

Study of intercropping sequence at pre-bearing stage of sweet orange under Western Maharashtra conditions

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ABSTRACT

In the experiment, intercropping in pre-bearing stage of sweet orange orchard upto five years the effect on plant growth and yield obtained from intercrop showed significant results. The maximum plant height of sweet orange plants (2.51m) with canopy volume (6.36 m³) was obtained in T₂ intercropping with groundnut (*kharif*) followed by onion (*rabi*). Though the yield level of groundnut – onion intercropping sequence were maximum, the B : C ratio observed was significantly maximum (4.22) in T₄ intercropping sequence green gram (*kharif*) followed by gram (*rabi*). From the results it was recommended to follow intercropping system green gram (*kharif*) followed by gram (*rabi*) to obtained maximum B : C ratio while on the basis of maximum net profit (Rs. 68559 / ha) the intercropping system groundnut (*kharif*) followed by onion (*rabi*) was also recommended.

Key words : Intercropping, B : C ratio, Canopy

In India, citrus is grown in 4,82,720 hectare area with a production of 42,58,514 tons with an average productivity of 8.0 t/ha. In Maharashtra, sweet orange is the important fruit crop among citrus group.

Land being a limited natural resource, there is a need for new land use system and adoption of suitable orchard management practices and cropping pattern with the available resources to increase the crop production. Bajwa and Ali (1945) as well as Gandhi (1939) quoted the importance of intercropping.

There is a scope to increase productivity by following intercropping in order to produce more yield per unit area. The principle of intercropping is kined with ecological system in nature where the vacant space is created by long duration and wide spread crops are successfully and suitably by the short duration and closely spaced crop. In order to get maximum output per unit area in the shorter time, it is imperative to practice intensive cultivation in suitable areas where irrigation facilities are easily available. By considering the present cropping system and demand of the sweet orange growers, the experiment, study of intercropping in pre-bearing stage of sweet orange was conducted.

MATERIALS AND METHODS

The experiment was conducted at All India Coordinated Research Project on Citrus, MPKV, Shirampur (M.S.), from the year 2005-06 to 2007-08 in pre-bearing stage of sweet orange, planted in the year 2002. The statistical design applied for experiment was Randomized Block Design with five treatments replicated 5 times. The plants of sweet orange cv. MOSAMBI were

planted in medium type of soil at the distance of 6 x 6 m.

Treatment details are given below : T₁ - Control (no intercrop), T₂ - *kharif* – ground nut (JL-24); *rabi* – onion (N2-4-1), T₃ - *kharif* – dolichus bean (Kokan Bhushan); *rabi* – wheat (N2-4-1), T₄ - *kharif* – green gram (Vijay); *rabi* – gram (Vishal), T₅ - *kharif* – cowpea (Phule komal); *rabi* – mustard (Varuna)

RESULTS AND DISCUSSION

Table 1 included plant growth in sweet orange *i.e.* plant height and canopy volume. Plant growth showed significant results. The plant height was maximum (2.51m) in treatment T₂, in intercropping with groundnut in *kharif*

Table 1 : Effect of intercropping on plant growth in sweet orange (pooled mean 2005-06 to 2007-08)

Treatments	Plant height (m)	Canopy volume (m ³)
T ₁	2.26	4.70
T ₂	2.51	6.36
T ₃	2.49	5.38
T ₄	2.31	4.83
T ₅	2.20	4.14
S.E.±	0.03	0.14
C.D. (P=0.05)	0.08	0.46

and onion in *rabi* which was at par in T₃. Similarly the canopy volume was maximum (6.36 m³) in T₂ which was highly significant. The minimum plant height (2.20m) and canopy volume (4.14 m³) was recorded in T₅, intercropping with cowpea (*kharif*) and mustard (*rabi*).

Table 2 included yield obtained from various