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Nutrient and Weed Management in Spring Planted Sugarcane

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Sugarcane is an exhaustive crop removes large quantity of plant nutrients from soil. The application of high-analysis fertilizers leads to deficiency of several micronutrients. Due to paucity of organic sources of nutrients and their inability to meet total nutrient requirements to sustain large-scale productivity goals, their integrated use with inorganic fertilizers becomes inevitable. Sugarcane has more weed infestation due to slow germination and growth in early stage, wider row spacing, heavy fertilization and constant moist soil conditions favourable for quick growing weeds which cause heavy losses. So from above we can say that nutrient and weed management is of prime importance for better yield and quality of sugarcane.

Introduction

Sugarcane is an exhaustive crop, produces heavy tonnage and removes large quantity of plant nutrients from soil. High cost of fertilizers warrants their efficient utilization. Moreover, the application of high-analysis fertilizers leads to deficiency of several micronutrients. This calls for substituting part of the inorganic N fertilizers by locally available organic sources viz. manures, green manures, crop residues, bio-fertilizers in a synergistic manner. Integrated nutrient supply leads to soil and crop sustainability. Organic sources can also ensure adequate supply of micronutrients to meet the crop needs. Due to paucity of organic sources of nutrients and their inability to meet total nutrient requirements to sustain large-scale productivity goals, their integrated use with inorganic fertilizers becomes inevitable.

Weed management is of prime significance. Unchecked weed competition can seriously reduce crop yields, inspite of best efforts on other aspects. Sugarcane has more weed infestation due to slow germination and growth in early stage, wider row spacing, heavy fertilization and constant moist soil conditions favourable for quick growing weeds. Time taken by sugarcane to develop a soil covering and weed smothering canopy is 4-6 months. It is during this early period the weeds cause heavy losses. So from above we can say that nutrient and weed management is of prime importance for better yield and quality of sugarcane.

Nutrient Management: For enhancing fertilizer use efficiency, the optimum time and method of application of fertilizers should also be given due importance in addition to optimum dose.

a. **Dose of fertilizer**: Soil test based application of plant nutrients is best approach to apply plant nutrients as per the requirement of crop. However, in absence of soil test report plant crop should be fertilized with 130 Kg urea/acre. If the sugarcane crop sown after potato which had received recommended dose of FYM, the urea dose should be 100 Kg/acre. The phosphorus need of the sugarcane crop can be met by applying 25 Kg DAP or 75 Kg SSP /acre, but the phosphorus should be applied only if soil test report indicates low phosphorus status i.e. less than 5 Kg P/hectare in soil. Despite these major nutrients, the deficiency of iron is also found in light textured and calcareous soils. The symptoms of iron deficiency first appear on young leaves as yellow stripes between green veins. Later the veins also turn yellow. In severe cases, the leaves become white and plant remains stunted. To correct this deficiency, crop should be sprayed with 1% ferrous sulphate solution i.e.1 Kg ferrous sulphate in 100 litre water at weekly intervals for 2-3 times

   Sugarcane being a long duration crop, responds to FYM/press mud. Apply 8 tons of FYM/press mud per acre 15 days before planting. In case of trench planting, apply the press mud at base of trench and mix it into the soil with Kasola. In case recommended FYM/press mud is applied, reduce the urea dose by 45 Kg /acre over the recommended urea. However, on light textured soils, application of Press mud/ FYM in addition to recommended N dose leads to 10 per cent increase in cane yield.

b. **Time and method of fertilizer application:** The time and method of application of fertilizer is as important as dose. Time of application is important in view of the fact that the nutrient demand of crop may be more or less at certain specific crop growth stages. Hence application of the fertilizer at critical growth stages will enhance crop yield.

   Top dress/drill half dose of nitrogen along side of the cane rows with first irrigation after germination and remaining half dose of N may be top dressed/drilled along side of the cane rows in May-June. However, whole of Phosphorus (If needed) should be applied as basal in furrows below the cane setts at the time of planting.

   Under rainfed situations, if there is enough soil moisture, half dose of N should be applied at the time of planting and second half at the onset of rain. However, in case moisture is deficient, whole of N may be applied with the onset of rain.

Weed Management : Spring planted sugarcane is infested with Makra (*Eleusine indica*), Madhana (*Eleusine aegyptiacum*), Itsit/chuppati (*Trianthema portulacastrum*), Love grass (*Eragrostis pilosa*) , Kutta ghas (*Cenchrus ciliaris*) , Takri ghas (*Digitaria sanguinalis*), Bhombola (*Physalia minima*), Chhiber bel (*Cucumis trigonus*), Patasa bel (*Rhyncosia capitata*), Chhoti Dodak (*Euphorbia microphylla*), Hazardani (*Phyllanthus niruri*) , Kaon makki (*Commelina benghalensis*), Dila/Motha (*Cyperus rotundus*), Khabbal (*Cynodon dactylon*) etc. These weeds can be effectively and economically controlled with the use of herbicides. However, the weeds can also be kept under check by mechanical or cultural methods.

a) **Mechanical control of weeds**: Due to wider row spacing and co-incidence of rainy season with the early growth stage of spring planted cane, lot of weeds emerges in periodic flushes, which can be tackled with 2-3 hand hoeings. Hoeing can be economically practiced with the help of bullock drawn horse hoe/plough/ tirphali or with a tractor drawn tiller.

b) **Cultural control of weeds**: Spreading of trash mulch between cane rows after the emergence of shoot helps to suppress weeds. This practice helps to control weeds by cutting down the sun light supply to weeds. This practice has dual advantage of weed management & moisture conservation. It is practically more advantageous in rainfed areas.

c) **Chemical weed control**: Chemical method of weed control is more important because it eliminates early crop weed competition. The use of pre-emergence herbicide does not allow the weed to germinate and there by eliminate the crop weed competition at the critical stages. Depending upon the weed flora present in the field and prevailing intercrop situations, any of the herbicide given in table 1 can be sprayed. The spray solution for one acre should be made in 225 litres of water. Always use flood jet nozzle for spray, which can discharge atleast 225 litres of water per acre. For higher efficiency of labour the spray can be done with multi nozzle boom in place of traditional single nozzle boom used by farmers. Spray should be done in straight bands hence to & fro of spray should be avoided. Twenty five to thirty percent overlapping of previously sprayed band is mandatory for uniform spraying. The height of spray lance should be kept at 45 cm above ground level.

Table 1. Herbicides recommended for weed control in sugarcane

S. No.	Herbicides	Dose/acre	Time of application	Weeds controlled
1	Metribuzin (Sencor 70WP)	800gm	Pre-emergence (with 24-48 hours of sowing)	Annual grass & Broad Leaf Weeds
2	Atrazine (Atrataf 50 WP Salore 50 WP /Mestaff 50 WP /Markzine 50 WP)	800 gm	Pre-emergence	-do-
3	Diuron (Klass 50 WP/ Karmex 50 WP)	800 gm	Pre-emergence	-do-
4	Pendimethalin (Stomp 30 EC) (If summer moong/summer mash inter crop)	1.0 lit	Pre-emergence	-do-
5	2,4-D sodium salt 80%	800 gm	Post-emergence	Dila/motha

Conclusion

Farmers are advised to follow practices for efficient nutrient and weed management to increase yield and profitability from spring planted sugarcane.