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Standardization of time for N and K fertilizer application in sweet orange

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ABSTRACT

In the experiment Standardization of time for N and K fertilizer application in sweet orange data in respect of plant growth, fruit yield and quality showed significant results. Maximum plant height (3.40m), canopy volume (14.26m^3), No. of fruits (264 /plant) average weight of fruit (272.77g /fruit) yield /plant (71.35kg) and yield /ha (19.77 t) similarly quality aspects as maximum juice content (43.55 %), TSS (11.82 ^{0}B), Total sugars (7.03 %), Reducing sugars (4.94 %), Ascorbic acid (59.53 mg/ 100 ml juice)with minimum acidity (0.48 %)and rind thickness (0.51 cm) was recorded in T_3, N and K fertilizer application (800 g N and 600 g K) in 3 equal splits as basal, 45 d and 90 d with basal dose of organic (FYM 20 kg + Neem cake 15 kg), biofertilizer (VAM 500g +PSB 100 g + Azospirillium 100 g + *Trichoderma herzianum* 100 g) and phosphorus (300 g) per plant. Similarly maximum B : C ratio (4.79) was recorded in T_3. The B : C ratio was in the range of 4.01 to 4.33 in T_2, T_4 and T_6 while it was 3.82 in control *i.e.* application of N in two splits while rest of the organic and inorganic fertilizers in a single dose as basal. Mear splitting of N and K fertilizers as basal and upto 180 days gave better results over the control as recommended.

Key words : Canopy, Split, Rind, Basal

Nutrition constitutes an important component of intensive cultivation since other fertilizer application accounts for 30- 40 % of total cost of cultivation. An inadequate nutrition of citrus orchards is one of the major constituent limiting the productivity.

In sweet orange, fruits require about eight month for full maturity. As per the previous recommendations if the fertilizer may be given within a period of 45 days only, the consumption of fertilizers for the maximum production of quality fruits is not fulfilled. By considering this view, the N and K fertilizers are splited up to 180 days for sweet orange plants in the experiment and by mear spitting of N and K the better results were obtained.

MATERIALS AND METHODS

The experiment was conducted at All India Coordinated Research Project on citrus, MPKV, Shrirampur from the year 2005-06 to 2007-08 on sweet orange plants having the age of 10 years, planted at 6 x 6 m distance. The statistical design applied for experiment was Randomized block design with 6 treatments replicated 4 times with two plants as an unit. The soil type was medium black.

Treatment details are as follows : T_1 : Control *i.e.* GRDF (800 : 300 : 600g NPK + 20 kg FYM + 15 kg neem cake + 500g VAM + 100g PSB + 100g Azospirillium + 100g *Trichoderma herzianum* / plant). N application in 2 equal splits, basal, 45 days. Full dose of P_2O_5 and K_2O + organics + biofertilizers as basal dose, T_2: N and K application in 2 equal splits, basal and 45 days + 100 % P_2O_5 + organics + biofertilizers as basal dose, T_3: N and K application in 3 equal splits, basal, 45 and 90 days + 100 % P_2O_5 + organics + biofertilizers as basal dose, T_4 : N and K application in 4 equal splits, basal, 45, 90 and 135 d + 100 % P_2O_5 + organics + biofertilizers as basal dose, T_5 : N and K application in 4equal splits, basal, 60, 120, 180 d + 100 % P_2O_5 + organics + biofertilizers as basal dose and T_6 : N and K application in 4 equal splits, basal, 30, 60, 90 d + 100 % P_2O_5 + organics + biofertilizers as basal dose.

RESULTS AND DISCUSSION

In this experiment Table 1 showed the data in respect of plant growth *i.e.* plant height and canopy volume. The plant growth recorded was highly significant. The maximum plant height (3.40 m) and canopy volume (14.26 m^3) was recorded in T_3, N and K application in 3 equal splits, basal, 45 and 90 days + 100 % P_2O_5 + organics + biofertilizers as basal dose.

Table 1 : Effect of N and K fertilizers in split form on plant growth of sweet orange (pooled mean 2005-06 to 2007-08)

Treatments	Plant height (m)	Canopy volume (m^3)
T_1	2.92	11.34
T_2	3.16	12.21
T_3	3.40	14.26
T_4	3.24	13.15
T_5	3.20	12.74
T_6	3.16	12.06
S.E.±	0.04	1.22
C.D. (P=0.05)	0.12	3.85