deep Tube Well	93.0	7.6	100.0	79.2	20.8	100.0
Rower Pump	86.8	13.2	100.0	91.2	8.8	100.0
Tractor	85.5	14.5	100.0	18.5	81.5	100.0
Thresher	96.5	4.0	100.0	44.2	55.8	100.0
Pumping set	96.9	3.1	100.0	63.9	36.1	100.0
Animal drawn cart	98.0	2.0	100.0	90.6	9.4	100.0
Sprayer	94.4	5.6	100.0	64.3	35.7	100.0
Others	99.3	0.7	100.0	97.1	2.9	100.0

TABLE 10.3: NUMBER AND PERCENT OF LAND HOLDINGS USING AGRICULTURAL EQUIPMENT BY TYPE OF EQUIPMENT USED AND BY ECOLOGICAL BELT, 2001/02

Type of equipment	Ecological belt			Nepal
	Mountain	Hill	Tarai	
Number of holdings ('000)				
Iron ploughs	5.2	54.8	810.3	870.3
Power tillers	0.1	7.9	7.6	15.6
Shallow tube well	0.0	4.0	115.6	119.7
Deep Tube Well	0.0	0.8	57.8	58.6
Rower Pump	0.1	1.6	21.0	22.7
Tractor	0.1	9.6	263.2	272.9
Thresher	0.2	33.8	215.5	249.5
Pumping set	0.2	6.7	203.6	210.4
Animal drawn cart	0.2	5.3	220.9	226.4
Sprayer	3.8	65.4	133.9	203.0
Others	25.4	125.3	298.2	449.0
Total land holdings	297.2	1,581.4	1,458.8	3,337.4
Percent to total land holdings				
Iron ploughs	1.8	3.5	55.5	26.1
Power tillers	0.0	0.5	0.5	0.5
Shallow tube well	0.0	0.3	7.9	3.6
Deep Tube Well	0.0	0.0	4.0	1.8
Rower Pump	0.0	0.1	1.4	0.7
Tractor	0.0	0.6	18.0	8.2
Thresher	0.1	2.1	14.8	7.5
Pumping set	0.1	0.4	14.0	6.3
Animal drawn cart	0.1	0.3	15.1	6.8
Sprayer	1.3	4.1	9.2	6.1
Others	8.6	7.9	20.4	13.5
Total (Percent)	100.0	100.0	100.0	100.0

TABLE 10.4: NUMBER AND PERCENT OF LAND HOLDINGS USING AGRICULTURAL EQUIPMENT BY TYPE OF EQUIPMENT USED AND BY DEVELOPMENT REGION, 2001/02

Type of equipment	Ecological belt					Nepal
	Eastern	Central	Western	Mid Western	Far Western	
Number of holdings ('000)						
Iron ploughs	321.9	239.9	135.1	80.9	92.5	870.3
Power tillers	0.9	12.4	1.7	0.3	0.3	15.6
Shallow tube well	57.6	31.4	14.4	2.0	14.2	119.7
Deep Tube Well	30.3	17.6	5.7	4.3	0.7	58.6
Rower Pump	3.1	8.0	1.1	1.8	8.7	22.7
Tractor	37.6	151.5	61.4	7.1	15.3	272.9
Thresher	49.4	121.6	51.7	8.5	18.3	249.5
Pumping set	50.4	79.9	45.2	7.3	27.5	210.4
Animal drawn cart	71.2	64.9	26.1	23.9	40.3	226.4
Sprayer	42.5	96.9	40.8	17.6	5.2	203.0
Others	89.5	125.3	131.0	64.0	39.3	449.0
Total land holdings	799.7	1,026.9	711.7	467.4	331.7	3,337.4
Percent to total land holdings						
Iron ploughs	40.3	23.4	19.0	17.3	27.9	26.1
Power tillers	0.1	1.2	0.2	0.1	0.1	0.5
Shallow tube well	7.2	3.1	2.0	0.4	4.3	3.6
Deep Tube Well	3.8	1.7	0.8	0.9	0.2	1.8
Rower Pump	0.4	0.8	0.2	0.4	2.6	0.7
Tractor	4.7	14.8	8.6	1.5	4.6	8.2
Thresher	6.2	11.8	7.3	1.8	5.5	7.5
Pumping set	6.3	7.8	6.4	1.6	8.3	6.3
Animal drawn cart	8.9	6.3	3.7	5.1	12.1	6.8
Sprayer	5.3	9.4	5.7	3.8	1.6	6.1
Others	11.2	12.2	18.4	13.7	11.8	13.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 10.5: NUMBER OF EQUIPMENT BY TYPE AND BY ECOLOGICAL BELT, NEPAL, 2001/02

(In thousand)				
Type of equipment	Ecological belt			Nepal
	Mountain	Hill	Tarai	
Iron ploughs	5.7	50.0	834.5	890.2
Power tillers	0.7	2.4	8.7	11.8
Shallow tube well	0.6	5.1	103.7	109.5
Deep Tube Well	0.7	2.1	48.8	51.5
Rower Pump	0.5	2.2	19.1	21.8
Tractor	0.2	6.5	144.0	150.6
Thresher	0.4	17.6	111.2	129.1
Pumping set	0.4	6.7	139.0	146.1
Animal drawn cart	0.5	7.3	191.3	199.1
Sprayer	3.8	59.9	82.2	145.9
Others	65.9	342.1	664.8	1,072.7

TABLE 10.6: NUMBER OF EQUIPMENT ITEMS BY TYPE AND BY DEVELOPMENT REGION, NEPAL, 2001/02

(In thousand)						
Type of equipment	Development Region					Nepal
	Eastern	Central	Western	Mid Western	Far Western	
Iron ploughs	336.4	209.9	140.1	104.0	99.8	890.2
Power tillers	1.7	6.7	1.9	1.0	0.6	11.8
Shallow tube well	53.2	25.3	15.3	3.6	12.1	109.5
Deep Tube Well	29.2	11.7	4.3	5.4	0.9	51.5
Rower Pump	3.7	6.2	1.0	2.2	8.8	21.8
Tractor	19.9	54.0	67.2	6.4	3.1	150.6
Thresher	27.4	49.6	38.6	8.9	4.6	129.1
Pumping set	37.5	42.4	34.6	7.6	24.0	146.1
Animal drawn cart	64.7	46.8	24.1	24.5	39.0	199.1
Sprayer	32.3	56.2	34.4	19.4	3.6	145.9
Others	251.9	346.6	269.0	124.4	80.7	1,072.7

TABLE 10.7: NUMBER AND PERCENT OF LAND HOLDINGS USING AGRICULTURAL EQUIPMENT BY TYPE OF EQUIPMENT USED AND SIZE OF HOLDING, NEPAL, 2001/02

Type of equipment	Size of holding			
	Less than 0.5 ha	0.5 - 2.0 ha	2.0 ha and over	Nepal
Number of holdings ('000)				
Iron ploughs	276.3	449.4	144.6	870.3
Power tillers	7.1	5.8	2.7	15.6
Shallow tube well	31.2	58.0	30.6	119.7
Deep Tube Well	18.0	26.3	14.3	58.6
Rower Pump	8.5	10.1	4.2	22.7
Tractor	94.4	128.5	50.0	272.9
Thresher	77.4	119.0	53.0	249.5
Pumping set	49.1	102.7	58.6	210.4
Animal drawn cart	30.3	118.0	78.1	226.4
Sprayer	59.2	106.1	37.7	203.0
Others	189.2	209.8	50.0	449.0
Total land holdings	1,578.9	1,504.3	254.2	3,337.4
Percent to total land holdings				
Iron ploughs	17.5	29.9	56.9	26.1
Power tillers	0.4	0.4	1.1	0.5
Shallow tube well	2.0	3.9	12.0	3.6
Deep Tube Well	1.1	1.7	5.6	1.8
Rower Pump	0.5	0.7	1.7	0.7
Tractor	6.0	8.5	19.7	8.2
Thresher	4.9	7.9	20.8	7.5
Pumping set	3.1	6.8	23.0	6.3
Animal drawn cart	1.9	7.8	30.7	6.8
Sprayer	3.7	7.1	14.8	6.1
Others	12.0	13.9	19.7	13.5
Total	100.0	100.0	100.0	100.0

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