

## **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<sup>-1</sup> in 1995-96 and 5,932 kg ha<sup>-1</sup> 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<sup>-1</sup>, area under cultivation of the crop concerned and the year of observation. An analysis of the past behaviour in acre<sup>-1</sup> 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<sup>-1</sup> 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<sup>-1</sup> 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:

$$\text{Ln } Y = -161 + 0.0864 X$$

**Table 2. Yield ha<sup>-1</sup> 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<sup>-1</sup>, it was projected by using the equation:

$$\text{Ln } Y = 54.5 - 0.0243 X$$

Based on past trends, a decreasing trend in the yield ha<sup>-1</sup> of potato is likely to persist. The projected yield ha<sup>-1</sup> 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<sup>-1</sup>. 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<sup>-1</sup> 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<sup>-1</sup> 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.