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Response of Indian mustard (*Brassica juncea*) to nitrogen and sulphur fertilization under rainfed condition of Diara land

S.K. TOMAR* AND KARAN SINGH

Dept. of Agronomy, Krishi Vigyan Kendra, N.D. Univ. of Ag. & Tech., Belipar, GORAKHPUR (U.P.) INDIA

ABSTRACT

An experiment was carried out during the winter season of 2000-01 and 2001-02 with NDR 8501 Indian mustard (*Brassica juncea* L. Czernj & Cosson] under diara land rainfed condition to evaluate the response of Indian mustard to nitrogen and sulphur application. Plant height, branches/plant and leaf area index increased with increasing N level. Nitrogen application up to 80 kg/ha significantly increased the yield attributes and seed yield while stover yield increased upto 120 kg N/ha. Oil content decreased as N level increased. However the difference between two consecutive levels were not significant in oil content. Oil yield and protein yield also registered higher with application of 80 kg N/ha over 0 and 40 kg N/ha. Similarly application of 30 kg sulphur/ha significantly improved the yield attributes, seed and stover yields. Sulphur application increased oil content and oil yield both.

Key words : Mustard, Nitrogen, and Sulphur.

INTRODUCTION

Diara land is the land which is subjected to the diluvion or alluvion as well as a result of flooding or an account of any change in the course of river. Generally in these areas amount of water starts to collect from the end of July and continues up to end of September. These lands are available for cultivation after September. A large of these lands can produce a good quantity of mustard seed but much effort has not been made to develop a proper recommendation of fertilizer for newly developed high yielding genotypes of mustard grow on diara lands. Availability of soil moisture in diara lands during crop period is sufficient upto February. In diara lands crop yield varies according to the silt deposition among different layers, input application and precipitation during crop period.Mustard [*Brassica juncea* (L) Czernj & Cosson] owing to its hardy nature and capacity to thrive well under poor conditions of moisture and fertility is generally raised as rainfed, without fertilizer resulting in low average yield.It has however been established that this crop responds well to sulphur also (Kachroo & Kumar 1997). Often inadequate application of N and Sulphur at diara land reduces the yield of Indian mustard but the fertilizer N recovery reported 23-35% by Pramanik (1992). Information pertaining to the synergistic effect of N and Sulphur fertilization yield attributes and seed yield is lacking in diara lands of Uttar Pradesh. Therefore the present investigation was undertaken to find out the effect of N and sulphur fertilization on the yield attributes and seed yield of mustard under rainfed condition of diara land.

MATERIALS AND METHODS

A field experiment was conducted during winter *rabi* seasons of 2000-01 and 2001-02 at Raunahi site of Saryu diara 15 km. from Faizabad city. The soil of the experimental site was sandy loam having pH 7.8 & 7.5, organic carbon 0.19% and .20, available P 5.6 and 5.5 kg/ha, available K 185 and 188 kg/ha and sulphur 6.1 and 6.4 ppm. The treatments were arranged in split plot design keeping 4 nitrogen levels (0,40,80 and 120 kg/ha) in main plot and 4 sulphur levels (0, 15,30 and 45 kg/ha) in sub plots with 4 replication. The crop was sown in rows at 30 cm. apart using 5 kg. seed of variety NDR 8501 on 29 October and 25 October during 2000 and 2001, respectively. Plant to plant spacing of 15 cm. was maintained by thining. Uniform basal application of 40 kg P_2O_5 through DAP, 20 kg K_2O through MOP full sulphur and 80 per cent of the N dose as per treatment was given basal. Rest of the N was top dressed after the winter showers. The other cultural practices were performed as per recommendation. The observation on various yield attributes were recorded at harvest on 5 random plants from the net plot area.

RESULTS AND DISCUSSION

Nitrogen :

Significantly taller plant, more branches/plant and leaf area index at flower initiation were recorded with

* Author for correspondence.