

Quality parameters of cotton as influenced by intercropping unconventional green manures

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ABSTRACT

Field experiments were conducted at Agricultural Research Station, Bhavanisagar, Tamil Nadu Agricultural University during summer 2003 and winter 2003-2004 to evaluate the effect of un conventional green manuring of marigold, sesame and sunnhemp on cotton yield and various quality characters. Four cropping systems viz., sole cotton, cotton + marigold, cotton + sesame and cotton + sunnhemp were tested (Factor A) in single and double rows (Factor B) incorporating them on 30 and 40 DAS (Factor C). The treatments were laid out in a factorial Randomized Block Design replicated thrice. The results indicated that intercropping marigold in two rows in between cotton rows and intercropping it *in situ* on 30 DAS had contributed ultimately more kapas and lint yield securing higher yield advantage in both summer and winter crops. Cotton quality in terms of seed and lint indices improved with marigold intercropping followed by sunnhemp. Sesamum had less effect on various quality parameters.

Key words : Unconventional green manuring, Cotton yield, Quality parameters, Intercropping.

INTRODUCTION

Green manuring is a practice of turning green biomass in the soil to improve soil physical, physico-chemical as well as biological properties suitable for plant growth. It is a convenient mean to furnish higher amount of nitrogen to the beneficiary crops than any other system of organic manuring. The growing and turning of green manure crops has been an ancient practice. Exclusive symposiums have been held on green manuring. The publication of IRRI (1988) on the proceedings of a symposium on sustainable agriculture under the title "Green manure in rice farming" reveals the significance attached to green manuring. While renewal in research on green manures is seen, the practice of green manuring by the farmers has been for ages and in China it goes back to 1134 B.C. (Joffe, 1955). Still earlier Pieters (1927) wrote in his book "Green manuring principles and practice" that much is known of what goes in the soil when organic manure is added but much still remains to be learned.

There are still processes within plants that we do not understand. From the past to the present findings, there is a research gain. Bouldin *et al.* (1988) reports showed the advances in green manuring research. They reported two N fractions. One which decomposes rapidly is named as 'Fast N' and the other named as 'Slow N'. Fast N accounts for 50-80 per cent of total N. It is incorporated to increase organic matter content, maintain soil structure, reduce loss of nutrients particularly N, provide a source of N for the succeeding crop and reduce

soil erosion, increases soil organic carbon and improves physical properties like infiltration rate, bulk density and water content at field capacity and thereby increase the production of crops. With these ideas in view, field experiments were conducted to find out the effect of unconventional green manures as intercrops on the yield of associate hybrid cotton and the quality parameters

MATERIALS AND METHODS

Field experiments were conducted at Agricultural Research Station, Bhavanisagar in order to find out the effect of unconventional green manures as intercrops on the yield and quality parameters of associate hybrid cotton (TCHB 213) during the year 2003 to 2004. Four cropping systems viz., sole cotton, cotton + marigold, cotton + sesame and cotton + sunnhemp were tested (Factor A) in single and double rows (Factor B) incorporating them on 30 and 40 DAS (Factor C). The treatments were laid out in a factorial Randomized Block Design replicated thrice. The soil of the experimental fields was well drained sandy clay loam of Irugur series. Sesame and sunnhemp were solid rows in the interspace *i.e.*, 60 cm in between two cotton rows for single row spacing. For two rows, they were sown at 40cm interval in the interspace. In a similar way, marigold seedlings were planted keeping 10 cm intra row spacing, cotton was earthed up simultaneously at the respective incorporation timings.

Nitrogen as urea (46 per cent), phosphorus as super phosphate (16 per cent P₂O₅) and potassium as muriate of potash (60 per cent K₂O) were applied at the rate of

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