

SUMMARY OF FINDINGS

Number and area of holdings

The 2001/02 National Census of Agriculture (NCA) of Nepal covered all holdings in the country with land at least 0.1 hectare and with no significant area of land but with at least two cattle or the equivalent number of other livestock.

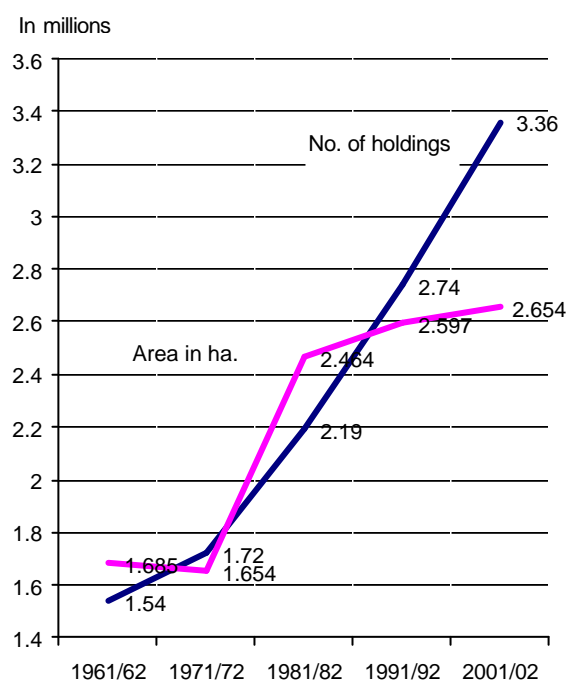
The 2001/02 NCA has enumerated a total of 3.3641 million holdings compared with 2.7361 million holdings enumerated in 1991/92, an increase of about 23%. This increase, however, is slightly lower than the increase in the number of holdings between census years 1981/82 and 1991/92, which was 25%.

In a span of 40 years, from 1961/62 to 2001/02, the number of holdings increased by 1.824 million, or 184%, an annual average increase of 4.6%. TABLE 1 shows the growth of the number of agricultural holdings in the country from 1.54 million in 1961/62 to 1.721 million in 1971/72 to 2.194 million in 1981/82, to 2.736.1 million in 1991/92 and finally to 3.3641 million in 2001/02.

The increase in the total area of the holdings is much slower when compared with the increase in the number of holdings, from 1.685 million hectares in 1961/62 to 2.654 million hectares in 2001/02 or a total increase of 968 thousand hectares in a span of 40 years. Percentage-wise, the total increase was only 57%, equivalent to an average annual increase of only 1.425%. However, if we look at the increases between censuses, there was significant increase in the total area of holdings between

1971/72 and 1981/82 when there was an increase of about 49%, from 1.665 million hectares to 2.464 million hectares, an increase of 478.4 thousand hectares. Since then the increases were minimal. Between 1981/82 and 1991/92 the increase in the total area of the holdings was only 5.5% in a period of 10 years. The increase in the total area of holdings went down further to only 2.2% between 1991/92 and 2001/02.

CHART 1
NUMBER AND AREA OF HOLDINGS
CENSUS YEARS 1961/62 TO 2001/02

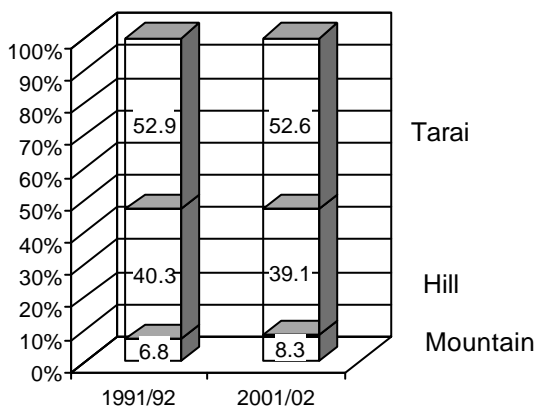


It is encouraging to note that holdings with no land registered a decrease by 16.8% over the number in 1991/92 from 32.1 thousand holdings to 26.7 thousand holdings.

Among ecological belts, Hill reported the highest number of holdings in 2001/02 at 1.586 million that comprised 47.2% of the total holdings in Nepal, followed by Tarai with 1.4795 million or about 44% of the total. However, Tarai ecological belt contributed the biggest area of holdings with 1.4 million hectares. This area was 52.6% of the total area of holdings in the country in 2001/02. Hill had a total area of 1.04 million hectares, about 39.1% of the total.

The Mountain ecological belt, being a mountainous territory, had the lowest number of holdings with 218.2 thousand and also the smallest area of holdings with only 218.7 thousand hectares, see TABLE 5.1.

CHART 2
AREA OF HOLDINGS
ECOLOGICAL BELTS



By development regions, Central Development Region (CDR) registered the biggest number of holdings with 1.037 million but Eastern Development Region (EDR) reported the largest area of holdings with 795.5 hectares compared with 750.2 hectares for CDR.

Of the 75 districts, Morang reported the highest number of holdings as well as the total area of holdings at 115.2 thousand and 116,530 hectares, respectively, followed closely by Jhapa with 104.7 thousand holdings and total holding area of 109,530 hectares. The least number of holdings was in the district of Manang with only about 1,500 with a total area of 1,130 hectares. The second lowest is Mustang with 2700 holdings. Both districts are in Western Mountain region while Morang and Jhapa are located in the Eastern region within the Tarai belt. (TABLES 4, 5, 5.1 and 5.2)

Holding Size

Because of the faster rate of increase in the total number of holdings than the total area of the holdings in Nepal, the average size of the holding decrease from 1.13 hectares in 1981/82 to 0.96 hectare in 1991/92 and further down to 0.80 hectare in 2001/02. At the national level, the average size of the holding started to decrease between 1981/82 and 1991/92 by 15% and between 1991/92 and 2001/02, by 17.16%, see TABLE 1.

By ecological belt, it is significant to note that only Mountain registered an increase of 8% in the average size of the holding while Tarai and Hill exhibited reduction in the size by 23.2% and 15%, respectively between 1991/92 and 2001/02. TABLE 5. However, holdings in the tarai ecological belt yielded the highest average size of 0.94 hectare per holding followed by Mountain belt with an average of 0.73 hectare per holding. Hill holdings reported the lowest average of 0.66 hectare, (TABLE 4). Holdings in both Mountain and Hill ecological belts registered an average below the national average.

The average size of the holdings with land in TARAI yielded a little higher average of 0.957 hectare compared with the average of all holdings while the average size of the land holdings in Hill and Mountain remained almost the same as the average of all holdings (land and no land), see TABLE 5.1.

By development regions, the holdings with land in Eastern Development Region (EDR) reported the highest average of almost a hectare (0.995) followed far

behind by the holdings in Mid-Western Development Region (MWDR) with 0.793 hectare although this figure is almost the same as the national average, see TABLE 5.1.

Far-Western Development Region (FWDR) holdings with land reported the lowest average of 0.68 hectare while Central Development Region (CDR) and Western Development Region (WDR) had almost the same average size per holding with 0.73 and 0.72 hectare, respectively.

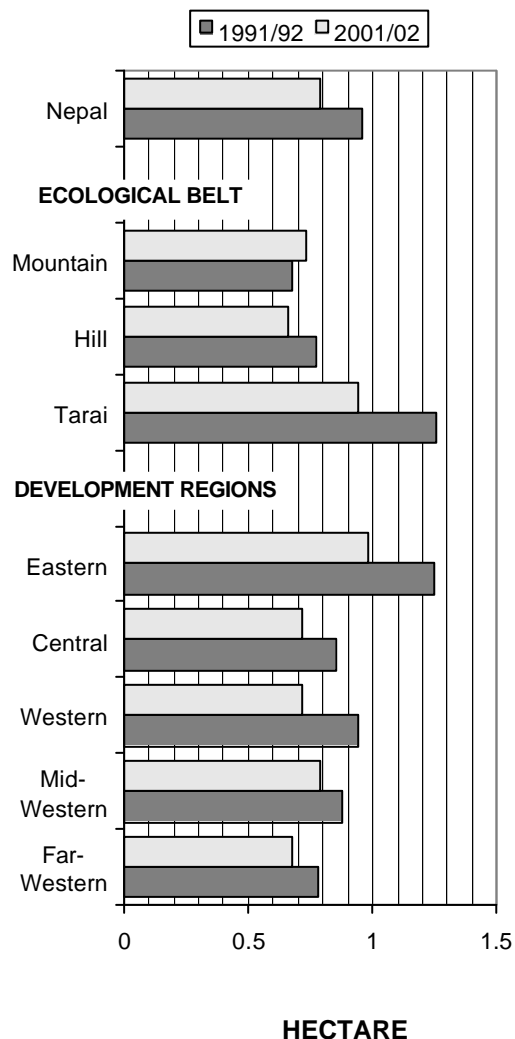
Among districts, Kapilvastu reported the highest average size of 1.241 hectares per holding in 2001/02.

It may be significant to mention that all districts in Eastern Tarai, namely: Jhapa, Morang, Sunsari, Saptari and Siraha reported an average size a little above 1 hectare. Other districts reporting an average size of the holding of more than 1 hectare in 2001/02 are: Taplejung, Solukhumbu, Ilam, Terhathum, Okhaldunga, Bardiya, Sarlahi, Rautahat and Kalilkot.

On the other hand, the districts reporting the lowest average size of the holding are: Bhaktapur, 0.233 hectare followed by Kathmandu (0.249) and Lalitpur (0.306). It is understandable that the three districts had registered the lowest average size because the agricultural lands are slowly being converted to other land uses due to urbanization. Other districts with low average holding size, which is below half a hectare are the following: Bajura (0.465), Bajhang (0.498), Achham (0.441), Mustang (0.468), Kaski (0.444), Parbat (0.497) and Dolpa (0.474), see TABLE 5.2.

The disparity in the size of the holdings is reflected in TABLE 2. Almost 92% of the

CHART 3
AVERAGE HOLDING SIZE
BY ECOLOGICAL BELT AND BY REGION
1991/92-2001/02

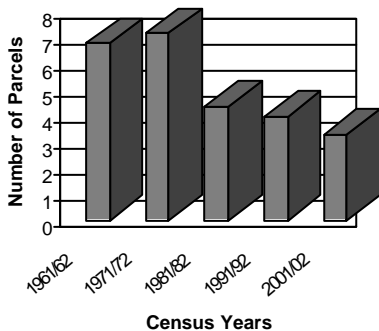


holdings shared only about 69% of the land devoted to agriculture. These are the holdings with sizes of less than 2 hectares. In contrast, only 0.75% (less than 1%) of the total holders operated 7.31% of the total area, which is approximately 194 thousand hectares, an average holding size of 7.64 hectares. These are the holdings with at least 5 hectares in size. Most of the holders in Nepal agriculture are below subsistence level.

Fragmentation of land

Fragmentation of land has slowed down between 1991/92 and 2001/02. The total number of parcels in 1991/92 was 10.8 million and increased to 10.99 million in 2001/02, a minimal increase of 1.7% compared with the increase of 13.6% between 1981/81 and 1991/92. While the average number of parcels per holding has been decreasing from 4.4 in 1981/82 to 4 parcels in 1991/92 to 3.3 parcels in 2001/02, the average area of the parcel has not increased between the last two censuses. The area remained at 0.24 hectare or 240 square meters in 2001/02.

CHART 4
AVERAGE NUMBER OF PARCELS PER HOLDING 1961/62 TO 2001/02



Selected characteristics of holdings

The intensity of the use of the land is observed to be much higher among holdings with sizes less than half a hectare. TABLE 3 shows that holdings with less than 0.5 hectare (small holdings) almost doubled (1.94) in the usage of the land compared with 1.73 times more among large-sized holdings (2 ha. and over).

It is further observed that as the holding's size increases, the household size also increases. It can be said then that bigger households tend to have bigger size of holding which may have been augmented by the higher percentage of households (19.3%) renting land compared with the small-sized holdings, where only 8.5% reported having rented land.

CHART 5
SMALL AND LARGE HOLDINGS

Small holding is less than 0.5 ha.
Large holding is 2 ha. and over.
□ Small ■ Large

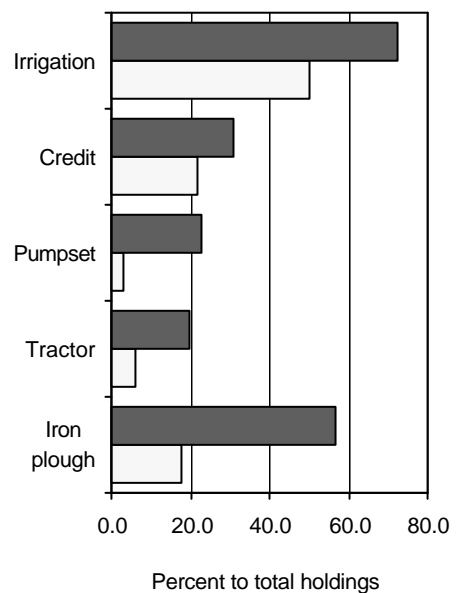


TABLE 3 further showed that the small holdings had less access to inputs of production where only almost half had

irrigation facilities compared with the large holdings with more than two-thirds (72%) had irrigation facilities. The use of iron plough also showed that a little more than one-fourth (27.5%) had it compared with more than half among large holdings (57%). It is only in the use of agricultural credit where the difference is not great.

Land use

An agricultural holding may comprise of agricultural land and non-agricultural land. In 2001/02, the agricultural land consisted of 94.1% of the total area of the holdings, which is approximately 2.498 million hectares, while the rest of the land, 156.4 thousand hectares, are classified as non-agricultural land, see TABLE 6.

CHART 6
LAND USE PATTERNS EXCEPT ARABLE LAND
1991/92 AND 2001/02



In 1991/92, the proportion of agricultural land to the total area of the holdings was 92.9%, which comprised about 2.393 million hectares. This is 104.8 thousand hectares lower than that obtained in 2001/02. In short, there was an increase of 4.4% of agricultural land between 1991/92 and 2001/02. Most of this land increases, may have come from the non-agricultural portion of the holding.

There was a decrease of 71.6 thousand hectares of woodland and forest, from 108.8 thousand hectares in 1991/92 to 37.2 thousand hectares in 2001/02, a decrease of 66% of the total woodland and forestlands between 1991/92 and 2001/02.

Furthermore, there was a big increase in the area of land under permanent crops from 29.4 thousand hectares in 1991/92 to 117.5 thousand hectares in 2001/02, an increase of almost 300% in 10 years. The importance of the area devoted to permanent crops is reflected in Table 6 where its share to the total holding area registered at 4.43% in 2001/02 compared with only 1.13% in 1991/92.

The changing pattern of land use among agricultural operators may be indicative of the changing structure of the use of land in Nepal, from woodland and forest farming to permanent crop farming.

The area devoted to fishing has not improved during the past ten years. In fact it was observed to be decreasing in area from 3.9 thousand hectares in 1991/92 to 3.5 thousand hectares in 2001/02, see TABLE 6.

Land Tenure

Most agricultural holders are owner-operators in 2001/02. Of the 3.337 million

holdings with land, 2.9 million holders or about 87% are full owners of their agricultural holding involving a total area of 2.2 million hectares of land, TABLE 7.

Full owners as one tenure form numbering 2.94 million, comprised 98.5% of all holders while the rest are either renting from others (1.2%) and other forms of tenure (0.3%).

Other landholders with more than one form of tenure like part-owners and part-renters, consisted of 397.9 thousand in 2001/02 with a total holding area of 412.9 thousand hectares. Of this area, 204.5 thousand hectares were fully owned while 204.2 thousand hectares were rented from others. Other forms of tenure reported a total area of 4.2 thousand hectares.

Ownership of holdings as one form of tenure had increased by 29.5% between 1991/92 and 2001/02 although it was observed that there was a corresponding decline in the number of holdings that rented land from others. The decrease is almost 25%, from 47 thousand holdings in 1991/92 to 35.5 thousand holdings in 2001/02. Other forms of tenure with one tenure form also decreased from 17.3 thousand to only 7.9 thousand, a decrease of 54.3%.

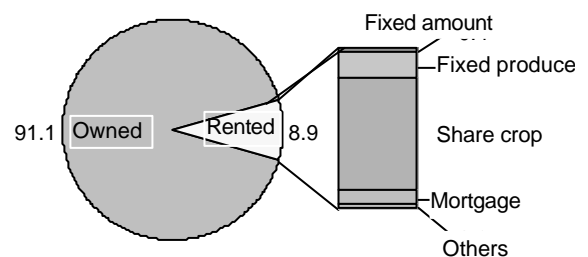
The number of holdings with more than one form of tenure slightly decreased from 400.6 thousand to 397.9 thousand, a decrease of less than 1%. Furthermore, the area reported also decreased by 7.15%, from 444.7 thousand in 1991/92 to 412.9 thousand in 2001/02. The biggest decrease in area was noted among holdings with several forms of tenure while those that rented land from others who are part-owners increased in area by 10.3%, see TABLE 7.

Share of produce and fixed quantity of produce were the most popular conditions of rent practiced in renting land with 46.5% and 30.3%, respectively, in 1991/92 while share of produce dominated the condition of rent in 2001/02 with 69% reporting such renting arrangement. The second highest was "fixed quantity of produce" with 15.3% reporting. Mortgage as condition of rent remained at 8.2% in both census years.

The average area involved in the renting of land is quite small. The biggest average area being rented was 0.63 hectare reported by tenants who paid the rent through the share of produce. This average area, however, slightly decreased to 0.62 in 2001/02. Other conditions of rent that decreased in the average area between 1991/92 and 2001/02 are: (1) fixed amount of money from 0.45 hectare to 0.40 hectare; (2) exchange for service from 0.23 to 0.22 hectare; (3) Other, from 0.30 hectare to 0.22 hectare, TABLE 8.

The average area of land rented which increased between 1991/92 and 2001/02 under two conditions of rent are: (1) fixed quantity of produce from 0.44 hectare to 0.54 hectare; and (2) mortgage from 0.23 to 0.27 hectare.

CHART 7
LAND TENURE, 2001/02
AREA OF LAND IN PERCENT



Irrigation

A total of 1.998 million holdings out of 3.3374 million holdings reported having access to irrigation facilities. This number represents almost 60% of the total holdings with land and an increase of 45% over the ratio of holdings with irrigation facilities in 1991/92, see TABLE 9.

Among the ecological belts, Tarai holdings registered a phenomenal increase in irrigation facilities by 69.3% between 1991/92 and 2001/02 compared with only 15% in Mountain and 32% in Hill.

The increases in Tarai were due to the increased number of tube wells that more than doubled in number in 2001/02 as well as permanent and seasonal canals as sources of irrigation water. The increase in the number of holdings availing of permanent canal in Hill was not able to increase comparatively the number of holdings with irrigation facilities.

Furthermore, the area irrigated in Tarai was reportedly the highest among the three ecological zones, with 57% of the 11.4 million hectares of land irrigated in 2001/02 compared with 29% only in Hill and 28% in Mountain. Despite the lowest land area under irrigation reported by holdings in the Mountain belt, compared with the two other belts, it reported the biggest increase in irrigated area between the two census years from 41.8 thousand hectares to 62.1 thousand hectares or about 49%. This increase even surpassed that of Tarai with an increase of 34.6% only for the same period.

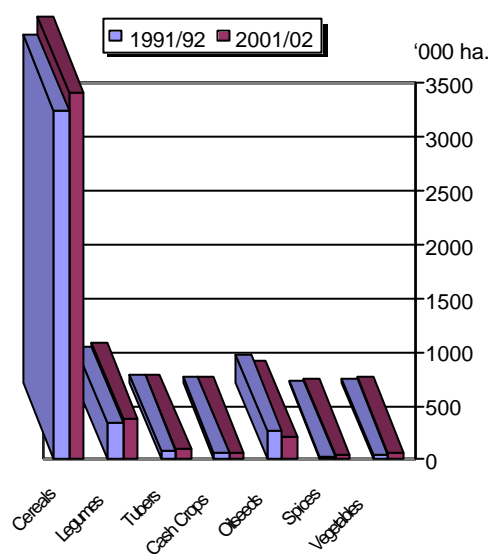
Temporary crops

In general, there has been an increase in the number of holdings growing temporary crops from 2.2 million in 1981/82 to 2.7

million in 1991/92 and 3.3 million in 2001/02. The area sown to temporary crops also increased from 3.315 million hectares in 1981/82 to 4.1 million hectares in 1991/92 to 4.3 million hectares in 2001/02. However, the increase between 1991/92 and 2001/02 was only 4.6% compared with the increase of 22.6% between 1981/82 and 1991/92, see TABLE 10.

Chart 8 below shows the comparative area sown to the different major temporary crops in Nepal for two successive censuses of 1991/92 and 2001/02.

CHART 8
CROP AREAS IN HA. 1991/92-2001/02
MAJOR TEMPORARY CROPS



Of the 4251.7 hectares sown to temporary crops in 2001/02 3,423.0 hectares, representing 80% of the total cropped area, were grown with cereals.

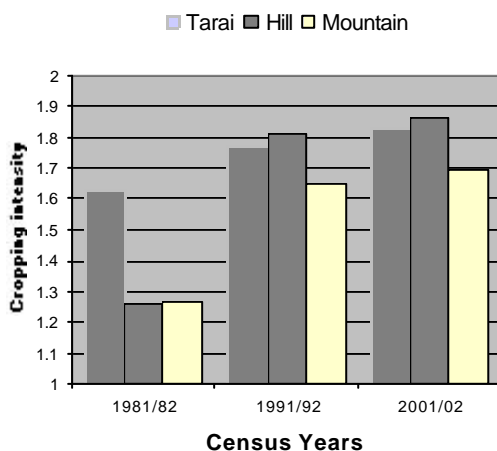
Except for legumes, tubers and vegetables where the increases in 2001/02 were comparatively higher than the past two censuses (1981/82 and 1991/92), the increase in the area for

growing other temporary crops had decelerated. In fact, the area devoted to the growing of some oilseeds had decreased by almost 18% between 1991/92 and 2001/02. The cultivation of cash crops had also been decreasing in area from 86 thousand hectares in 1981/82, to 62.9 thousand hectares in 1991/92 and slightly went down to 60.6 thousand hectares in 2001/02. But what was remarkable is the increasing area sown to spices by about 39% between 1991/92 and 2001/02, from 29.3 thousand hectares to 40.7 thousand hectares. There was also a big increase in the area planted to vegetables by 52%, from 39.5 thousand hectares in 1991/92 to 60.0 thousand hectares in 2001/02.

In Nepal, the cropping intensity of land sown to temporary crops had been increasing from 1.47 in 1981/82 to 1.78 in 1991/92 to 1.83 in 2001/02, see TABLE 11.

The increasing intensity of land use may be indicative of shortage of land to plant temporary crops.

CHART 9
INTENSITY OF LAND USE OF AREA UNDER
TEMPORARY CROPS, 1981/82 – 2001/02
ECOLOGICAL BELTS



On the other hand, it can also mean that the farmer had utilized the use of his land more productively to increase his income especially when there were accessible irrigation facilities.

By ecological belt, the highest intensity of land use if we based on the physical area of land under temporary crops, is in the Hill area with 1.86 in 2001/02. This was true also in 1991/92 with 1.8 compared with 1.77 in Tarai and 1.65 in Mountain belt regions.

However, if we consider arable land as the basis for measuring cropping intensity, Hill and Tarai have the same level at 1.82 in 2001/02. In short, the landholders in Hill and Tarai used their land 82% more than the physical area of their arable land. in 2001/02.

Cropping intensity in the Mountain belt did not increase as much between 1991/92 and 2001/02. This may be due to the weather conditions obtaining in the mountainous areas where temporary crops cannot be raised all-year round, especially during winter. Unlike in Hill and Tarai ecological zones, cereals, vegetables, legumes and other temporary crops can be grown in any season especially in areas where there are irrigation facilities.

Growing of cereals

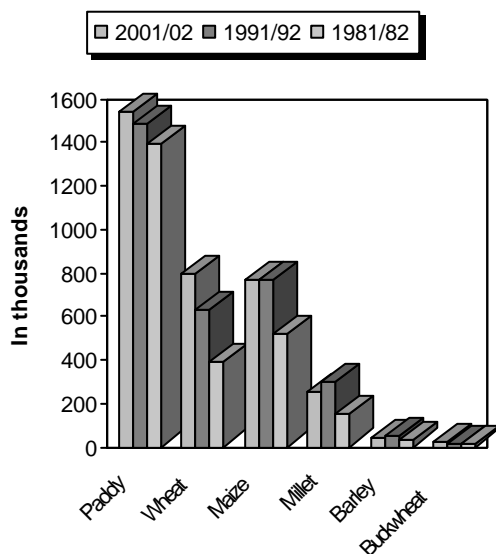
Paddy is still the most popular temporary crop being grown by farmers where 2.466 million holdings reported of having grown this cereal crop. This number represented 92.9% of the total holdings engaged in agriculture in Nepal in 2001/02. In 1991/92, paddy growers numbered 2,037.5 thousand out of a total holdings of 2,703.9 thousand, or 75.4% of the total. There was, therefore, an increase in the

number of holdings growing paddy. This is understandable since rice is a major staple food in this country.

While there was an increase in the number of holdings raising paddy the increase in the area sown was minimal at 4.28% only over the last census. This increase in area has slowed down when compared with the increase between 1981/82 and 1991/92, which was 6.25%.

On the other hand, the increase in the area planted to wheat and buckwheat is an indication that these two cereal crops are becoming important to Nepal's agriculture. The area of wheat has increased from 633 thousand hectares to 794 thousand hectares between 1991/92 and 2001/02, an increase of 25.3% while buckwheat increased from 16 thousand hectares to 21 thousand hectares equivalent to about 28% increase for the same period.

CHART 10
AREA SOWN TO CEREAL CROPS
IN HECTARES



For other cereals, however, it was observed that the area planted to millet

and barley had decreased. For millet, the decrease in area was sizeable from 302 thousand hectares to 250 thousand hectares, a decrease of about 17%. For Barley, the decrease in area sown between the two censuses was about 15%, from 46 thousand hectares in 1991/92 to 39 thousand hectares in 2001/02.

Because of the importance of paddy growing in Nepalese agriculture, the number and area of holdings growing paddy by region and by district are shown in TABLE 11.1.

Of the 1.544 million hectares planted to paddy, 1.117 million hectares or 72% were reported in Tarai, 353 thousand hectares in Hill and only 74 thousand hectares or 4.8% of the total, in the Mountain.

In fact, 80% of the total area of the holding in Tarai was devoted to the growing of paddy. Only a very small area is left in the growing of other crops considering that 86% of all arable land in Tarai had been devoted to paddy.

While more than 1 million holdings reported as having grown paddy in Hill the average paddy area per holding is only about one third of a hectare (0.348). The same pattern was observed in Mountain where the average area sown to paddy was a little higher than in Hill (0.36 ha.).

At the regional level, Central Tarai and Eastern Tarai regions cornered almost one-half of the total area sown to paddy (49%), which is even more than the total area planted to paddy in Hill and Mountain districts put altogether. This is how important these two regions are in attaining self-sufficiency in rice in Nepal.

Permanent crops

In the land use category, the area of land under permanent crops had increased from 29 thousand hectares in 1991/92 to 118 thousand hectares in 2001/02 (TABLE 6), an increase of 307% in a span of 10 years, or a yearly increase of almost 31%.

Of the total land area classified as land under permanent crops, only about 33 thousand hectares were reported to be in compact plantation of fruit trees while the rest were planted with tea (6.1 thousand hectares), thatch (68 thousand hectares), fodder trees (7.3 thousand hectares), and bamboo trees (6.3 thousand hectares). Some of these are forest products but apparently they are taken care of by the farmers as part of the holding.

Among the fruit trees in compact plantation, mango numbered more than 2 million trees that are productive and more than 400 thousand that are not yet of bearing age. These were planted in about 18 thousand hectares of land, an increase of more than 3 thousand hectares between 1991/92 and 2001/02.

The second important fruit trees in number are the banana plantations consisting of almost 2 million bearing, and another million non-bearing trees. Banana plantation increased in area between the two censuses by more than 1000 hectares. Both mango and banana trees also abound in backyards as indicated by the number of scattered trees which runs into millions, i.e. 1.6 million scattered mango trees and 3.3 million scattered banana trees.

Other permanent trees which are becoming popular as a plantation are: oranges, sweet orange and Junar as a

group. There has been a big increase in the number of bearing trees for these fruit trees, from 375 thousand only in 1991/92 to 1.665 million in 2001/02, an increase of more than 340%. The area planted to these 3 citrus varieties also increased from 2.44 thousand hectares to 3.94 thousand hectares for the same period. Scattered citrus trees also abound, from 850 thousand in 1991/92 to 1.3 million in 2001/02. Other fruit trees that are part of the daily diet of the Nepali and observed to have increased in number significantly are: apple, pineapple, plum, pear, guava, jackfruit, and papaya. (TABLE 15).

Cropping practices

Pure stand cropping both for temporary and permanent crops is commonly practiced in Nepal agriculture. In 1991/92 a total of 2.67 million holdings out of 2.704 million holdings reported a single crop being planted in each parcel per cropping season. This represented almost 99% of the holdings practicing pure stand cropping. Mixed cropping was practiced by 640 thousand holdings, representing 23.7%. In other words, not all the parcels of the holding are planted on a pure stand but usually mixed with other temporary crops especially vegetable gardening where several crops may be inter-planted or mixed in one planting season. Associated cropping was reported by only 2.6 thousand holdings in 1991/92. This is a mode of planting where a temporary crop is planted in-between permanent crops. When two temporary crops are planted in one parcel, this is usually called mixed cropping.

In 2001/02, the cropping practices were the same as in 1991/92. Holdings practicing pure stand cropping numbered 3.25 million out of 3.306 million holdings, which were about 98.4%, a little lower

than in 1991/92. On the other hand, those practicing mixed cropping proportionally decreased over 1991/92 from 23.7% to 20.2% in 2001/02. Holdings that planted associated crops also declined both in number and percentage-wise, from 2.6 thousand holdings in 1991/92 to only 2.1 thousand holdings in 2001/02. (TABLE 12)

It may be mentioned that while pure cropping stand is the normal practice, the farmers in Nepal practice double or triple cropping. This is evidenced by the increasing cropping intensity where a parcel is used as many times for planting crops as the growing cycle of the plant and the cropping season allow.

Improved farm practices and facilities

In general, Nepal agriculture is still far from being mechanized. The proportion of holdings using tractors and threshers was less than 10% of the total holdings in the country, and most of these are in Tarai where 18% of the holdings reported as having availed of tractors in their farming operations while about 15% holdings used threshers. The use of iron plough was not even very popular in Mountain and Hill but about 55% of the holdings in Tarai reported as having used it. This is understandable considering that in Mountain and Hill, most of the parcels of land are terraced and may not have a need for such equipment.

Power tillers are not also popular since only less than 1 per cent of the holdings in the three ecological belts reported of having used in their farming operations.

With respect to inputs utilized in the growing of selected crops, the use of improved seeds have not improved much between 1991/902 and 2001/02 for paddy,

wheat and sugarcane. It is in the growing of potato where an improvement in the proportion of holdings using improved seeds was noted, from 18% of the total holdings in 1991/92 to 27% in 2001/02. This improvement was observed in all the three ecological zones. For maize, there is a little increase in the use of improved seeds from 11.9% of the total holdings reporting in 1991/92 to 15.4% in 2001/02.

The use of pesticides was widely practiced by almost one-fourth of the holdings growing paddy at the national level but the proportion is much higher in Tarai where 34% used pesticides on paddy compared with 16.7% in Mountain and Hill.

Of the selected crops, three-fourths of the sugarcane growers applied chemical fertilizers at the national level but in Tarai where most of the sugarcane growers are found, about 88% reported of using chemical fertilizers.

What stood out in the farming practices of the holdings was the popular use of chemical or inorganic fertilizer in the growing of wheat compared with the growing of paddy. At the national level, more than half of the holdings used chemical fertilizers in growing wheat in 1991/92 compared with 49% of the holdings in 2001/02. In 2001/02, the number of holdings that used inorganic fertilizer in growing wheat had increased to 64% of the total holdings while only 20.5% used it on paddy. This pattern had been practiced in Tarai where there was a reduction in the proportion of holdings using inorganic fertilizer on paddy from 66% in 1991/92 to only 29% in 2001/02. But there was a big increase in the proportion of holding using inorganic fertilizer in growing wheat in Tarai, from 79% in 1991/02 to 93% in 2001/02.

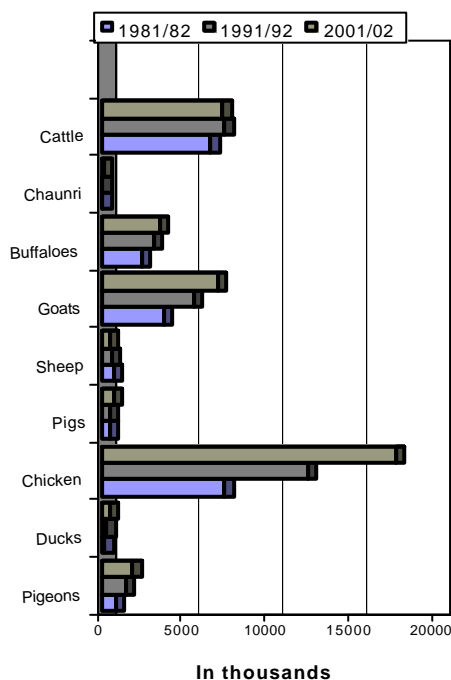
There had been increasing proportion also in the use of inorganic fertilizers in the growing of maize and potato between the two censuses, see TABLE 14.

Livestock

There were 3.02 million holdings or 89.7% of the total holdings in Nepal that raised livestock in 2001/02. The proportion of holdings raising livestock had decreased when compared with 91.3% of the total holdings that raised livestock in 1991/92.

Livestock in its generic sense, includes all farm animals and poultry.

CHART 11
LIVESTOCK POPULATION
1981/82-2001/02



Despite the decreasing proportions of holdings raising livestock, there was an

overall increase in the livestock population by 24.3% between 1991/92 and 2001/02, from 31.3 million to 38.8 million. The biggest increase was noted in the poultry population with a 41.6% increase, from 14 million to 19.9 million. However, these increases observed between 1981/82 and 1991/92, see TABLE 16.

Among the farm animals, Chaunri population registered the biggest increment of 62.8% between the two censuses, followed by pigs with 27.6% and goats, 25.7%. Except for Chaunri, the increases in the population of pigs and goats are much lower than the increases observed between 1981/82 and 1991/92. In other words, the increases in most of the farm animals and fowls were decelerating.

The sheep population has been decreasing during the past 20 years, from 677 thousand in 1981/82 to 602.8 thousand in 1991/92 and further down to 471.2 thousand in 2001/02. Despite the decreasing proportions of holdings raising livestock, there was an overall increase in the livestock population by 24.3% between 1991/92 and 2001/02, from 31.3 million to 38.8 million. The biggest increase was noted in the poultry population with a 41.6% increase, from 14 million to 19.9 million. However, these increases are very much below the increases observed between 1981/82 and 1991/92, see TABLE 16.

TABLE 17 shows the age-sex distribution of the three large livestock: cattle, chaunri and buffaloes. It also showed the milking animals belonging to these three livestock.

Dairy farming in Nepal is on a small scale involving only 631.3 thousand holdings raising milking cattle, 5,400 holdings

raising milking chaunri and 680.4 thousand holdings with milking buffaloes in 1991/92. The number of holdings with milking cows increased to 759.7 thousand in 2001/02, an increase of 20%, with a total population of 918.8 thousand milking cows. The average per reporting holding was 1.2 cows. The average in 1991/92 was 1.3 cows per holding.

There was a big increase in the number of holdings that reported having milking buffaloes between 1991/92 and 2001/02 from 680 thousand to 923 thousand, an increase of about 36% but the increase in the number of milking buffaloes was lower (32%). The number of milking buffaloes per reporting holding was 1.2 in 1991/92 but decreased to 1.1 milking buffaloes per reporting holding in 2001/02.

TABLES 17a, 17b and 17c show the breed by age and sex of selected livestock and poultry. For cattle, only 1% of the population are of improved breed while buffalo population registered a higher proportion of 1.8% improved breed. It may be significant to observe that proportionally, female cattle (1.8%) registered a higher proportion of improved breed compared with the male cattle with only 0.5%. It is also noted that the younger cattle have higher proportion of improved breed than the older ones. This trend holds true also for the buffalo population although the proportion is much higher at 1.8% of the total as improved breed.

Furthermore, the proportion of improved breed among milking animals for both cattle and buffaloes is much higher at 2.8% for milking cows and 2.4% for milking buffaloes.

In general, the proportion of improved breeds among the cattle and buffalo

populations is considered very low by international standards.

For the pig population, the proportion is a little bit higher at 3.49% of the total belong to improved breed. There is not much difference in the proportion of improved breeds according to age, see TABLE 17b.

For chicken, the proportion of improved breed among the chicken population is very higher. On the average, 1 out of 5 of the chicken population is an improved breed. By type of chicken, hens registered the highest proportion with improved breed at 29% followed by cocks, with about 25%. Chicks have the lowest proportion of improved breed at 12% only, see TABLE 17c.

Agricultural buildings

There were three types of non-residential buildings mostly found on the holding both in 1991/92 and 2001/02. These are buildings used for keeping livestock (farm animals), poultry house and buildings for storing agricultural produce, TABLE 19.

In 2001/02, about 61% of the large holdings (2 hectares and over) reported having non-residential building used in keeping livestock while only 33.8% among the small holdings (less than 0.5 hectare) have non-residential building for keeping livestock. For keeping poultry and for storing agricultural produce, only about 10% was reported by large holdings while only 3% among small holdings, TABLE 19.

Forestry and fisheries

Forestry and fisheries activities are carried out on the holding together with agricultural activities. In 2001/02, a total of 988.7 thousand holdings out of 2.65 million holdings reported as having forest

trees on their holding. This number is about 37% of the total, which is slightly lower than the proportion of holdings that had forest trees in 1991/92, which were about 40%. Forest trees for the purpose of the census include bamboo trees and other woody vegetation used for fuel, forage, protection and other purposes.

For the first time in the census of agriculture in Nepal, the area of compact plantation on forest trees as part of the holding was included. In 2001/02, there were 165.9 thousand holdings that reported with compact plantation on forest trees involving 27 thousand hectares. Most of these holdings belong to those with at least 0.5 hectare but less than 2 hectares in size but 41% of the area were found among the larger holdings of 2 hectares and above, see TABLE 18.

A total of 38.7 million forest trees were grown on the holding of which 20.5 million or 53% were in compact plantation. Among the size of holdings, 22.9 million forest trees were found in the medium-sized holdings (0.5 to < 2 hectares) which comprised 59.1% of the total forest trees. It is interesting to note, however, that proportionally, there were more holdings with forest trees among the small holdings than the large holdings in 2001./02, which was not the case in 1991/92. In 1991/92 the proportion of holdings with forest trees increased as the area increased, i.e. the small holdings reported only a proportion of 28% and the medium size holdings reported a proportion with forest trees of 46.5% while the large holdings reported 58% of the holdings growing forest trees. In 2001/02, the opposite was observed. The small holdings had reported a proportion of 87% with forest trees, the medium size holding, 57% and the large holdings, 14%.

For fisheries, there were only 22.2 thousand holdings with fishing activities on their holding involving an area of 5.7 thousand hectares. This area is more than doubled when compared with that of 1991/92, which was only 2.38 thousand hectares.

Agricultural credit

The proportion of holdings availing of agricultural credit to finance their farming operation has not increased much during the last ten years. In 1991/92, about 23% of the holdings availed of agricultural loans. In 2001/02, about 24% availed of agricultural loans, an increase of one percentage point in a span of 10 years.

Proportionally, more of the large holdings borrowed than the smaller holdings. This observation was true to the two censuses. Most of the sources of credit came from non-institutional or informal type of source like private lenders, relatives, and so on. However, if we examine the sources of credit by size of holding, the bulk of the small holdings borrowed from informal sources (71.6%) while only 32.4% of the larger holdings obtained loan from the informal source. More than two-thirds of the large holdings obtained their credit from institutional sources, TABLE 20.

Characteristics of holders

The holder is the person in the holding who exercises management control over the operations of the holding. Of the 3.4 million holdings in Nepal in 2001/02, 91.9% or 3,093 thousand holdings were operated by males and 8.1% or 271.5 thousand are females. The participation of the female as a holder in 2001/02 has improved percentage-wise (17.4%) when compared with previous census years. In 1981/82 the proportion of female holders

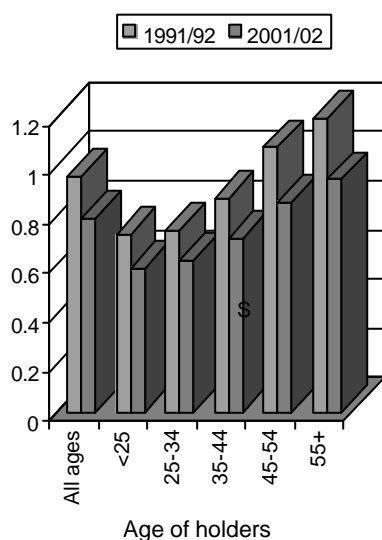
was 6.8% and in 1991/92, the proportion increased slightly to 6.9%.

Average size of holder's holding

The average size of the holding managed by the females, however, seemed to have decreased comparatively with the previous census. In 1991/92, the female's average size of the holding was 67.3% of that of the male's average holding size. In 2001/02, the percentage decreased to 65.4%. In other words, the overall decrease in the average size of the holding nationwide was not proportional to the decrease in the size of the holding managed by females.

Age of holder

CHART 12
AGE OF HOLDER BY SIZE OF HOLDING



There seems to be a positive correlation between the age of the holder and the average size of the holding he/she manages. TABLE 21 shows that: as the age group of the holders becomes older, the average size of the holding correspondingly increases. For instance,

holders below 25 years old reported an average holding size of 0.59 hectare. For those who are 25-34 years old, the average size was 0.62 hectare; 35-44 years old, 0.71 hectares and so on.

The modal age group among holders was 35-44 years old in 2001/02. This was also the modal age group in 1991/92. However, in 1981/82, the modal age group was 25-34. It is observed that the ages of the holders were getting older in the most recent census conducted where 78.1% were aged at least 35 years old compared with 74.6% ten years ago.

Holders as head of household

About 97.5% of the holders were head of the households, 0.23% were hired managers and the rest, members of the household.

Characteristics of the Holdings

Legal status

The census of 2001/02 showed that the holdings operated by a single family consisted of 97.2% of the total; about 2.8% jointly operated with other families and the rest, were managed with other kind of arrangements.

As the size of the holding increased, the proportion of single family operating the holding decreased and the joint family status correspondingly increased although the highest proportion reached only up to 7.7% of the total holdings, see TABLE 22.

The legal status of the holding with land and with no land did not seem to be different from each other where the single family status prevailed at 97.2% for holdings with land and 96.4% for holdings without land. Correspondingly the joint

family status was 2.8% for holdings with land and 3.3% for holdings without land.

Use of produce

More than three-fourths of the holdings used their produce for their own consumption in 2001/02 while a little more than one-fifth both sold and used their produce. Only 0.2% of the holdings sold all their produce. These holdings that sold all their produce were mostly holdings without land, TABLE 22.

Food sufficiency/insufficiency

In terms of sufficiency of agricultural and/or livestock produce to feed the household, TABLE 23 showed that almost 40% of the holdings reported that they are self-sufficient in food from their produce. However, for holding without land, only 6.5% of the total holding without land reported self-sufficiency in food.

Self-sufficiency in food is directly related to the size of the holding. As the size of the holding increases, self-sufficiency in food for the household correspondingly increases. For instance, holding with 5 hectares and over reported the highest proportion of households with sufficient produce to feed the household which registered at 89.3% of the total households under this group./ Holdings with less than .1 hectare reported the lowest proportion of self-sufficiency of only 4.6% of the total holdings with this size.

Among households with insufficient food supply, most of them reported 4 to 6 months as the duration of insufficiency but what is bothersome is the fact that more than one-third (34.5%) had insufficiency of food from their produce for at least 7 months to one year. In fact, for those

without land, almost four-fifths ((79%) had insufficiency for 10 to 12 months.

The manner of coping insufficiency of food among households had been augmented with income earned within the district (69%) and income coming from outside Nepal (13%). About 12% resorted to borrowing while 8.6% earned their income within Nepal outside of the district of their residence.

Soil type

The soil type is dominated by loam where more than 2 million holdings or 60% of the total holdings reported as having this type of soil, followed by sand with 1.5 million holdings or 44% of the total holdings reporting. The third ranking soil type reported by 1.3 million holdings or 39.4% is clay soil. Silt soil was reported by only 16% of the total holdings and clay loam, only 13%. It may be mentioned that a holding may report as many types of soil as there are in the holding, thus the total percentage of holdings exceeded more than 100%, if all types of soil were added. In terms of size of holding, there is no difference in the ranking of the soil types found, i.e. rank 1 is loam, rank 2 is sand and rank 3 is clay soil.

The area devoted to the different soil types followed also the same ranking as reported by the holdings but the percentage of importance is different, e.g. for loam 33.3% or 885 thousand hectares of the total area of holdings comprised it while 22.2% or 589 thousand hectares was reported for sandy soil and 20% or 532 thousand hectares, for clay soil, see TABLE 24.

Soil Color

Brown soil was the most common color reported by the holdings with about 63% of the holdings reporting, followed by black soil with 56% reporting. Red soil was reported by about one-fourth of the total holdings. Percentage-wise of the area involved, brown color occupied about 35% of the total area of the holdings followed closely by black soil with 31% while red soil comprised only 11% of the total area of holdings. By size of holdings, there was not much difference in the color of the soil.

Occurrence of natural calamities

An important information gathered during the 2001/02 census of agriculture is the number of holdings affected by natural calamities resulting in the non-cultivation of certain part of their holding.

During agricultural year 2001/02, a total of 156,883 land holdings suffered losses due to the occurrence of calamities that led to the non-cultivation of some 30,845.2 hectares of agricultural land. The number of holdings affected by either flooding or soil erosion was about 4.7% of the total holdings in the country and about 1.16% of the total area of holdings in Nepal, see TABLE 25.

More than 10 per cent of the holdings with at least 2 hectares were victims of these disasters although the area affected was proportionally lower (a little more than 1%) than the holdings under 0.1 hectare (3.01%). As the size of the holding becomes bigger, the area made uncultivable due to flood or erosion becomes also bigger such that holdings with at least 10 hectares reported an average affected area of about 1.7 hectares and holdings with 5 hectares to

less than 10 hectares reported an average of half a hectare (0.534) as the affected area but 15.4% of the total holdings under this holding size group suffered.

Farm population

The farm population is composed of all household members listed during the Population Census as having agriculture land holding and/or raised livestock or poultry. In 2001, the total farm population was 19,032,499 of whom 9,385,811 were males comprising about 49.3%. The sex ratio was 97 males per 100 females. There were more males in the ages 0 to 14 and 45 and above with the sex ratio of more than 100.

On the other hand, females dominated the ages 15 to 44 years old with a very low sex ratio (86.5) in the age group 25-34. This is the prime age group and the males in this age group may have left the farm thus the dominance of the female population, see TABLE 26.

The average size of the farm households in 2001 was 5.7 persons. Tarai exhibited the highest average size of 6 compared with only 5.3 and 5.4 for the Mountain and Hill, respectively.

About 46.6% of the total population were found in Tarai, 45.2% in Hill and only 8.25% in Mountain, see TABLE 27.

The most populated development region is Central region with 31.4% of the total farm population followed by Eastern region with 22.5%.

Among the eco-development regions, Central Tarai was the most populated consisting of 16.1% of the total farm population. This is approximately 3.1 million people, which is more in number

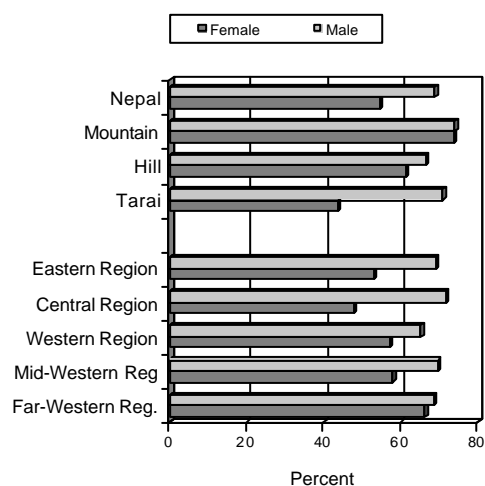
than the entire farm population of Mid-Western region or Far-Western region. In fact, the population of Eastern Tarai of 2.34 million was even higher than the population of Far-Western region of 2.06 million people.

Tarai belt reported the highest average household size of 6 ranging from 5.1 in Eastern Tarai to 6.9 in Far-Western Tarai. On the other hand, Mountain belt registered the lowest average household size of 5.3, ranging from 4.8 in Western Mountain to 5.7 in Far-Western Mountain.

Among the development regions, Far-Western region reported the highest average household size of 6.2. Eastern region reported the lowest with 5.3 persons per household, see TABLE 27.

The labour force participation rate of the farm population registered at 61.5% for both males and females in 2001. Labour force participation rate is the proportion of economically active farm population 10 years old and over to the total farm population, 10 years old and over. The participation rate of the males was 68.9%, which was much higher than the participation rate of the females.

CHART 13
LABOUR FORCE PARTICIPATION RATE
FARM POPULATION, 2001



Mountain farm population registered the highest participation rate of 74% where the male and the female participation rates were almost the same. In Tarai, the female participation rate was comparatively low at 43.6% compared with the 70.8% participation rate of the males.

Among the development regions, Central region reported the highest participation rate for males at 71.6% but it also reported the lowest participation rate of females at 47.9%, see TABLE 28.

Farm labour

Of the 3.364 million holdings, 66.2% did not hire any agricultural worker on their holding in 2001/02. In 1991/92, the percentage was less, which was 64.4%.

In 1991/92, 145 thousand holdings or approximately 5.3% of the total holdings had employed permanent workers of which 3.9 percentage points augmented their permanent employees by hiring occasional workers while 30.3% of the holdings or 830.2 thousand employed occasional workers only. In 2001/02 only 2.7% of the total, or about 92 thousand holdings employed permanent employees with 2 percentage points of this hired occasional workers. However, the proportion of holdings that had employed occasional workers increased to 31.1% or 1.046 million holdings in 2001/02.

The number of permanent workers hired in 1991/92 was 301.7 thousand and the number had increased to 317.8 thousand in 2001/02, an increase of 5.3%. Most of the increases in the number of permanent employees were reported in the small and medium size holdings. However, in the large holdings, a reduction of permanent employees was observed from 164.7

thousand in 1991/92 to 151.1 thousand in 2001/02.

It is remarkable to observe that there was a big increase in the number of females who were hired as permanent workers in the holdings. The biggest increase was noted in the large holdings from a proportion of only 22.2% in 1991/92 to 44.7% in 2001/02, see TABLE 29.

CHART 14
PERMANENT WORKERS BY SEX
1991/92-2001/02

