CHAPTER 9
USE OF INPUTS

In 1981/82, there were only 3.2 percent of rice growers using improved seed but this percentage increased to 24 percent in 1991/92. Between 1991/92 and 2001/02 there was an increase of only 1.1 percent. About 4.8 percent of wheat growers in Nepal used improved seed in 1981/82 and it increased to 30.7 percent in 1991/92. Between 1991/92 and 2001/02 the number of wheat growers using improved seeds did not change much and remained at 30 percent. Some 2.4 percent of maize growers used improved seeds in 1981/82. It increased to 11.9 percent in 1991/92 and further increased to 14.9 percent in 2001/02.

Number of farmers using pesticides has been increasing over the years. Below 1 percent of rice growers used pesticides in 1981/82. The proportion of rice growers using pesticides increased to 13.2 percent in 1991/92 and to 20.4 percent in 2001/02. In the case of wheat crops, use of pesticides has not been increasing as in the case of rice. Approximately one percent of the wheat growers used pesticides in 1981/82. In the span of 20 year (1981/82 – 2001/02), it increased to 8.9 percent, an addition of 7.9 percent only. The percentage of pesticides users among the maize growers has been very low in the country. In the last three censuses of 1981/82, 1991/92 and 2001/02 the percent of pesticides users among maize grower were just 0.9, 2.8 and 4.2 respectively.

Use of chemical fertilizer has been increasing rather rapidly. Only 16 percent of rice growers used chemical fertilizer in 1981/82. This percentage increased to 48.8 percent in 1991/92 and increased further to 64.9 percent in 2001/02. Wheat growers ranked second in the proportion of growers applying chemical fertilizer. There were 52.4 percent of wheat farmers using chemical fertilizer in 1991/92. It increased to 57.7 percent in 2001/02. Number of maize grower using chemical fertilizer has also been increasing. The percentage of chemical fertilizer users among maize growers were 5.1 percent, 22.6 percent and 35.0 percent in 1981/82, 1991/92 and 2001/02 respectively.

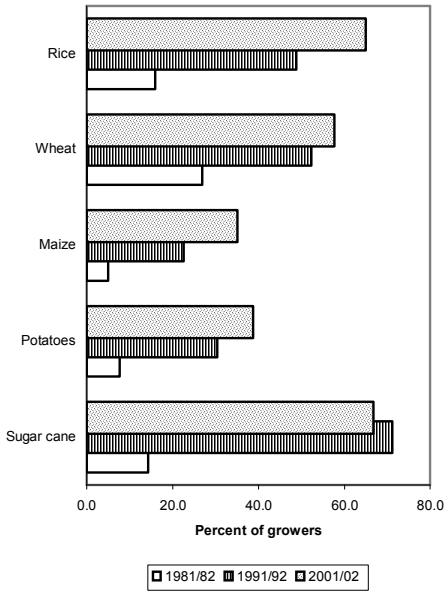
Table 9.0 Summary Statistics

Crop	Holdings with crop (' 000)			Improved seeds (% of crop growers)			Pesticides (% of crop growers)			Chemical fertilizer (% of crop growers)		
	1981/82	1991/92	2001/02	1981/82	1991/92	2001/02	1981/82	1991/92	2001/02	1981/82	1991/92	2001/02
Rice	1,021.7	2,037.5	2,481.6	3.2	24.0	25.1	0.8	13.2	20.4	16.0	48.8	64.9
Wheat	649.5	1,635.8	1,935.1	4.8	30.7	30.0	1.0	5.4	8.9	26.9	52.4	57.7
Maize	838.6	1,872.6	2,166.3	2.4	11.9	14.9	0.9	2.8	4.2	5.1	22.6	35.0
Total land holdings	2,185.7	2,703.9	3,337.4	...	...	...	...	...	...	...	...	...

9.1 Agricultural inputs

Statistics on the agricultural inputs used in the farming operations of agricultural holdings in Nepal are necessary information required to support the developmental efforts of government as well as the private sector in improving the output from agriculture. Agricultural inputs for the purpose of the Census of Agriculture are materials or improved practices that are used or adopted in the cultivation of crops and raising of livestock to increase agricultural production. These include the use of chemical fertilizers, use of improved seeds like high yielding varieties (HYVs), and, the use of pesticides for important crops grown by most holdings in Nepal.

FIGURE 9.1: GROWERS USING CHEMICAL FERTILIZER, NEPAL

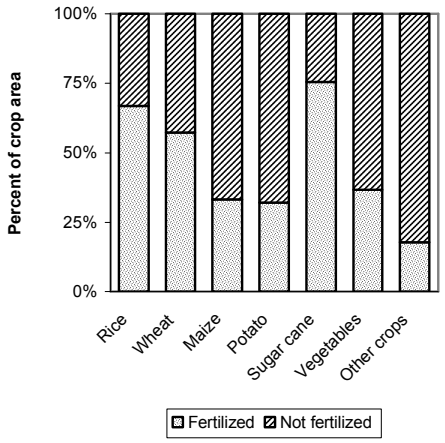


9.2 Growers using chemical fertilizers

There has been an increasing usage of chemical fertilizers in the cultivation of important crops in Nepal since 1981/82.

In 2001/02, sugar cane growers reported the highest percentage (66.7%) of using chemical fertilizers in their sugar cane fields although the number of growers was not as many as those engaged in the culture of rice, maize and wheat. Rice growers ranked second in the usage of chemical fertilizers with 64.9% of them using while wheat growers ranked third in the proportion of growers applying chemical fertilizers (57.7%). It ranked third also in the total number of growers engaged in crop cultivation. Take note that maize ranked second in terms of the total number of growers but only 35% applied fertilizers

FIGURE 9.2: CHEMICAL FERTILIZERS, AREA TREATED, NEPAL, 2001/02



in their maize field in 2001/02. Potato growers ranked 4th in the usage of chemical fertilizers with 38.8% of the total. This percentage was even higher than maize growing.

The levels of percentages in 2001/02 were considerably higher than in 1991/92 and in 1981/82. In the 80's the use of chemical fertilizer was not as yet popular. The highest proportion of fertilizer usage was reported among wheat growers with 26.9% while that of rice growers and sugar cane growers were 16% and 14.3%, respectively. In 1991/92, there was an upsurge in the use of chemical fertilizers on sugar cane with

71.2%. Wheat and rice growers also registered remarkable increases in usage to 52.4% for wheat and 48.8% for rice.

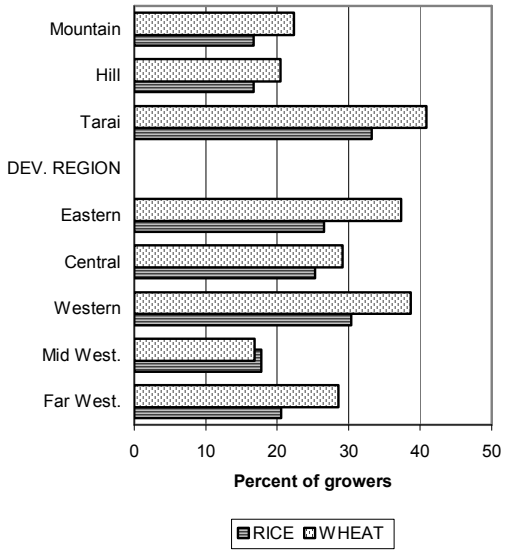
TABLE 9.2 shows the increases in the utilization of chemical fertilizers by type of crop between 1991/92 and 2001/02. It is observed that it is only in sugar cane where there was a decrease in the level of users. But despite the decrease in the number of sugar cane growers using chemical fertilizers, the area fertilized had increased. Notables in the increase in area fertilized were vegetables and maize with 150.5% and 81.6% increases, respectively.

9.3 Growers using improved seeds.

The use of improved seeds has not progressed very much between 1991/92 and 2001/02 although it can be seen from TABLE 9.1 that there was a big improvement in the use of improved seeds between 1981/82 and 1991/92.

In the 80's only 3.2% of the rice growers used improved rice seed varieties but the percentage went up to 24% in 1991/92. However, between 1991/92 and 2001/02, only 1.1 percentage points were added. In fact, for wheat, there was even a decrease by 0.7 percentage point in the proportion of wheat growers using improved wheat seeds as planting materials.

FIGURE 9.3: GROWERS USING IMPROVED SEEDS, 2001/02



There was a significant increase on the use of improved seeds among potato growers from only 1% in 1981/82 to 17.9% in 1991/92 and further increased to 25.9% 2001/02. Maize growers also increased in the adoption of improved seeds from 2.4% in 1981/82 to 11.9% in 1991/92 and increased to 14.9% in 2001/02.

In general, the use of improved seeds to increase production of the major temporary crops is comparatively low in Nepal.

9.4 Growers using pesticides

The use of pesticides by crop growers in the 80's was practically unknown where the highest percentage was reported among wheat growers with only 1% that applied pesticides in their farming operations. Less than 1% among rice, maize, potato and sugar cane growers used pesticides during the same period.

In 1991/92, the proportion of sugar cane growers increased to 23.5% which is quite remarkable and this percentage continued to increase in 2001/02 to 30.9%. In other words, almost one third of sugar cane growers used pesticides in 2001/02 to protect their cane fields from attacks of insects and pests.

Rice growers also increased their usage of pesticides from 0.8% in 1981/82 to 13.2% in 1991/92 and then 20.4% in 2001/02. This means that one out of 5 growers used pesticides in his rice fields.

Potato growers also increased their utilization of pesticides from 0.5% in 1981/82, to 10.7% in 1991/92 to 19.5% in 2001/02.

9.5 Rice

Among cereal crops, rice is still the most important temporary crop being raised by almost two-thirds of the total holdings in the country.

Of the 3.3 million holdings in 2001/02, 2.48 million holdings cultivate rice in an area of .54 million hectares. The rice growers were distributed unevenly in Tarai belt (1.26 million), Hill belt (1.02 million) and Mountain belt (203,300). While more than 1 million holdings planting rice were found in the Hill belt, only 353,000 hectares of rice land were being tilled by them. Of the 1.54 million hectares of rice land, 1.12 million rice land were located in the Tarai belt. This makes Tarai belt rice farmers important in the production of rice.

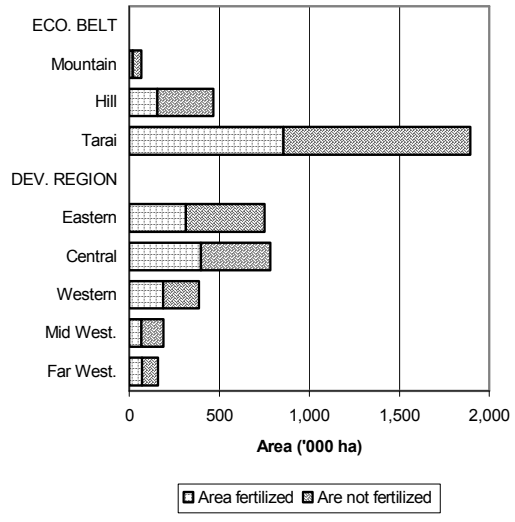
Among the development regions, the Eastern, Central and Western regions have an aggregate of 1.9 million rice farmers with 1.24 million hectares of rice land comprising 80% of the total rice land in Nepal. These three regions therefore are important to rice growing.

Among the three ecological belts, Tarai belt rice holdings seem to exhibit the highest percentages of usage of improved seeds, pesticides and chemical fertilizers both in 1991/92 and 2001/02. However, in the use of improved seeds, there was a decrease in the percentage of users between 1991/92 and 2001/02 from 36.9% to 33.2%. What was notable was the big increase in the number of rice growers using chemical fertilizers in Tarai from 66.2% in 1991/92 to 82.3% in 2001/02 and the area applied to fertilizer from 52.8% to 76.6% of the total crop area. There was also an increase in the use of pesticides but the level of usage was comparatively low from 20.9% in 1991/92 to 28.5% in 2001/02.

Among the development regions, the proportion of users of chemical fertilizers among rice growers in Central region was reportedly the highest at 89.1% in 2001/02 from 87.8% in 1991/92. Second in rank in usage was far below at 64.5% in Western region and the third ranking was Eastern region with 61.3%.

There had been an improvement in the use of improved seeds in four regions except Central region. In 1991/92, Central region reported the highest proportion of improved seeds users at 34.5% but declined to 25.3% in 2001/02. On the other hand, Western region reported the highest percentage of users of improved seeds in 2001/02 at 30.3%.

FIGURE 9.4: CHEMICAL FERTILIZERS, RICE AREA TREATED, 2001/02

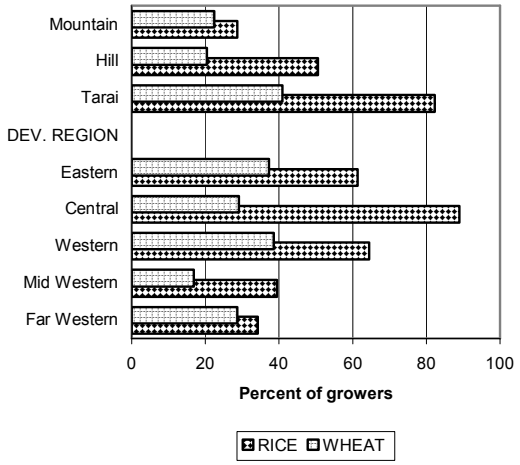


9.6 Wheat

Growing of wheat in Nepal has progressed slowly in terms of the utilization of inputs that increase production. At the national level, majority (52.4%) of wheat growers used chemical fertilizers in 1991/92. This percentage increased to 57.7% in 2001/02. On the use of pesticides, only 5.4% of the growers used it in 1991/92 and this proportion increased to 8.9% in 2001/02. However, in the use of improved seeds, the proportion of growers decreased from 30.7% in 1991/92 to 30.0% in 2001/02.

By ecological belt, the picture changes. Wheat growers in Tarai and hill belts using chemical fertilizers suddenly reduced in proportion. Tarai belt growers decreased from 78.7% in 1991/92 to only 40.9% in 2001/02 while Hill belt growers decreased from 36.7% to only 20.5% for the same period. While the number of growers decreased proportionally, the area treated with fertilizers increased during the same period. In Tarai belt, the area fertilized in 1991/92 was 69.5% of the total crop area. In 2001/02, the area fertilized increased to 78.2% of the total crop area. The same trend was observed for Hill belt but the increase was not significant, see TABLE 9.4.

FIGURE 9.5: GROWERS USING CHEMICAL FERTILIZER, 2001/02



The same pattern in Tarai belt and Hill belt was observed in the utilization of improved seeds where the proportion of wheat growers using improved seeds declined between 1991/92 and 2001/02.

While the use of pesticide was not as prevalent as the chemical fertilizer, the proportions of users have increased conservatively within the ten-year period being observed.

By development regions, four out of five regions reported a decrease in the usage of chemical fertilizers. It was only in Mid-Western region where an increase in the use of fertilizers was observed. However, it might be delightful to know that the areas treated with fertilizers increased in four regions out of five, with the exception of Central region where the area decreased from 79.8% of the total crop area in 1991/92 to 78.2% in 2001/02.

FIGURE 9.6: GROWERS USING CHEMICAL FERTILIZER BY SIZE OF HOLDING, NEPAL, 2001/02

9.7 Maize

Maize is second in rank to rice as temporary crop raised by holdings in Nepal. There were 2.2 million holdings reporting in 2001/02 as cultivating maize in an aggregate area of 769,400 hectares. Most of these holdings (1.46 million) were found in Hill belt with aggregate crop area of 510,200 hectares. Tarai belt maize growers totaled 448,300 with a total crop area of 175,200 hectares while in Mountain belt there were 256,200 maize growers involving 84,000 hectares. The bulk of maize growers in development regions was spread out in Eastern, Central and Western regions in an aggregate area of 608,400 hectares, which is 79.2% of the total area sown to maize.

The application of chemical fertilizers in maize fields was not as prevalent as in the culture of rice. In 1991/92, 22.6% of maize

growers used chemical fertilizers and in 2001/02 the users increased to 35%. The total area fertilized also increased from 18.3% of the total crop area in 1991/92 to 33.2% in 2001/02. It is interesting to observe that the Mountain belt reported the highest proportion of maize growers with 25.1% of the total growers in this area followed by Hill belt with 23.8%. Tarai belt reported the lowest percentage of chemical fertilizer users on maize at 16.9% of the total holdings with maize.

Among development regions, Central region reported an extraordinarily high percentage of fertilizer users on their maize farm compared with the other regions both in 1991/92 and 2001/02. In 1991/92, 61.4% of the maize holdings used fertilizer in Central region compared with only 12.6% for Western region and 11% for Eastern region. In 2001/02, the fertilizer users in Central region increased to 68.6% compared with 29.5% for Western region and 30.2% for Eastern region, see TABLE 9.5

While Tarai belt reported the lowest proportion of fertilizer users among maize growers, it reported the highest proportion of usage of improved seeds with 17.8% compared with only 11.1% for Hill and 6.3% for Mountain belt..

The same trend was observed for users of pesticides where Tarai belt reported the highest percentage at 5.1% followed by Hill belt with 2.5% and 0.6% in Mountain belt in 1991/92. In 2001/02, the percentage of users in Tarai belt increased to 8.8% followed by Mountain belt with 3.5% pesticide users and Hill belt with 2.9%.

Central development region reported the highest percentage of pesticide users among the five development regions at 6.9% followed by Eastern region at 5.4% in 2001/02.

9.8 Other crops

The use of agricultural inputs in the cultivation of other crops in Nepal is not as popular as in the three major temporary crops earlier discussed.

In 1991/92, the percentage of users of chemical fertilizers among potato growers registered at 30.5% and this percentage increased to 38.8% in 2001/02. Tarai belt reported the highest proportion of fertilizer users both in 1991/92n and 2001/02 at 41.5% and 54.4%, respectively compared with only 26% and 31.7% for the same period among potato growers in Hill belt.

Among development regions, Central region reported the highest percentage of users at 60.2% in 1991/92 and increased to 61.6% in 2001/02. It seems that it is this region where improved farm practices are observed by majority of the holdings compared with other regions.

The users of fertilizers among vegetable farmers are comparatively lower than potato growers both in 1991/92 and 2001/02. Tarai belt vegetable growers still reported the highest percentage of users compared with the other belts.

On the use of improved seeds and pesticides, still tarai belt growers reported the highest usage. Users of improved seeds and pesticides among sugar cane growers in Hill and Mountain belts are negligible when compared with those in Tarai belt.

9.9 Comparison of small and large holdings

The use of agricultural inputs in the different holdings according to size category seemed to reveal a pattern for the three major temporary crops. TABLE 9.9 shows that the large holdings reported a higher incidence of usage of the three agricultural inputs than the smaller ones.

On the use of improved seeds, the large holdings reported a usage percentage of 38.8% for rice compared with 21.1% for small holdings; 73.5% for wheat compared with 26.3% for small holdings; and 22.1% for maize compared with 13.1% for maize.

The same pattern was observed on the use of pesticides although the difference was rather big when compared with rice. For large holdings, the use of pesticides registered at 87.9% of the total large holdings compared with only 17.4% for the small holdings.

For wheat growing, the difference was not as great compared with rice but still there is a wide gap, 13.5% for the large holdings against 7.9% among the small holdings. For maize, users of pesticides among large holdings was only 8.4% of the total compared with 3.7% of the total among small holdings.

In the application of chemical fertilizers, the large holdings also reported higher percentages for the three crops but the difference was not as great compared with the first two inputs discussed.

In 2001/02, almost 80% among large holdings reported as having used chemical fertilizers for rice cultivation compared with 62.5% users among small holdings. For wheat, about 74% of the large holdings used fertilizer compared with 53% users among the small holdings.

For maize growing, the difference in the percentage of users of chemical fertilizers among the different sizes of holdings was not very apparent although the large holdings reported a little bit higher percentage (37.1% vs. 34.5%).

TABLE 9.1: HOLDINGS USING DIFFERENT INPUTS FOR SELECTED CROPS, NEPAL, 1981/82, 1991/92 AND 2001/02

Crop	Holdings with crop ('000)			Improved seeds (% of crop growers)			Pesticides (% of crop growers)			Chemical fertilizer (% of crop growers)		
	1981/82	1991/92	2001/02	1981/82	1991/92	2001/02	1981/82	1991/92	2001/02	1981/82	1991/92	2001/02
Rice	1,021.7	2,037.5	2,481.6	3.2	24.0	25.1	0.8	13.2	20.4	16.0	48.8	64.9
Wheat	649.5	1,635.8	1,935.1	4.8	30.7	30.0	1.0	5.4	8.9	26.9	52.4	57.7
Maize	838.6	1,872.6	2,166.3	2.4	11.9	14.9	0.9	2.8	4.2	5.1	22.6	35.0
Potato	193.2	734.7	857.3	1.0	17.9	25.9	0.5	10.7	19.5	7.7	30.5	38.8
Sugar cane	60.2	82.6	85.1	3.0	31.8	31.4	0.4	23.5	30.9	14.3	71.2	66.7
Vegetables	324.2	763.1	977.5	na	19.2	29.9	na	7.1	16.1	na	18.3	29.5
Other crops	na	2,246.6	1,888.3	na	4.7	6.7	na	1.9	4.5	na	15.5	26.5
Total land holdings	2,185.7	2,703.9	3,337.4	...	...	...	...	...	...	...	...	...

TABLE 9.2: USE OF CHEMICAL FERTILIZERS FOR SELECTED CROPS, NEPAL, 1991/92 AND 2001/02

(In thousand except percent)

Crop	Number of holdings with crop	Holdings using chemical fertilizer	Percent holdings using fertilizer	Area of crop (ha)	Area fertilized (ha)	Percent of crop area fertilized
			1991/92			
Rice	2,037.5	994.5	48.8	1,481.2	683.0	46.1
Wheat	1,635.8	857.4	52.4	633.1	316.3	50.0
Maize	1,872.6	422.8	22.6	768.7	140.5	18.3
Potato	734.7	224.2	30.5	70.5	18.2	25.8
Sugar cane	82.6	58.8	71.2	36.6	30.3	82.7
Vegetables	763.1	139.7	18.3	39.5	8.8	22.3
Other crops	2,246.6	348.9	15.5	1,033.4	130.5	12.6
			2001/02			
Rice	2,481.6	1,611.6	64.9	1,544.6	1,033.1	66.9
Wheat	1,935.1	1,116.8	57.7	793.5	454.2	57.2
Maize	2,166.3	759.2	35.0	769.4	255.1	33.2
Potato	857.3	332.6	38.8	83.9	26.9	32.0
Sugar cane	85.1	56.8	66.7	51.9	39.2	75.5
Vegetables	977.5	288.3	29.5	60.0	22.0	36.7
Other crops	1,888.3	500.9	26.5	972.4	173.6	17.9
			Percent increase 2001/02 vs 1991/92			
Rice	21.8	62.1	33.1	4.3	51.3	45.1
Wheat	18.3	30.3	10.1	25.3	43.6	14.5
Maize	15.7	79.6	55.1	0.1	81.6	81.2
Potato	16.7	48.4	27.2	18.9	47.6	24.2
Sugar cane	3.1	-3.4	-6.3	41.9	29.3	-8.8
Vegetables	28.1	106.3	61.1	51.9	150.5	64.7
Other crops	-15.9	43.6	71.1	-5.9	33.0	41.7

TABLE 9.3: RICE GROWERS, USE OF SELECTED INPUTS IN ECOLOGICAL BELTS AND DEVELOPMENT REGIONS, NEPAL, 1991/92 AND 2001/02

Geographic area	Holdings with rice ('000)	Area of rice sown ('000 ha)	Improved seeds (% growers)	Pesticides (% growers)	Chemical fertilizers	
					(% growers)	(% crop area)
			1991/92			
NEPAL	2,037.5	1,481.2	24.0	13.2	48.8	46.1
ECOLOGICAL BELTS						
Mountain	179.1	49.3	5.9	2.0	26.3	25.1
Hill	905.4	335.2	14.0	7.4	35.0	27.3
Tarai	953.0	1,096.8	36.9	20.9	66.2	52.8
DEVELOPMENT REGIONS						
Eastern	468.4	489.0	23.9	11.2	33.4	27.3
Central	655.2	449.3	34.5	18.9	87.8	78.8
Western	439.1	290.6	18.1	16.5	45.2	51.5
Mid Western	248.9	131.0	17.0	6.2	16.6	22.0
Far Western	225.8	121.3	13.0	2.4	10.1	13.8
			2001/02			
NEPAL	2,481.6	1,544.6	25.1	20.4	64.9	66.9
ECOLOGICAL BELTS						
Mountain	203.3	74.2	16.7	6.0	28.6	27.4
Hill	1,015.6	353.0	16.7	13.1	50.6	44.5
Tarai	1,262.7	1,117.4	33.2	28.5	82.3	76.6
DEVELOPMENT REGIONS						
Eastern	552.0	500.5	26.6	15.6	61.3	62.6
Central	803.3	471.0	25.3	31.9	89.1	84.1
Western	511.4	270.6	30.3	22.5	64.5	69.0
Mid Western	322.4	164.1	17.8	9.2	39.5	41.2
Far Western	292.6	138.4	20.6	6.4	34.3	50.0

TABLE 9.4: WHEAT GROWERS, USE OF SELECTED INPUTS - ECOLOGICAL BELTS AND DEVELOPMENT REGIONS, NEPAL, 1991/92 AND 2001/02

Geographic area	Holdings with wheat ('000)	Area of wheat sown ('000 ha)	Improved seeds (% growers)	Pesticides (% growers)	Chemical fertilizers	
					(% growers)	(% crop area)
			1991/92			
NEPAL	1,635.8	633.1	30.7	5.4	52.4	50.0
ECOLOGICAL BELTS						
Mountain	184.5	48.7	9.3	1.0	17.2	14.0
Hill	755.0	223.5	22.2	3.5	36.7	26.3
Tarai	696.3	360.8	45.7	8.7	78.7	69.5
DEVELOPMENT REGIONS						
Eastern	283.8	118.4	41.8	7.8	59.0	57.0
Central	494.5	183.1	41.2	8.2	86.9	79.8
Western	320.4	114.9	29.1	5.4	56.1	55.0
Mid Western	300.8	122.6	16.7	1.9	15.0	17.3
Far Western	236.3	94.0	15.6	1.3	15.1	19.3
			2001/02			
NEPAL	1,935.1	793.5	30.0	8.9	57.7	57.2
ECOLOGICAL BELTS						
Mountain	194.7	65.6	22.4	3.9	22.4	13.1
Hill	856.5	256.7	20.5	4.3	20.5	30.0
Tarai	883.9	471.2	40.9	14.4	40.9	78.2
DEVELOPMENT REGIONS						
Eastern	342.8	177.5	37.4	11.0	37.4	73.5
Central	572.1	217.8	29.2	15.0	29.2	78.2
Western	357.1	116.0	38.7	5.9	38.7	60.8
Mid Western	360.8	148.7	16.8	3.1	16.8	21.8
Far Western	302.2	133.6	28.6	5.4	28.6	37.9

TABLE 9.5: MAIZE GROWERS, USE OF SELECTED INPUTS IN ECOLOGICAL BELTS AND DEVELOPMENT REGIONS, NEPAL, 1991/92 AND 2001/02

Geographic area	Holdings with maize ('000)	Area of maize sown ('000 ha)	Improved seeds (% growers)	Pesticides (% growers)	Chemical fertilizers	
					(% growers)	(% crop area)
			1991/92			
NEPAL	1,872.6	768.7	11.9	2.8	22.6	18.3
ECOLOGICAL BELTS						
Mountain	228.3	69.3	6.3	0.6	25.2	22.0
Hill	1,263.5	515.3	11.1	2.5	23.8	18.9
Tarai	380.8	184.1	17.8	5.1	16.9	15.1
DEVELOPMENT REGIONS						
Eastern	401.7	224.2	6.8	2.0	11.0	9.9
Central	506.5	216.7	21.1	5.4	61.4	46.6
Western	448.7	167.5	12.1	2.7	12.6	8.6
Mid Western	312.3	113.7	6.1	0.8	2.1	1.6
Far Western	203.4	46.6	7.0	0.9	2.1	2.2
			2001/02			
NEPAL	2,166.3	769.4	14.9	4.2	35.0	33.2
ECOLOGICAL BELTS						
Mountain	256.2	84.0	15.4	3.5	28.7	29.9
Hill	1,461.8	510.2	13.3	2.9	36.4	34.2
Tarai	448.3	175.3	20.0	8.8	34.2	31.6
DEVELOPMENT REGIONS						
Eastern	480.9	242.3	14.2	5.4	30.2	27.5
Central	586.7	227.0	19.4	6.9	68.6	62.9
Western	516.2	150.7	16.0	2.8	29.5	22.6
Mid Western	372.8	112.1	9.1	2.0	9.2	7.2
Far Western	209.7	37.3	11.7	1.6	11.9	9.3

TABLE 9.6: POTATO GROWERS, USE OF SELECTED INPUTS IN ECOLOGICAL BELTS AND DEVELOPMENT REGIONS, NEPAL, 1991/92 AND 2001/02

Geographic area	Holdings with potato ('000)	Area of potato sown ('000 ha)	Improved seeds (% growers)	Pesticides (% growers)	Chemical fertilizers	
					(% growers)	(% crop area)
			1991/92			
NEPAL	734.7	70.5	17.9	10.7	30.5	25.8
ECOLOGICAL BELTS						
Mountain	101.8	14.6	4.4	1.0	8.9	5.7
Hill	307.4	34.7	12.4	7.7	26.0	21.7
Tarai	325.5	21.2	27.4	16.7	41.5	46.5
DEVELOPMENT REGIONS						
Eastern	225.2	29.3	15.5	6.9	22.8	16.1
Central	187.1	21.2	27.2	20.6	60.2	50.0
Western	156.4	11.0	18.1	13.3	33.9	22.0
Mid Western	100.1	5.3	12.3	3.5	5.7	7.7
Far Western	65.9	3.6	8.0	0.9	2.3	1.6
			2001/02			
NEPAL	857.3	83.9	25.9	19.5	38.8	32.0
ECOLOGICAL BELTS						
Mountain	112.4	19.0	22.0	7.5	14.7	15.4
Hill	392.5	41.5	20.9	14.9	31.7	26.7
Tarai	352.3	23.4	32.7	28.4	54.4	55.1
DEVELOPMENT REGIONS						
Eastern	249.3	30.8	19.3	20.8	37.5	23.5
Central	183.7	25.6	31.6	33.1	61.6	54.6
Western	202.5	12.1	29.8	17.7	45.7	33.1
Mid Western	128.1	9.9	27.4	9.6	15.6	10.5
Far Western	93.7	5.5	22.2	6.5	14.4	11.5

TABLE 9.7: SUGAR CANE GROWERS, USE OF SELECTED INPUTS IN ECOLOGICAL BELTS AND DEVELOPMENT REGIONS, NEPAL, 1991/92 AND 2001/02

Geographic area	Holdings with sugar cane ('000)	Area of sugar cane sown ('000 ha)	Improved seeds (% growers)	Pesticides (% growers)	Chemical fertilizers	
					(% growers)	(% crop area)
			1991/92			
NEPAL	82.6	36.6	31.8	23.5	71.2	82.7
ECOLOGICAL BELTS						
Mountain	2.1	0.1	1.4	3.2	5.1	13.4
Hill	13.1	1.0	0.5	1.6	6.1	10.1
Tarai	67.4	35.5	38.9	28.4	85.9	85.0
DEVELOPMENT REGIONS						
Eastern	3.8	2.1	29.8	15.7	41.0	61.8
Central	40.9	22.2	39.7	25.3	88.6	85.2
Western	26.6	10.9	32.7	30.7	76.1	88.3
Mid Western	1.2	-	2.8	4.2	1.4	-
Far Western	10.1	1.4	2.2	2.8	8.2	32.4
			2001/02			
NEPAL	85.1	51.9	31.4	30.9	66.7	75.5
ECOLOGICAL BELTS						
Mountain	1.8	0.2	3.6	4.4	2.3	2.8
Hill	10.8	0.7	1.9	3.1	8.2	14.6
Tarai	72.5	51.0	36.5	35.7	77.1	76.6
DEVELOPMENT REGIONS						
Eastern	9.5	5.2	8.2	11.8	56.8	60.6
Central	43.4	35.0	41.2	44.6	82.0	80.7
Western	20.0	8.1	32.3	22.9	66.2	72.1
Mid Western	4.1	0.6	7.2	6.3	6.0	40.5
Far Western	8.1	3.1	15.8	12.3	29.0	56.4

TABLE 9.8: VEGETABLE GROWERS, USE OF SELECTED INPUTS IN ECOLOGICAL BELTS AND DEVELOPMENT REGIONS, NEPAL, 1991/92 AND 2001/02

Geographic area	Holdings with vegetable ('000)	Area of vegetable sown ('000 ha)	Improved seeds (% growers)	Pesticides (% growers)	Chemical fertilizers	
					(% growers)	(% crop area)
			1991/92			
NEPAL	763.1	39.5	19.2	7.1	18.3	22.3
ECOLOGICAL BELTS						
Mountain	88.6	3.1	3.4	1.0	4.8	3.5
Hill	356.9	14.0	14.4	4.3	17.1	16.4
Tarai	317.5	22.3	29.0	12.0	23.5	28.6
DEVELOPMENT REGIONS						
Eastern	221.3	13.6	15.6	4.5	12.9	15.6
Central	223.2	12.9	21.3	9.7	35.4	41.2
Western	137.0	5.2	23.8	9.9	16.6	17.9
Mid Western	114.2	4.3	15.6	5.0	5.4	7.7
Far Western	67.3	3.5	20.6	4.8	4.8	2.9
			2001/02			
NEPAL	977.5	60.0	29.9	2.3	29.5	36.7
ECOLOGICAL BELTS						
Mountain	71.6	3.7	26.4	0.4	7.8	7.0
Hill	518.9	26.1	27.6	1.7	28.0	33.4
Tarai	387.0	30.2	33.8	3.4	35.5	43.3
DEVELOPMENT REGIONS						
Eastern	208.9	14.4	24.3	2.4	26.5	34.2
Central	238.0	19.1	29.1	4.6	51.4	57.6
Western	232.1	9.9	35.2	1.4	27.9	34.1
Mid Western	165.8	10.4	24.6	0.9	12.9	13.9
Far Western	132.7	6.3	37.6	1.0	18.5	20.8

TABLE 9.9: RICE, WHEAT AND MAIZE GROWERS, USE OF SELECTED INPUTS BY SIZE OF HOLDING, NEPAL, 2001/02

Size of holding	Holdings with crop ('000)	Area of crop sown ('000 ha)	Improved seeds (% growers)	Pesticides (% growers)	Chemical fertilizers	
					(% growers)	(% crop area)
			Rice			
Less than 0.5 ha	1,032.6	201.0	21.1	17.4	62.5	62.3
0.5 - 2.0 ha	1,236.1	824.4	26.0	20.8	64.4	63.0
2.0 ha and over	212.7	519.2	38.8	87.9	79.9	74.8
Total	2,481.3	1,544.6	25.1	20.4	64.9	66.9
			Wheat			
Less than 0.5 ha	751.5	123.6	26.3	7.9	53.4	8.3
0.5 - 2.0 ha	988.8	430.1	30.7	8.7	57.9	23.3
2.0 ha and over	194.7	239.8	73.5	13.5	73.5	82.6
Total	1,935.1	793.5	30.0	8.9	57.7	57.2
			Maize			
Less than 0.5 ha	1,007.8	159.1	13.1	3.7	34.5	33.2
0.5 - 2.0 ha	1,038.7	480.4	15.9	4.3	35.3	33.6
2.0 ha and over	119.6	129.9	22.1	8.4	37.1	31.3
Total	2,166.0	769.4	14.9	4.2	35.0	33.2

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