

Total Factor Productivity growth of onion :

Total Factor Productivity growth (TFT): Maharashtra and Karnataka are the two major onion states and hence for the examination of TFT of onion these two states were selected for analysis.

Growth in input-use : Analysis of growth trend in the use of inputs in onion in Maharashtra from 1996-97 to 2015-16 revealed that Chemical fertilizer use by farmers during last 20 years grown, significantly in onion production in Maharashtra at 6.3 % per annum Irrigation and insecticide use has also increased substantially by 8.61 and 15.15 per cent, respectively. Human Labour use decreased marginally, while use of animal labour decreased substantially. In Karnataka no significant increase in Chemical fertilizer use during last 20 years onion in Karnataka was observed, while uses of human labour and animal labour decreased substantially.

Growth in input prices : In Maharashtra, growth rates of input prices are very high and increased significantly over last 20 years particularly human (11.80 %) and animal labour (12.79 %). While output prices had a growth rate of only about 7 % which is less than growth of most of input prices. During same period yield has grown moderately at 3.34 %. In Karnataka too the growth rates of input prices were also higher and significant particularly for human (19.16 %) and animal labour (15.7 %) inputs. Price of onion during same period has grown much higher at 15.33 %/ annum.

Growth in costs, returns and margin in onion production in India : In Maharashtra, during 1999-2000 operational costs was Rs 13,630/ha, while total costs (C2) was Rs 16,281/ha. The costs over period has increased and during 2015-16, the operational costs increased to Rs 42,718/ha while the total costs (C2) increased to Rs 69525/ha. The gross return of onion during the same period increased from Rs 17942/ha to Rs 1,18,327/ha. As regards profitability it could be seen from the figure that some years in Maharashtra the cost of production of onion is higher than the farm gate price indicating the loss in production of onion. Similar is the case in Karnataka too.

Annul Indices of total input (TII), total output (TOI) and total factor productivity (TFT): The Tornqvist Divisia index were worked out separately for two states viz. Maharashtra and Karnataka states by using the data on cost of cultivation published by the Directorate of Economics and Statistics (DES), Department of Agriculture and Cooperation, Government of India. In Maharashtra, analysis for the period from 1996-97 to 2017-18 revealed that the annual average indices for TII, TOI and TFT are 112.2, 101.0 and 112.53, respectively for Maharashtra and these values of TII, TOI and TFP for Karnataka state are 112.93, 116.03 and 101.16, respectively. This higher annual average TFT in Maharashtra than Karnataka state is attributed to technological, extension and other programmes than the growth of inputs.

Spatial and Temporal growth in area, production and productivity of onion : Growth of 8.1 % from 1990-91 to 2017-18 was achieved, mostly on account of area-led growth (6.1%). Higher rate of growth in production (14.7%) was attained during 2001-02 to 2010-11. In all three decades, it was area-led growth which contributed most to the increase in onion production. Hence, there is a very good potential to increase production through increase in productivity.

State-wise analysis revealed that onion area had increased by 8.8 lakh ha (>200%) from 1996-97 to 2017-18 and nearly 46 % of this increase had come from Maharashtra alone, followed by MP (11%), Karnataka (11.8%) and Rajasthan (7.3%). Maharashtra's share of onion area has increased from 20.5 % during P-I (1990-91 to 2000-01) to 38.0 % during P-II (2001-02 to 2010-11), while in MP and Rajasthan, the area during same period increased from 5.6 to 9.3 % and 5.2 to 6.6 % respectively.

In Karnataka, the share in national onion area decreased from 21.8 % during P-I to 15 % during P-III (2011-12 to 2017-18). Other states whose share decreased during these two periods were

Gujarat, AP, Telangana and Bihar. Onion production has increased by 56.5 lakh MT from 1996-97 to 2017-18 and nearly 32.9 % of this comes from Maharashtra alone, followed by MP (17.4%), Karnataka (12.5%) and Rajasthan (7.1%). In Maharashtra, onion production has increased from 22.1 % during P-I to 30.7 % during P-II, while in MP and Rajasthan, production during same period has increased from 6.9 to 15.2 % and 3.4 to 6.3 % respectively. In Gujarat, onion production has decreased from 19.8 % during P-I to 6.45 % during P-III. Other states whose share decreased during these two periods were AP and Telangana.

Onion production has increased by 56.53 lakh MT from 1996-97 to 2017-18 (Table 9) and nearly 32.87 % of this increase comes from Maharashtra alone, followed by MP (17.35 %), Karnataka (12.49 %) and Rajasthan (7.07 %). In Maharashtra, onion production share has increased from 22.10 % during P-I to 30.71 % during P-II, while MP and Rajasthan production during same period has increased from 6.9 % to 15.2 % and 3.4 to 6.3 percent, respectively. In Gujarat, the share in the national production is decreased from 19.8 % during P-I to 6.45 % during P-III. Other states whose share decrease during these two periods were combined states of AP+ Telangana

Growth rates: Onion area, production and productivity in India is grown at a compound growth rate of 6.70, 9.92 and 3.29 % per annum, respectively. This indicates that the production in India from 1996-97 to 2017-18 was led by growth in area than productivity. Further, due to advancement technologies, both in terms of availability of HYV/hybrids and improvement in production and protection technologies, it is expected that the future increase in production would come from productivity-led growth. The major states which achieved significant and higher growth in terms of production were Bihar (17.31 %), Assam (15.73 %), MP (14.80 %), Haryana (12.83 %), Rajasthan (11.75 %), Maharashtra (11.20 %) and Karnataka (10.52 %). It is to be noted here that other than Maharashtra and Karnataka which are traditionally onion growing areas, the other states had achieved higher growth in onion which is a welcome development.

Tomato

Spatial and Temporal growth in area, production and productivity of tomato: Increase in production in tomato is area-lead contributed to the total production during 1990-91 to 2017-18. Tomato area increased by 4.1 lakh ha (86%) from 2001-02 to 2017-18. AP, Chhattisgarh, Gujarat, Haryana and Karnataka states are the major contributors, together accounting for 35%. Odisha, AP, Bihar, WB, Karnataka, Maharashtra are the major states accounting for 67 % of area during 2000-01 and now it is about 45 % of total area during 2017-18. Major gainers are Chhattisgarh, Gujarat and Haryana states, while the area decreased in Bihar, Karnataka and Maharashtra states. Unlike onion, tomato is fast expanding in non-traditional areas while traditional growing states are also growing at the faster rate.

Production Expansion: Tomato production in India has increased from triennium average of 6.89 mil MT in 2001-02 to 19.99 mil MT during 2017-18 suggesting more than 300 % increase in production. The two contrasting changes occurred during these periods are highlighted. Some states increased their share in the total national production while many states though increased in absolute quantity, the share during the said periods decreased. For instance, the states like Madhya Pradesh (increase from 0.31 % to 13.53 %), Andhra Pradesh –combined (11.93 % to 19.0 % and Gujarat (from 4.42 to 6.75 %) has shown good increase in their shares. While traditionally tomato growing states like Karnataka (decreased from 15.12 % to 10.68 %), Maharashtra (from 14.10 % to 4.71 %), Orissa (from 16.11 % to 6.56 %) and West Bengal (from 9.53 % to 6.28 %) have shown decline in their share in the national tomato production. Thus, it is important that many other states are catching up and this diversifying into other states is a good development as it not only help the farmers in these states to get advantages of high income earning crops but also helps in better distribution of tomatoes in the many states and thus reducing the transaction costs.

Growth of tomato: Analysis of growth rates of area, production and productivity of tomato in India from 2001-02 to 2017-18 periods revealed that the growth rate were 3.9, 7.36 and 3.36 percent, respectively. Again as in case onion crop, this pattern of growth suggests that the production growth achieved in India is more of an area led growth though the productivity led growth was also contributed significantly to the production. The major states which had shown significant growth in production were Chhattisgarh (12.21 %), Gujarat (10.62 %) and Andhra Pradesh (8.18 %). It is to be noted here that the major states like Maharashtra (0.31 %), Karnataka (5.23 %) and Orissa (1.18 %) has achieved less than national growth rate. In fact Maharashtra has achieved negative growth in terms of productivity which is undesired developments and efforts need to be taken to examine this trend in Maharashtra.