

Research Paper :

Influence of liquid fertilizers through drip irrigation on growth and yield of Suru sugarcane

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ABSTRACT

A field experiment was carried out at AICRP on water management Project, Mahatma Phule Krishi Vidyapeeth, Rahuri during 1997-98 on vertic Ustropept. The experiment was conducted in Factorial Randomized Block Design (FRBD) with three replications and eight treatments. The treatments consisted of (a) four levels of NP and K through Richfield water soluble fertilizers (RWSF) viz., 50%, 75%, 100%, 125% per cent of recommended dose, (b) four levels of NPK through straight fertilizers (SF) viz., 50%, 75%, 100%, 125% per cent of recommended dose. The growth parameters such as cane height, no of internodes, girth of internodes, weight/cane and leaf area were found to be maximum in 125% RD of RWSF as compared to SF. Application of RWSF resulted into higher cane yield (153.35 t/ha) by 9% over to that of SF (141.76 t/ha). The fertilizers application through drip at 125 % RD was found to be significantly superior to those of 100% RD.

Key words : RWSF, SF, Sugarcane, Liquid, Fertilizer

Sugarcane (*Saccharum officinarum* L.) is one of the important pride cash crops of the tropical region and is the main source of sugar and sugary byproducts in India. Sugar industry is important agro-based industry and has great impact on socio economic development in rural areas. Plant nutrient like N, P and K are the most critical factors, which seriously limit the growth, quality and yield of crops. Nitrogen fertilizer is costly input and every effort needs to be made to improve the utilization of applied nitrogen by a crop. Apart from source of nitrogen, the method and time of application are important deciding factors for increasing its efficiency.

Applying fertilizers directly to crop root zone through drip irrigation and fertigation is thus an answer for judicious use of precious commodity such as water and fertilizer. Therefore the study was undertaken to find out the effects of water-soluble fertilizers through drip on growth and yield of *suru* sugarcane.

MATERIALS AND METHODS

Field experiment was carried out at MPKV, Rahuri during the year 1997-98 on medium black and clayey soil having pH 8.35, The Soil of experimental plot was low in available N (114.3kg/ ha) and P (10.8 kg/ ha) and high in available K(773 kg/ha). The experiment was carried out in Randomized Block Design (Factorial) having three replications. The Treatment comprised of

- Sources of fertilizers
 - Conventional fertilizers
 - Richfield water soluble fertilizers RWSF

- Level of fertilizers
 - 50% recommended dose
 - 75% recommended dose
 - 100% recommended dose
 - 125% recommended dose

Water soluble fertilizer as a sources were urea (46%N) and Richfield water soluble fertilizers with a grades of (20:10:10), (12:61:0) and (0:0:50) 250 kg N/ha was applied in 4 splits of 10,40,10 and 40 per cent viz., at planting, 6-8 weeks after planting, 12-16 weeks after planting and at earthing up, respectively, phosphorus (115 kg ha⁻¹) and potash (115 kg ha⁻¹) were applied as basal dose. RWSF were splitted in thirty weeks.

The planting of suru sugarcane cv.86032 was done on 15.12.1997 in furrow planting technique (0.9 x 1.8 m). The gross plot size was 10 x 9m² while net plot size was 9.4 x 8.4m². All the fertilizers were applied through drip irrigation system.

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been presented under following heads :

Height:

The height of sugarcane at harvest was influenced significantly by sources of fertilizers and levels of fertilizers. The RWSF recorded significantly higher plant height as compared to SF, which was 2.84% more than SF. The height of cane was increased with the level of