

PAST PRODUCTION AND FUTURE PRODUCTION POTENTIAL OF POTATO CROP IN THE PUNJAB

**Khurshid Ali Qureshi, Asghar Ali Khan, M. Aslam Chaudhry,
Buland Akhtar & M. Tariq Qureshi**
University of Agriculture, Faisalabad

The study regarding the supply projections of potato crop in the Punjab predicted that the area under potato is projected to increase from 96,587 ha in 1995-96 to 1,48,821 ha in the year 2000-01 and to 2,29,143 ha in 2005-06. Production may increase from 630.87 thousand tonnes in 1995-96 to 997.1 thousand tonnes in 2000-01 and to 1359.2 thousand tonnes in 2005-06. While, the average yield is likely to be 7567 kg ha⁻¹ in 1995-96 and 5,932 kg ha⁻¹ in the year 2005-06.

INTRODUCTION

The long term production projections of agricultural commodities are of great importance as these help in making smooth adjustments of the supply and demand. Projections prove very helpful in formulating government policies with regard to production, consumption, procurement programmes and prices, marketing, storage, domestic and foreign trade etc. of agricultural commodities. Projections also help in the optimum allocation of scarce resources in various sectors of economy. The supply of and demand for agricultural commodities is more or less inelastic and thereby, fluctuation in prices is more explosive, hence, the importance of projections for such commodities becomes imperative.

Potato is an important crop. In view of the economic importance of this crop, it is necessary to investigate into its future production potential in the area of Punjab. Future production projections are made on the basis of trends in past production. The past trends furnished guidelines for projection of production potential of this crop over the period 1991-92 to 2005-06.

MATERIALS AND METHODS

This study is based on the secondary data which were collected from various publications of the Government of Pakistan for the year 1974-75 to 1991-92. The approach followed for this study explicitly took into account the relationship between the variables such as yield ha⁻¹, area under cultivation of the crop concerned and the year of observation. An analysis of the past behaviour in acre⁻¹ yield and overtime hectareage under potato crop suggested a linear trend. It was, therefore, considered appropriate to predict the expected future trends in the production using a linear production function of the following types:

$$\text{Ln } Y = a + bX$$

The production projections from 1991-92 upto 2005-06 were obtained by the above equation. Projected values were calculated at 95% confidence interval.

RESULTS AND DISCUSSION

The supply projections of potato crop in the Punjab province have been made

keeping in view the variations in area under cultivation and average yield ha^{-1} of potato on the basis of last 15 years i.e. 1976-77 to 1990-91 (Anonymous, 1992). The supply of and demand for the agricultural commodities tend to remain more or less inelastic and, therefore, fluctuation of prices becomes more explosive under the pressure of inelastic demand. Production projections are, therefore, important for these commodities to achieve stabilisation in production and prices, the swings in the production and price of potato and onion crops in Pakistan are too well known (Anonymous, 1991).

Very little effort seems to have been made regarding the analysis of the behaviour of the past production and reflecting future production potential of potato crop in the Punjab. The results of this study have been found to be in line with the findings of Qureshi (1971).

Table 1. Hectareage projection of potato for Punjab

| Year | W.O.C.I.* (ha) | Min.** (ha) | Max** (ha) |
|------|-------------------|----------------|---------------|
| 1992 | 68371 | 57572 | 81186 |
| 1993 | 74541 | 61722 | 90021 |
| 1994 | 81267 | 66145 | 99837 |
| 1995 | 88592 | 70863 | 110768 |
| 1996 | 96587 | 75902 | 122921 |
| 1997 | 105303 | 81428 | 136421 |
| 1998 | 114806 | 87038 | 151433 |
| 1999 | 125166 | 93190 | 168114 |
| 2000 | 136462 | 99757 | 186651 |
| 2001 | 148821 | 106799 | 207254 |
| 2002 | 162202 | 114314 | 230130 |
| 2003 | 176822 | 122357 | 255557 |
| 2004 | 192779 | 130954 | 283821 |
| 2005 | 210176 | 140154 | 315180 |
| 2006 | 229143 | 150001 | 350074 |

*Without confidence interval; **With confidence interval.

Production projections of a specific crop for a particular year are mainly the function of average yield ha^{-1} and area under cultivation. The projected results of potato crop are discussed as follows:

a. Area: As regards area, it was projected by using the following equation:

$$\ln Y = -161 + 0.0864 X$$

Table 2. Yield ha^{-1} projections for Punjab

| Year | W.O.C.I.* (kg) | Min.** (kg) | Max** (kg) |
|------|-------------------|----------------|---------------|
| 1992 | 9339 | 7472 | 9309 |
| 1993 | 8140 | 7214 | 9183 |
| 1994 | 7943 | 6963 | 9062 |
| 1995 | 7753 | 6721 | 8944 |
| 1996 | 7567 | 6485 | 8828 |
| 1997 | 7384 | 6258 | 8715 |
| 1998 | 7207 | 6037 | 8603 |
| 1999 | 7034 | 5824 | 8495 |
| 2000 | 6865 | 5619 | 8387 |
| 2001 | 6700 | 5419 | 8282 |
| 2002 | 6538 | 5228 | 8179 |
| 2003 | 6382 | 5043 | 8077 |
| 2004 | 6228 | 4864 | 7976 |
| 2005 | 6079 | 4691 | 7877 |
| 2006 | 5932 | 4524 | 7780 |

*Without confidence interval; **With confidence interval.

Hectareage under potato cultivation is expected to increase by 61.33% from 1994-95 to year 2005-06 with an average annual growth rate of 5.11%. Further, an increase of 62% in hectareage is projected from 1991-92 to 2005-06 with an annual growth rate of 4.11% (Table 1).

b. **Yield:** With respect to the yield ha⁻¹, it was projected by using the equation:

$$\ln Y = 54.5 - 0.0243 X$$

Based on past trends, a decreasing trend in the yield ha⁻¹ of potato is likely to persist. The projected yield ha⁻¹ has indicated a decrease of 30.69% from 1994-95 to 2005-06 with a negative annual growth rate of 2.56%. It is proceeded by an expected decrease of 40.57% with a negative annual growth rate of 2.70% from 1991-92 to 2005-06 (Table 2).

Table 3. Production projections of potato for Punjab

| Year | W.O.C.I.* (000 tonnes) | Min.** (000 tonnes) | Max** (000 tonnes) |
|------|---------------------------|------------------------|-----------------------|
| 1992 | 570.145 | 430.177 | 755.760 |
| 1993 | 606.763 | 445.262 | 826.662 |
| 1994 | 645.503 | 460.567 | 904.722 |
| 1995 | 686.853 | 476.270 | 990.708 |
| 1996 | 630.873 | 490.175 | 1088.834 |
| 1997 | 777.557 | 508.675 | 1188.499 |
| 1998 | 827.406 | 525.448 | 1302.778 |
| 1999 | 880.417 | 542.738 | 1428.128 |
| 2000 | 936.811 | 560.534 | 1565.441 |
| 2001 | 997.100 | 578.743 | 1716.477 |
| 2002 | 1060.476 | 597.633 | 1882.233 |
| 2003 | 1128.476 | 617.046 | 2064.133 |
| 2004 | 1200.627 | 636.960 | 2263.765 |
| 2005 | 1277.659 | 657.462 | 2482.672 |
| 2006 | 1359.276 | 678.600 | 2723.657 |

*Without confidence interval; **With confidence interval.

c. **Production:** Production has been projected by multiplying expected future area with the respective future yield ha⁻¹. The projected results indicate that potato production is likely to increase from 686.853 thousand tonnes in 1994-95 to 1935.276

thousand tonnes in 2005-06 with an increase of 49.46% in production from 1994-95 to 2005-06. The annual growth rate thus comes to be 4.12%. Similarly, the expected increase in the production of potato will be 74.94% from 1991-92 to 2005-06 with an annual growth rate of 4.99% (Table 3). Based on historic trends, acreage under potato crop is projected to put up an increasing production trend in the future years. However, the yield ha⁻¹ is projected to follow the past decreasing trend during the future years.

The expected increase in potato hectareage is likely to come from the reclaimed lands, and a decrease in area under fodder, coarse rice and sugarcane crops as is evinced by the past trends of these crops. Low quality seeds, poor crop management practices and less fertile lands are the main reasons for a declining trend in yield ha⁻¹ of potato crop. Expected future increase in production of potato will, therefore, most likely result entirely from expansion in hectareage.

REFERENCES

- Anonymous. 1991-92. Economic Survey. Economic Advisor's Wing (Finance Div.), Govt. of Pakistan, Islamabad.
- Anonymous. 1991. Agricultural Statistics of Pakistan. Ministry of Food, Agri. and Cooperatives. Food and Agri. Div. (Economic Wing), Govt. of Pakistan, Islamabad.
- Qureshi, M.A. 1971. Past production and future production potential of potato crop in West Pakistan. M.Sc. Hons. (Agri. Economics) Thesis, Univ. of Agri., Faisalabad.
- Tariq, A.H., M.M. Mahmood and R.J.A. Edwards. 1991 a. Potato in the Punjab Plains. PSPDP/PARC, Islamabad.
- Urs-Zanoni. 1991. Potato Atlas and Compendium of Pakistan's Potato Production by Ecological Zones. Pak. Agri. Res. Council, Islamabad.