

Effect of intercrops and fertilizer levels on yield and quality of different cotton (*Gossypium hirsutum* L.) genotypes under rainfed conditions

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ABSTRACT

A field experiment was carried out at Parbhani during *Kharif* seasons of 2001 and 2002, to evaluate the effect of intercrops and fertilizer levels on yield and quality of different cotton genotypes under rainfed conditions. All cotton genotypes (NHH 44, PHH 316 and PH 348) were found equally effective in producing seed cotton yield. Newly released cotton hybrid PHH 316 and variety PH 348 recorded significant effect on quality parameters like ginning percentage and halo length over NHH 44 under intercropped situation during both the years. Cotton intercropped with black gram produced higher seed cotton yield than cotton intercropped with soybean. Intercrops did not produce appreciable effect on quality parameters. Increasing fertilizer level from 50% recommended fertilizer dose of both the crops (RFDB) to 100% RFDB showed positive response in respect of seed cotton yield. Recommended dose of fertilizers of both the crops on area basis (RFDB) enhanced the ginning percentage and halo length significantly than 75% and 50% RFDB. Further, application of 75% RFDB also improved the ginning percentage and halo length than 50% RFDB. Cotton genotypes grown as a sole crop produced significantly higher seed cotton yield than intercropped cotton. Cotton hybrid PHH 316 grown as a sole crop recorded higher ginning percentage and halo length than sole NHH 44 during both the years. Interaction effects indicated that NHH 44 + blackgram, NHH 44 + soybean, PH 348 + blackgram as well as PH 348 + soybean with recommended fertilizer dose of both the crops on area basis produced at par seed cotton yields with application of 75% recommended fertilizer dose of both the crops on area basis of the respective cropping system. However, PHH 316 with either blackgram or soybean intercropping with recommended fertilizer dose of the respective cropping system on area basis produced significantly higher seed cotton yield than lower fertilizer level of the respective intercropping system.

Key words : Cotton genotypes, Intercrops, Fertilizer levels, Seed cotton yield, Ginning percentage, Halo length.

INTRODUCTION

Cotton is an important cash of Maharashtra grown mostly under rainfed situations. Textile industry is the backbone of industrial economy of India and cotton is the basic raw material of the industry. The oil content in cotton seed ranges from 19 to 22% depending on cultivars.

In Maharashtra, rainfed cotton cultivation has always become a challenging task on account of adverse climatic factors, especially under uncertain and erratic precipitation coupled with high humidity and cloudy situations creating severe pest problems resulting in unstable production of cotton every year.

To overcome the problem, intercropping has been considered as a safeguard against total failure of any one particular crop. Intercropping as an agronomic strategy for fibre, oil and pulse is an attractive proposition for the farmers. Legumes having wonderful ability to fix atmospheric nitrogen and add large amount of organic matter and improve the soil fertility.

Cotton plant being heavy feeder needs proper manuring and fertilization for its successful cultivation. It shows better response to N, P_2O_5 and even K_2O in

deficient soils. The excessive use of the nitrogenous fertilizers results into luxuriant vegetative growth and make the crop more susceptible to pests specially bollworm and sucking pest complex. Hence, timely and balanced use of fertilizer nutrients is essential to sustain high yields and for increasing the productivity. With this intention an experiment entitled "Effect of intercrops and fertilizer levels on yield and quality of different cotton (*Gossypium hirsutum*) genotypes under rainfed conditions" was planned during *Kharif* seasons of 2001 and 2002 respectively.

MATERIALS AND METHODS

A field experiment was carried out at Cotton Research scheme, MAU, Parbhani, during *Kharif* seasons of 2001 and 2002. The soil of the experimental field was vertisol having low available nitrogen, medium in available phosphorus, fairly rich in available potassium and the pH was normal for crop growth. The experiment was laid out in split plot design with eighteen treatments consisting of 6 combinations of 3 cotton genotypes (NHH 44, PHH 316 and PH 348) and 2 intercrops (blackgram and soybean) in main plots and 3 fertilizer levels (100%

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