

S_U_M_M_A_R_Y

The present study, "Growth Trend of Area, Production and Productivity of oilseed crops in Uttar Pradesh - An econometric study", was conducted during the year 1980-81 and 1981-82 with the main objective of studying the trend of growth in area, production and average-yield of major oilseed crops in five agro-economic regions of Uttar Pradesh. It also aimed at studying the relative contributions of area, and yield towards the growth in major oilseed production during Pre and Post High Yielding Varieties Programme Periods in different regions of Uttar Pradesh. The constraints responsible for slow growth in acreage and yield of oilseeds were also examined.

The methodology adopted was the time-region analysis of area, production and average-yield of five major crops, viz., til, groundnut, rapeseed-mustard, linseed and castor over the past thirty years beginning from 1950-51 to 1979-80. The compound growth rates based on log linear function were worked out to measure the growth in area, production and yield of these oilseed crops during Pre and Post-High Yielding Varieties Programme Periods and also during the entire period for five regions of the state. Yield differences among different regions during these two sub-periods were analysed with the help of analysis of variance technique. The relative contributions of area and yield towards growth in major oilseeds production during Pre and Post High Yielding Varieties Programme Periods

were obtained using multiplicative model.

The study is based on the secondary data of area, production and average-yield of major oilseed crops grown in five agro-economic regions viz; Western, Central, Bundelkhand, Eastern and Hill of Uttar Pradesh, which were made available from various bulletins of Directorate of Agriculture, U.P., Lucknow, Fertilizer Statistics and like others.

A critical analysis of the agro-economic features of the state showed that Uttar Pradesh being the fourth largest state in terms of area, stood first in population in the country. The state has been divided into five well defined geo-physical and agro-economic regions for resources development. There is a marked variation in the natural features and economic development of these regions.

Downward trends in area, production and average-yields of major oilseed crops were observed during Post-High Yielding Varieties Period but for rapeseed-mustard whose acreage and yield growth in the later period showed significant growth in the production. Til acreage showed continuous declining trend in Bundelkhand Region as well as in the state. Acreage declined more frequently during post period as compared to pre-period in all the regions. Groundnut is another Kharif oilseed crop which is used for edible oil as well as for nut purposes. Its acreage too, declined more frequently in the post period in the state and regions although overall average increase from 1952-53 to 1977-78 was observed in it. Western and Central regions of

the state accounted for more than 95 per cent acreage under groundnut. Eastern Region only showed continuous increasing trend. Rapeseed-mustard acreage continuously increased in the state during 1952-53 to 1977-78. It showed fluctuating trend in all the regions except Central and Eastern Regions. A sharp increase of 118.82 and 85.19 per cent in acreage was observed in Western and Central Regions after 1967-68. Linseed is a oilseed crop of more industrial and less domestic uses. Its acreage increased in the state continuously upto 1962-63 and there after a steep fall was noticed during 1967-68. The maximum increase of 29.35 per cent in it was obtained during 1972-73 over 1967-68. Bundelkhand and Eastern Regions shared the maximum acreage under them. Its acreage reduced in all the regions but for Western Region during 1967-68. Castor acreage showed continuous declining trend in the state, which was more frequent during post period. Bundelkhand Region shared more than 67 per cent acreage under the crop during 1952-53 and its acreage although decreased with time even than its share increased more than 75 per cent during 1977-78. Acreage under total oilseeds increased to 7.77 lakh hectares during 1977-78 from 3.88 lakh hectares during 1952-53, registering thereby an increase of more than 100 per cent during the above period. Western, Bundelkhand and Central Regions contributed more than 77 per cent to the state acreage.

Growth in acreage under major oilseed crops showed negative rates during post-period for til, groundnut and castor crops and positive for rapeseed-mustard and linseed for the entire state. All the regions, but for Western Region, showed negative growth rates for til and castor during post-period. Western and Central Regions showed negative rates for groundnut during later period. Positive and significant growth rates for rapeseed-mustard were obtained for all the regions, but for Bundelkhand region during post-period. Maximum significant growth rate was witnessed for Western Region. Eastern and Hill Regions obtained negative growth rates during post-period for castor.

Production for all the oilseed crops witnessed a downward declining trend during post-period, but for rapeseed-mustard in the state. Sharp decline was observed in later period as compared to Pre-High Yielding Varieties Programme Period. Til production came down from 0.18 lakh tonnes during 1952-53 to 0.06 lakh tonnes during 1977-78 in the state with an annual rate of growth of -2.06 per cent. A continuous declining trend was observed in the state for this crop. Production of groundnut increased upto 1967-68 after which a continuous fall was obtained in the state as well as in most of the regions. An increasing trend in the rapeseed-mustard production was witnessed in the state. Maximum production increase was obtained after 1967-68, which was shared exclusively by Western Region. Hill Region, with more than 13 per cent share to the state production during 1952-53,

showed declining trend after 1967-68. No significant increase in linseed production was observed during the entire period of 30 years in the state and its average production remained stagnant at 0.21 lakh metric tonnes with some ups and downs. Bundelkhand and Eastern Regions shared more than 94 per cent of the state production during 1952-53. Fluctuating trend in its production was observed in all the regions. Castor production in the state showed downward trend which was more penetrating after post-period. Same response was given by different regions. Bundelkhand Region increased its share in the state production to more than 75 per cent during 1977-78 from 69 per cent during 1952-53. Thus, total oilseed production increased to 3.79 lakh M.tonnes during 1977-78 from 2.17 lakh M.tonnes during 1952-53 in the state. Maximum increase of about 40.71 per cent was recorded during 1962-63 over 1957-58. Maximum regional increase was shared by Western Region during 1972-73. Growth in total oilseed production obtained during pre-period was comparatively more than that of post-period. Significant growth was noticed for both the periods. Higher production rate in rapeseed-mustard growth was recorded during post-period for the state and Western and Central Regions. Linseed production also showed higher growth rate during post-period in the state as well as in Western, Central and Bundelkhand Regions. Production growth declined in til, groundnut and castor crops at higher rates during later period in the state.

Average-yields of til, groundnut and linseed continuously declined whereas the yield of rapeseed-mustard fluctuated in the state. Castor yield remained stagnant during the entire period in the state. Yield declined more sharply during post-period as compared to pre-period in til, groundnut and linseed crops. Rapeseed-mustard yield improved in Western, Central and Hill Regions whereas it deteriorated in Bundelkhand Region during post-period.

Yield differences were observed for total oilseeds in all the regions but for Hill Region after the adoption of High Yielding Varieties Programme in the state. Til yield declined significantly during post-period in all the regions of the state which was maximum in Western Region. Groundnut yield too declined significantly during post-period. Maximum decline of 3.91 q./ha. was shown in the Hill Region. Yield of rapeseed-mustard improved during post-period in Western, Central and Hill Regions of the state. Significant increase of 126 kg/ha. was obtained in Western Region. Linseed yield also declined during post-period in all the regions of the state. Significant variations in yield were shown by different regions indicating wide disparities in them. Individual years over the state as whole also showed highly significant differences in yield owing to broad variation in climate from year to year.

Relative contributions of area and yield for the change in the level of oilseeds output was also studied for pre and Post-High Yielding Varieties Programme Periods. Til output

declined during pre-period which was contributed by more than 93 and 7 per cent decline in acreage and yield respectively in the state. Decline in yield contributed more in post-period as compared to pre-period for output decline in different regions as well as in the state. Growth in groundnut output declined during post-period which was contributed by decline in acreage and steep fall in yield in the state. Yield decline mainly contributed for the output decline in almost all the regions of the state. Contributions of yield in the growth of rapeseed-mustard production deteriorated in all the regions, but for, Bundelkhand and Eastern Regions during post-period. Yield contributions improved during post-period for linseed output growth in regions as well as in the state. Acreage increase mainly contributed for growth in linseed production in all the regions, but for Eastern and Hill Regions, during post-period. Castor output declined mainly due to decline in acreage during pre-period, but sharp decline in yield also added to output decline in post-period. More than 50 per cent decline in Western & Eastern Regions were explained by yield during this period.

An examination of constraints responsible for slow or no growth in oilseeds production in different regions of Uttar Pradesh was made. The analysis revealed that there were numerous physical, technological, economic and institutional constraints responsible for slow or no growth in area and yield rates of oilseeds. The most important among these is the lack of high

yielding varieties suitable for dryland conditions for major oilseed crops. If, it is made possible than it can help in boosting oilseeds production in Bundelkhand Region where irrigation facilities are inadequate. Short duration varieties suitable for mixed cropping are also needed to help small farmers, who generally prefer to grow oilseeds with other cereal crops. Generally farmers find it difficult to get good quality seeds at the time of sowing and unavailability of which causes poor seed germination. Adequate application of fertilizers to oilseed crops is also needed to boost its production. It can be achieved by knowledge of proper agronomical practices by the growers. Risk of crop failure due to vagaries of monsoon rains, in Eastern and Bundelkhand Regions in particular, causes damage to seed germination at the time of sowing and low test-weight at the pre-harvesting stage. Failure of winter rains in rainfed areas result in poor yield of oilseeds. Pests and diseases attack, as and when occurred, intensify the anxiety of the farmer in harvesting a good crop. Pests and diseases can be controlled but with limited financial resources a poor farmer can not afford its cost and leave the crop at nature's will. Resistant varieties are needed to over power this natural cause.

Knowledge of post harvest technology is another most important constraint in boosting oilseeds production. It is utmost important to know when a particular crop should be harvested ? It has been reported that percentage of oil

increases to a fair quantity when the oilseeds crushed are properly dried. On the other hand over maturity of the crop can prove harmful for the grower.

Formation of an institutional mechanism for integrating production, processing and marketing of oilseeds is the need of present era. Only credit facilities can not serve the purpose. This institution should be solely made responsible for the supply of essential inputs to the oilseed growers in the region and it should look after the crop development at each period. Whatever expert guidance is required must be provided by the expert team of this institution. They should procure the oilseeds from the growers field and should pay to the grower its reasonable price. Thus formation of such a machinery in the state save the oilseed growers from the clutches of the middle man and can boost oilseed cultivation in different regions of the state. A Saurashtra Region (Gujarat State) type of organization can serve some guidelines in this field.

It may, thus, be concluded that the present situation of oilseeds growth, both in acreage and yield, calls for a radical change in context of national policies for restructuring the oilseeds and vegetable oil sub-sector. More irrigational facilities should be extended in dry areas and use of fertilizers should also be made popular to get good yield. All efforts should be employed to get rid over major constraints in oilseeds production. In the light of these guidelines, it may be expected that yields of oilseeds would improve in future.

B I B L I O G R A P H Y

1. Alagh, Y.K. and Sharma, P.S. 1980. Growth of crop production: 1960-61 to 1978-79 - Is It Decelerating ? Indian Journal Agril.Econ. XXXV(2): 104-105.
2. Batra, M.M. 1974. Recent trends in oilseeds Price Policy for oilseeds and vegetable oils. Agril.Situation in India.
3. Bharambe, D.T. 1979. Agricultural Production Trend and its components in Marathawada Region of Maharashtra State. J.Indian Society of Agril.Statistics XXXI(3): 99.
4. Balakrishnan, R. and Bokil, S.D. 1975. Trend of Production of Foodgrains in India. J.Indian Society of Agril. Statistics XXVII(2) : 97-98.
5. Bali, Y.N. 1968. Assessment of the relative contribution of factors leading to decline of sugarcane area in U.P. during 1966-67. J.Indian Society of Agril.Statistics XX (1) : 86.
6. Bhatia, M.S. and Sinha, R.C. 1975. Growth rates and relative contribution of different components towards total foodgrain production in U.P. Agril.Situation in India. XXX(9) : 629-631.
7. Blyn, George, 1967. Measurement of growth rates in Agriculture. Indian J.Agril.Econ. XXII(1) : 25-36.
8. Chadha, R.S. 1967. Growth rates in Indian Agriculture. Agril. Situation in India. XXI (10): 841-848.
9. Chatterji, A. 1966. A study of Agricultural growth rates during 1950-63 in India. Indian J.Agril.Econ. XXI(4): 192-194.
10. Chaudhuri, M. 1981. Is the rate of growth of Indian Agriculture Diminishing. Econ. & Pol.Weekly, XVI.
11. Chatterji, N.P. 1963. Some aspects of marketing of oilseeds and their products in India. Indian Oilseeds J. VII (3) : 179-183.
12. Dharam Narain, 1977. Growth of productivity in Indian Agriculture. Indian J.Agril.Econ. XXXII(1): 1-44.
13. Daya Krishna, 1965. Vanaspati Industry in India. Agril. Situation in India. XX(8): 663-666.
14. Daya Krishna, 1965. Oilseeds economy of India. Agril. Situation in India. XX(9) : 735-739.
15. Dandekar, V.M. 1980. Introduction to seminar on data base and methodology for the study of growth rates in Agriculture. Indian J.Agril.Econ. XXXV(2): 1-12.

16. Dey, A.K. 1975. Growth rates in agriculture and industry. Econ. & Political Weekly, X (25 & 26).
17. Deshpande, R.S., Rao, V.M. and Nadkarni, M.V. 1980. Measurement of growth and fluctuations in crop output- an approach based on the concept of non-systematic component. Indian J. Agril. Econ. XXXV(2): 21-30.
18. Daroga Singh. 1980. Data base in Agriculture. Indian J. Agril. Econ. XXXV(2): 119-126.
19. Daroga Singh. 1981. Imbalances in agricultural growth (Presidential address). Indian J. Agril. Econ. XXXVI(1):
20. Dayal, R. 1966. Agricultural growth rates and their components. Indian J. Agril. Econ. XXI(4): 227-228.
21. Gopinath, D.M. & Karasimhayya, G. & Gupta, T.B.R.N. 1972. Growth trends in area, production and productivity of F.V.C. Tobacco in A.P. Indian J. Agril. Econ. XXVII.
22. Kahlon, A.S. and Mehta, P. 1972. Land use pattern and acreage growth rates in Gurudaspur district of Punjab. Punjab Agril. University, J. of Research. IX(2): 361-366.
23. Kaul, J.L. and Sondhi, R.K. 1971. Growth of agriculture in Punjab - an analysis by component elements. Agril. Situation in India. XXVI(6): 407-409.
24. Krishnaji, N. 1980. Measuring agricultural growth. Indian J. Agril. Econ. XXXV(2): 31-41.
25. Kumar, P.R. 1981. Current status of rapeseed & mustard research in India. (Paper presented at the National Seminar on Oilseeds, Hyderabad).
26. Minhas, B.S. and Vaidyanathan, A. 1965. Growth of crop output in India - an analysis by component elements (1951-54 to 1958-61). J. Indian Society of Agril. Statistics. XVII(2): 230-252.
27. Mukherjee, Chandan and Vaidyanathan, A. 1980. Growth and fluctuations in foodgrain yields per hectare - A state wise study. Indian J. Agril. Econ. XXXV(2): 60-70.
28. Misra, V.N. 1971. Growth of crop output in Gujrat - A component analysis. Anvesak. I (1):
29. Misra, V.N. and Radhakrishna, R. 1971. Econometric Models for acreage response : A case study of groundnut and Bajra in Gujrat. Anvesak. I (2): 175-183.

30. Minhas, B.S. 1966. Rapporteur's report on measurement of agricultural growth. Indian J. Agril. Econ., XXI(4): 165-182.
31. Panse, V.G. 1959. Recent trends in the yield of rice and wheat in India. Indian J. Agril. Econ. XIV(1):
32. Panse, V.G. 1964. Yield trends of rice and wheat in first two five year plans in India. J. Indian Society of Agril. Statistics. XVI(1):
33. Pranesh Kumar and Gupta, V.K. and Bhatia, V.K. 1975. Stabilising production of rapeseed-mustard. J. Indian Society of Agril. Statistics. XXVII(2): 107-108.
34. Patel, D.A. 1966. Growth of groundnut in Gujrat State. Indian J. Agril. Econ. XXI(4): 223-226.
35. Parikh, Ashok. 1966. State wise growth rates in agricultural output - an econometric analysis. Artha vijnana. VIII(1) March, 1-52.
36. Prahladachar, M. and Venkataramanan, L.S. 1980. Growth rates and cropping pattern changes in agriculture in six states (1950-1975), Indian J. Agril. Econ. XXXV(2): 71-84.
37. Parikh, A. 1966. Analysis of growth components and method of constructing the index number of agricultural production under constant cropping pattern, Indian J. Agril. Econ. XXI(3) : 41-47.
38. Parikh, A. 1970. Crop-wise district-wise production function. Indian J. Agril. Econ. XXV(1) : 43-58.
39. Patel, M.S. and Rao, M.R. 1962. Place of oilseeds in Indian Economy. Indian Oilseeds J. VI(2): 67-83.
40. Patel, A.S. and Bagchi, Dilip and Patel, V.G. 1974. The problem of groundnut oil in Gujrat. Agril. Situation in India. XXIV(6): 401-408.
41. Ramamurthy, N. 1967. Work done on growth rates in agriculture in India - A review. Agril. Situation in India. XXII(5): 539-545.
42. Reddy, V.N. 1978. Growth rates. Economic and Political Weekly XIII(19).
43. Ranade, C.G. 1980. Impact of cropping pattern on agricultural production. Indian J. Agril. Econ. XXXV(2): 85-93.
44. Rao, V.M. 1980. Methodological issues in measuring agricultural growth - lessons of recent Indian researches. Indian J. Agril. Econ. XXXV(2): 13-20.
45. Rath, Nilkantha, 1980. A note on agricultural production in India during 1955-78. Indian J. Agril. Econ. XXXV(2): 94-103.

46. Rai, Mangala, 1981. Strategies for increasing linseed productivity in semi-Arid regions. (Paper presented at the National Seminar on Rainfed Agriculture and Forage Forestry with special reference to Bundelkhand region).
47. Ramasubban, T.A. 1977. A methodology for trend curve selection. J. Indian Society of Agril. Statistics, XXIV(1): 143-144.
48. Saxena, R. and Sardana, M.G. 1973. Study on the trends in yield of rice and wheat in India during the First Three Five Year Plans. J. Indian Society of Agril. Statistics. XXV(2) : 58-66.
49. Sisodia, B.V.S. and Rai, S.C. 1975. Trends in the Yield Rates of various Food Crops in U.P. during First Three Five Year Plans. J. Indian Society of Agril. Statistics XXVII(2): 97.
50. Shah, C.H. 1975. Agricultural growth - trends in crop pattern and yield. Agril. Situation in India. XXX(5): 349-354.
51. Srinivasan, T.N. 1979. Trends in agriculture in India (1949-50 to 1977-78), Economic and Political Weekly XIV(30,31 and 32 special no.):1283-1284.
52. Srinivasan, T.N. 1977. Constraints on growth and policy options : A comment. Economic and Political Weekly, XII(48).
53. Sondhi, Rajinder and Singh, Karam, 1975. Component analysis of foodgrain economy of India. J. of Social and Economic Studies, III(2).
54. Singh, Balwinder, Rangi, P.S. and Sankahayan, P.L. 1973. Relative contribution of area and productivity in increasing production of major foodgrain crops in Punjab (1960-61 to 1969-70). Economic Affairs, XVIII(3): 124-130.
55. Shishido, Tosio. 1961. Japanese agriculture- productivity trend and development of technique. J. of Farm Econ. XXXXIII : 285.
56. Stalling, L. James. 1961. Weather and crop yields. J. of Farm Econ. XXXXIII: 1153.
57. Sharma, P.V. 1974. Identification of contribution of each element to the growth rate of commercial crop output in the district of A.P. Indian J. Agril. Econ. XXIX(3): 187-188.
58. Shetty, S.A. 1970. Agricultural Production Trends and Components. Indian J. Agril. Econ. XXV(2): 28-46.

59. Sharma, B.M. and Singh, Chhotan, 1982. Trends in oilseeds production. Eastern Economist. X(22): 1278-1281.
60. Sen, S.R. 1967. Growth and Instability in Indian Agriculture. Agricultural Situation in India. XXI(10): 827-839.
61. Sastri, A.V.K. and Sharma, P.S. 1959. Contribution of area and yield to increase in rice output. Agril. Situation in India. XIV (3): 229-234.
62. Singh, H.S. 1963. Factors for shifts in groundnut acreage. Indian J. Agril. Econ. XVIII (1): 59-62.
63. Sarup, Shanti and Rai, S.C. 1981. Economic analysis - Lags in groundnut cultivation. Eastern Economist, 77(11): 492-95.
64. Tyagi, B.N., Dubey, R.C. and Vidya Sagar, 1974. Study of growth rates of area, production and productivity of groundnut crop in U.P. for the period from 1960-61 to 1971-72. Agril. Situation in India. XXIX (6): 391-396.
65. Tyagi, B.N. 1974. A study of the impact of green revolution on the regional development of agriculture in U.P., Indian J. Agril. Econ. XXIX(4): 44-54.
66. Thamarajaksh, R. 1967. Growth of agriculture in Madras State, (1949-50 to 1962-63). Agril. Situation in India, XXII (9): 1003-1006.
67. Thomas, T. stout and Vernon, W. Ruttom, 1958. Regional patterns of technological change in American Agriculture. J. of Farm Economics. XL(2): 1971.
68. Vidya Sagar, 1977. A component analysis of the growth of Agricultural productivity and production in Rajasthan. Indian J. Agril. Econ. XXXII(1): 108-119.
69. Vidya Sagar, 1980. Decomposition of growth trends and certain related issues. Indian J. Agril. Econ. XXXV(2): 42-59.
70. Vidya Sagar, 1980. Growth of productivity in Indian Agriculture - A comment. Indian J. Agril. Econ. XXXV(1): 129-133.
71. Vaidyanathan, A. 1977. Constraints on growth and policy options. Economic and Political Weekly, XII(38) 51).
72. Vaidyanathan, A. 1977. Performance and prospects of crop production in India. Economic and Political Weekly, XII (33, 34, special no.): 1355.
73. Seshadri, C.R. 1962. Monograph on 'Groundnut' Published by the Indian Central Oilseeds Committee, Hyderabad.

74. Joshi, A.B. - Monograph on 'Til'.
75. Recharya, R.H. 1962. - Monograph on 'Linseed'.
76. Singh, D.P. 1958. - Monograph on 'Rapes and Mustard'.
77. Tiwari, R.N. 1970 - Agricultural Development and
Population Growth.
78. George, P.S.Srivastava, U.K. and Desai, B.M. 1978. The Oilseeds
Economy of India: An analysis of post supply and
projections for 1985. The Macmillan Co.of India Ltd,
Bombay.
79. Pavaskar, Madhoo, 1978. Behaviour of oilseeds prices. The
Economic scene Special Report. Tata Economic
Consultancy Services, Bombay.
