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Effect of rainfall on area, production and yield of wheat in agricultural region eastern Uttar Pradesh

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Abstract: *Rainfall as the primary ecological parameter has created a variety of farming enterprises, types or systems in the world. Variations in rainfall characteristics affect agriculture as a whole and therefore, there is need to investigate them in details Rainfall effectiveness is usually expressed as the actual total rainfall minus the total possible evaporation. Importance of water to plants is paramount for several reasons. It is a constituent part of the protoplasm Generally it forms 85 to 90% of the green weight of actively growing tissues. Presence of water within the plant and in the environment save the plant from lethal temperatures. Rain is the most important source of soil water and is of tremendous importance to the plant, Rain provides water to the soil for transpiration. It has also been noted that the deficiency or excess of rainfall at the critical stages of plant life cause soil horizon to dry up, hampers the supply of moisture to the plant damage the plants, turning tillers as no production and reduced the yield.*

Key Words: ecological parameter, farming enterprises, Variations, rainfall characteristics, agriculture .

Almost all the moisture consumed by the plants comes to it from the soil. Therefore availability of moisture in the soil is a prerequisite for the survival of and the growth of plant. Plant growth and development depends (i) upon a continuous process of cell division, (ii) on the progressive initiation of tissue and organ primordia and (iii) on the differentiation and expansion of the component cells along with this is an inter-connected chain of metabolic events which involve the uptake of nutrients from both soil and air, the synthesis of metabolites and structural materials, and also from the flow of substances within the plant body. Because all these plant processes take place, in the aqueous medium and water being a transporting agent as well as a reactant in the majority of these processes any shortfall in water uptake and dehydration results in negative effects on most of the physiological processes. Crops are greatly dependent on weather particularly rainfall during the periods of growth and particularly in the critical phases like germinating flowering seed setting, maturing etc.

The rainfall variability in excess of 20 percent implies a great risk to farming. Tillage sowing and other operations in agriculture are influenced by time and intensity of rainfall rendering emergence of weather parameter rainfall as important. In this paper attempt has been made to examine impact and response of rainfall on area, production and productivity of wheat in the region.

Area Profile- The agricultural region of En. Uttar Pradesh extends between latitudes 23° 50' N and 28° 44' N and longitudes 81° 06' E and 84° 39' E and has Nepal on its north, Champaran, Saran, Bhojpur and Palamu districts of Bihar on its east, Surguja Sidhi and Rewa districts of Madhya Pradesh on its south and Lakhimpur, Sitapur, Barabanki, Fatehpur and Banda districts of Uttar Pradesh Allahabad, Bahraich, Ballia, Basti, Deoria, Faizabad, Ghazipur, Gonda, Gorakhpur, Jaunpur, Mirzapur, Pratapgarh, Sultanpur and Varanasi districts. With an area of 8584494 Km. A total population of 5271062 (2001), the density of population is 478 persons per sq. Km. The rate of decadal population growth was 21.67 percent during 1991-2001. The study area forms a part of the vast Ganga plain and lies in the well known climatic region which is famous for its variation. The annual rainfall average being 958.62 mm. About 88.23 percent of the annual rainfall is generally accounted for by the four summer months-June to September.

Objectives- To estimate the impact of rainfall on area, production and yield of wheat a Macro and Micro levels of the study area.



To evolve strategy for minimizing risk to the crop production by rainfall variability based cropping system adjustments.

To prepare, maps, charts and diagrams of observation, correlations and modeling process for policy for mutations and decisions making.

The present stage of knowledge- Breather crop relations is complex and much work would have to be done to arrive at dependable relationships in quantitative form between these factors and yields of crops. Such studies are being actively pursued in many countries. In the USA crop yield studies are made using regression techniques, both linear and curvilinear. In addition to weather factors, technological trend is used both in its linear and quadratic forms. In the USSR crop yield forecasts, using curvilinear techniques, are issued. Besides, weather parameters, soil moisture, stage of crop development, soil type and evapo-transpiration are also considered. In India data collected under the All-India coordinated crop weather scheme introduced in 1945 have been statistically analysed using the techniques of regression. Fisher's response curves, fitting of probability distribution of meteorological factors and Ezekiel's curvilinear regressions. The studies have brought out the relatively large dependence of crop growth and yield on rainfall and its distribution in various phases compared to other meteorological parameters. The Institute of Agriculture Research Statistical, New Delhi, has carried out linear regression analyses with yield as the dependent variable and total rainfall during the five crop growth phases as independent variables. Rainfall during pre-flowering and grain formation period is more important and effective as compared to rainfall in other periods.

Data base and methodology- The study is based on secondary data obtained from India, Meteorological Department (IMD) Pune and Indian agricultural statistics New Delhi. The district wise rainfall data provided by IMD for the last 30 years (1970-71-1999-2000) and Indian agricultural statistics from 1950-2001.

$C.V. = (S.D.) / M \times 100$ Where- C.V.= Co-efficient of variation S.D.= Standard deviation

M= Mean For the correlation- $r = \frac{\sum dx dy}{N \sqrt{x^2 y^2}} \times 100$

Detail Study- Wheat is crop of Rabi season. Wheat is mostly depending on irrigation for its water requirement. The months of November to March are the period of growth and maturity of the crop. Though, wheat is an irrigated crop but winter season rains have some positive bearing on the proper growth, flowering and grain formation of the crop.

Conclusion- These facts lead to the conclusive remarks that being an irrigated crop wheat is least concerned with the rainfall. But winter rains have substantial influence on the performance of the crop. Simultaneously, rainfall is important as a whole for the maintenance of soil moisture and ground water potential.

REFERENCES

1. Singh Jasbir and S.S. Dhillon (2004), "Agricultural Geography", Tata MC Graw-Hill Pubn. Co. New Delhi. III Edition, PP. 68.
2. Breazeale, E.L. and W.T. Mc George (1953), "Influence of atmospheric humidity on root growth," soil science, 76, pp. 361-365.
3. Kluges, K.H.W. (1958), "Ecological crop Geography", New York, Mac Millan, pp. 44.
4. Jasbir Singh, Vijay Kumar, and J.P. Gupta, (1993): Geomonitoring of Biophysical Environment and Area development: Haryana a case study", New Delhi, National Book Organization, pp. 155.
