

## Growth in crop productivity in relation to tractor population density in District Muzaffarnagar (U.P.).

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### SUMMARY

A study on growth in productivity of food grain and sugarcane crops in relation to tractor population in district Muzaffarnagar, on the basis of secondary data concluded that during the period 1971-72 to 2000-01, tractor population increased by eleven fold and productivities of sugarcane and food grain crops increased by 157 and 29 per cent, respectively. Tractors with other economic reasons increased the productivity of crops. It played major role in the cultivation of sugarcane crop.

Key words: tractor, sugarcane, food grain, productivity.

Mechanization of Indian agriculture has assumed greater importance in increasing agricultural production and productivity by utilizing scarce and costly agriculture inputs as seed, fertilizer and irrigation water more efficiently and reducing human drudgery. Tractor is an important component of modern agricultural production system. It enhances the farm power availability, increases precision and timeliness of operations like, tillage, sowing, harvesting and threshing. Power requirement is an important factor in crop production. Dhawan (1980), Sharma et. al. (1991) and Kishore et. al. (1999) reported higher crop productivity at tractor farms in comparison to bullock farms. Tractor density in Muzaffarnagar was 91 tractors per thousand net cropped hectare in the year 1997-98 and the same in Uttar Pradesh, Haryana, Punjab and at India level was 24, 62, 83 and 12 in respectively, in 1997-98 (Srivatava 2003). It indicates that tractor density in the study area was higher than Punjab and Haryana. Thus, study area was an agro-economically advance district. This paper presents growth in crop productivity in relation to tractor density at district level in Muzaffarnagar (U.P.).

### PROFILE OF THE STUDY AREA

Muzaffarnagar district is situated between 29°11' and 29°45' North latitude and 77°03' and 78°07' East longitude in the Western region of Uttar Pradesh. The land of the district, in general, is leveled alluvial plain. The soils are mainly loam and sandy loam with good fertility. There are three distinct weather conditions in the district viz. winter, summer and rainy seasons. Net sown area is about 79 percent of the total geographical area 412 thousand hectare. Almost total sown area has facility of irrigation. Sugarcane and wheat are main crops of the district. Table-1 presents brief profile of the district.

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### MATERIALS AND METHODS

Time series data was collected from the Office of the District Statistical Officer, Muzaffarnagar for the period 1971-72 to 2000-01 on tractor population and productivity of food grain and sugarcane crops to study their growth trends and it was analyzed with EXCEL software.

### RESULTS AND DISCUSSION

Crop productivity is a function of interaction amongst several factors as inputs used, technology management and resource endowments. Farmers adopt different measures, both engineering and non-engineering to increase crop productivity. Use of tractor-machinery system not only contributes in crop production due to better cultural practices, precise operations and timeliness but also increases efficiency of non-engineering inputs. In the study area, tractor density increased from 8 to 99 tractors per 1000 Net cropped hectare and registered an increase of eleven fold during the year 1971-72 to 2000-01 (Fig-1). However, during this period productivity of food grain crop increased continuously from 1.5 to 3.1 tonne per hectare with an increase of 107 per cent and productivity of sugarcane crop increased from 49 to 63 tonne per hectare and recorded an increase of 29 per cent (Table-2, Fig-2). In Uttar Pradesh and in India productivity of food grain crop were 2.10 and 1.64 tonne per hectare respectively and that of sugarcane were 69.64 and 54.76 tonne per hectare respectively in the year 2000-01 Anon (2002). In the study area productivity of food grain crop was almost double and productivity of sugarcane was lower by 10 per cent to that of India level. Strong positive correlation was observed between tractor density and productivities of sugarcane and food grain crops in the study area. Like chicken and egg, it is difficult to state whether increased tractor