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Research Article

Effect of canopy temperature on growth and yield of pigeonpea + kalmegh intercropping system

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Abstract : A field experiment was conducted at Nagarjun Medicinal Garden, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during 2009-10 to determine suitable row proportion for pigeonpea + kalmegh intercropping system. Canopy temperature showed decreasing pattern with the advancement in age of the crop. Maximum thermal use efficiency (TUE) in pigeonpea and kalmegh was noticed with 2:1 (3.43 kg/ha/D^0C) and 1:1 (0.72 kg/ha/D^0C) row proportion. Dry matter and grain yield of pigeonpea recorded positive and negative correlation, respectively with canopy temperature. While, herbage yield, seed yield and andrographoloide yield of kalmegh recorded positive correlation with morning canopy temperature and negative correlation with evening canopy temperature.

Key Words : Kalmegh, Intercropping, Canopy temperature, TUE, Correlation

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INTRODUCTION

Kalmegh (*Andrographis paniculata* Wall. ex Nees) belong to family Acanthaceae, is an important annual medicinal herb widely distributed in plains throughout India and Shrilanka (Patra *et al.,* 2004). It consists of 40 species out of which 21 are in India. It is referred by different vernacular names like Charayetah, Kiryat, Mahatita, Bhuneemb and Kalmegh in different group of people in India (Amminuddin *et al.,* 1997). Medicinal plants have higher demand and high value in the market and are quite suitable to our soils and weather conditions. Indian farmers have been looking for some better alternative to diversify from traditional agriculture due to gradual reduction in profitability owing to decline in productivity, increased incidence of disease and pest in traditional crops. Medicinal plants' inclusion in cropping system is a better option. Pigeonpea being a predominantly rainfed crop of this region can be grown as component crop with kalmegh. On this line an experiment was conducted to assess the suitable row proportion for pigeonpea + kalmegh intercropping system and to study the impact of climate on productivity of this system.

EXPERIMENTAL METHODS

A field experiment was conducted at Nagarjun Medicinal Garden, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, during 2009-10, so as to assess row proportion for pigeonpea + kalmegh intercropping system. The soil of experimental field was medium black.

The experiment was laid out in Randomized Block Design with four replications. The six treatments which include four intercropping row proportions (1:1, 2:1, 2:2 and 4:2 of pigeonpea and kalmegh) and sole crop of pigeonpea

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