Conclusion
and
Suggestions
Rohilkhand region is one of the fertile areas of the state of Uttar Pradesh (U.P.) in India. The growing population of the region is engaged directly or indirectly in agriculture and as a consequence there is a demand for more and more foodgrains and farmers are forced to pay special attention towards the improvement of their agricultural output with an increased use of technological inputs. There has been a sizeable increase in the available food resources. However, the distributional pattern of all the inputs are not equal in all the development blocks of Rohilkhand region.

An analysis of the technological factors shows the variations in the development of agriculture in the region. It may give new dimensions for understanding the problems, along with sustainable development of agriculture.

The land utilization of the region shows that the culturable waste land in the region is 1.01 per cent of the total reporting area. Similarly the current fallow and other fallow lands is 4.11 per cent to the total reporting area. The net sown area is 78.48 per cent (2.32 million ha.) in the region. The crop land use pattern in the region shows that the cereals and cash crops are important crops in the region. The area under cereals is 73 per cent to the total cropped area and the area under cash crops was 18.86 per cent to the total cropped area in Rohilkhand region during 1994-95 to 1998-99.

On the basis of Yang's Crop Yield Index, the blocks of the region are demarcated as very high, high, medium, low and very low productivity regions for the year 1994-95 to 1998-99. During this period, areas of very high productivity regions were located in northeastern parts of the region and included the blocks of namely, Shahabad, Saidnagar, Milak, Bilaspur,
Chamraon, Suar, Nahtaur and Lalaurikhera block of Pilibhit district lying in eastern part of the region. High productivity was found in 22 development blocks lying in the northern and southeastern part of the region. A set of 27 blocks characterized with medium productivity and remaining 33 blocks showing low and very low crop productivity in the region.

An input and output analysis was performed on the basis of output (productivity) and input (independent variables), adopting a statistical techniques for multiple correlation. The analysis reveals firstly, that gross irrigated area, net irrigated area, tube-well net irrigated area, fertilizer consumption, plough (wooden and Iron), threshing machines, germs killer, and sprayers and tractors are positively correlated with productivity. Secondly, the role of variables were identified by testing them through factor analysis technique for each productivity regions as well as in Rohilkhand region considering it as a single unit.

The causes of very high and high agricultural productivity at F1 was revealed by the variables of germs killer and sprayers, harrows and cultivators and showing machines. At F2 productivity index is a single positive loading. At F3 gross irrigated and net irrigated area. At F4 percentage of tube-well irrigation, and finally F5 fertilizers, tractors, and literacy were the main causes of making the area as high productivity.

The composite Index points to a wide range of variation in the variables in the blocks of the region. In Rohilkhand region there are 9 development block showing very high agricultural development are namely, Kyara, Khutar, Mirzapur, Chamraon, Nahtaur, Dadrol, Kalan, Seohara and
Bhawalkhera and 16 blocks fall under high level of agricultural development in the region. A set of 35 blocks characterised with medium levels of agricultural development and the remaining 30 blocks of the region show low and very low agricultural development.

The overall assessment of the study reveals that the agricultural development in the blocks of Rohilkhand region is dependent on the efficient management of technological factors committed to cultivation, like irrigation, fertilizer consumption, HYV of seeds and mechanization.

However, the present agricultural system is mainly being governed by a policy of economic development that emphasizes on high productivity for commercial purposes, this has led to agricultural intensification involving improved cultivators, expanding area under single crop and above all the intensive use of agro-chemicals like fertilizers, pesticides. All these unilateral approaches of increasing production have generated several undesirable impacts viz. degradation of land and water resources, loss of biodiversity, environmental pollution which are the major challenges to be met for a sustainable agricultural system.

However, the present level of agricultural development in the region needs improvement in order to meet the demand of population by adopting certain strategies for sustainable development of agriculture in the development blocks of Rohilkhand region. To ensure a friendly and healthy environment should encompass the following lines for the development:

(i) Crop improvement for higher productivity
(ii) Prevent degradation of soil and ensuring maintenance of soil fertility.

(iii) Greater organic matter and fertilizer use and increasing fertilizer use efficiency.

(iv) Integrated and balanced nutrient supply system management.

(v) Efficient water management in irrigated area and irrigation resource development.

(vi) Evolving efficient cropping system and crop sequence for higher productivity per unit of time.

(vii) Evolving location-specific agronomy of crops varieties for higher productivity and ecosystem balance.

(viii) Developing high production technology for crops particularly cereals, pulses, oilseeds and cash crops.

(ix) Ensuring availability of good quality seeds in adequate quantities and at proper time.

(x) Efficient and quick transfer of advances in technology to farmers.

(xi) Evolving low-cost technology for small and marginal farmers in the region.

(xii) Efficient management of conventional energy use and greater use of non-conventional energy in agriculture.

There is no conflict between development and sustainability. Infact development as well as increased food production, in view of the increasing
population are necessary, but the development should not be at the cost of posterity. It should be eco-friendly.

The concept of sustainable development, as defined by the World Commission Report on Environment and Development is that the need of the present generation should be meet without compromising the needs of the future generation. It only means that the resources should be used in the most judicious manner. For increased production of foodgrains, irrigation and fertilizers are important. For profitable irrigation, good drainage is extremely important so that water may not stay on the land and lead to waterlogging. Again if irrigation is being done by canals which are unlined, seepage would take place and to sub-soil will be saturated with moisture and restrict aeration and supply of oxygen to the roots.

In case of chemical fertilizers, the knowledge of the quantum of fertilizers per hectare, the manner of application and the time of application are important. If excessive doses of fertilizers are used, then that are unused and washed off to rivers and lakes. The water is polluted and results in eutrophication causing hindrance in navigation.

It will not be sustainable development. Besides, along with chemical fertilizers, bio-fertilizers, compost and green manuring should also be used to improve the structure of the soils.

Insecticides and pesticides are important to save the crop from being lost but they are also causing health hazards. The new technology that of Integrated pest management as far as possible should be used. In this
technology such weather conditions are created which are unfavourable to the pest and favourable to the enemies of these pests.

All in all, sustainable development in Rohilkhand should apply the new agricultural technology keeping in mind that the manner in which the technology is used is eco-friendly and leads to development that is sustainable.