

Response of pearl millet [*Pennisetum glaucum* (L.)] to different fertilizer levels in medium deep black soil under rain fed conditions

PREMSING P. GIRASE, SANJAYKUMAR C. WADILE*, PRAMOD M. CHAUDHARI AND SANJAY S. CHITODKAR

Department of Agronomy, College of Agriculture, DHULE (M.S.) INDIA

ABSTRACT

A field experiment was conducted during three rainy seasons (*kharif*) 2004, 2005, 2006 to study the response of pearl millet (*Pennisetum glaucum* L.) to different fertilizer levels in medium deep black soil under rain fed conditions at Bajra Research Scheme, College of Agriculture, Dhule. Among the different treatments application of 5 tones of FYM + 60:30:30 kg NPK/ha (T_8) produced significantly higher grain yield (35.27 q/ha), fodder yield (60.04 q/ha), gross return (Rs. 24195/ha) and net returns (Rs. 12756/ha) over rest of the treatment except application of 5 tones of FYM + 50:25:25 kg NPK/ha (T_7) which was at par with T_8 . The application of 5 tones of FYM + 50:25:25 kg NPK/ha (T_7) recorded highest B:C ratio among all treatments.

Key words : Pearl millet, Rainfed condition, Fertilisers.

INTRODUCTION

Pearl millet (*Pennisetum glaucum* L.) is the fourth most important cereal staple food crop in India next to rice, wheat and sorghum. Maharashtra stands second in area and fourth in production of pearl millet in India. It is necessary to increase the productivity of pearl millet by using advanced techniques because this crop is being continuously grown on marginal lands with low levels of inputs. However, inadequate nitrogen and phosphorus fertilization which is already deficient in the soil of arid and semiarid regions (Khateek *et al.*, 1999) Fertilizer is also important input for successful crop production. This is necessary to provide adequate and balanced dose of fertilizer to the *kharif* pearl millet. For increasing productivity and fertilizer use efficiency under rainfed condition hybrids are more responsive to fertilizers in view of this background, the present investigation was under taken to find out the optimum dose of fertilizer in medium black soil under rainfed condition.

MATERIALS AND METHODS

The field investigation on response of pearl millet [*Pennisetum glaucum* (L.)] hybrid Saburi to different fertilizer levels in medium soil under rain fed conditions during rainy season (*kharif*) in 2004, 2005 and 2006 at Bajra Research Scheme, College of Agriculture, Dhule was carried out. The soil was medium black with pH 8.1, low in available nitrogen (205 kg/ha), and available phosphorus (17 kg/ha) and rich in available potassium (492 kg/ha). The experiment was laid out in Randomized Block Design with 8 treatment replicated thrice. The treatment consisted of T_1 - 0:0:0 kg NPK/ha, T_2 -20:0:0 kg NPK/

ha, T_3 - 0:20:0 kg NPK/ha, T_4 - 0:0:20 kg NPK/ha, T_5 - 20:20:20 kg NPK/ha, T_6 - 40:20:20 kg NPK/ha, T_7 - 50:25:25 kg NPK/ha and T_8 - 60:30:30 kg NPK/ha. Pearl millet variety Saburi (RHRB 8924) was sown at 45 x 15 cm by dibbling every year. In all the treatments 5 tones of FYM/ha was applied and seeds were treated with biofertilizer (Azospirillum + PSB @ 25 gm/kg seed each). The fertilizer application was done as per the treatments, the half dose of N, full dose of P and K was applied at the time of sowing and remaining half dose of N was applied at 30 days after sowing. The rainfall received during crop season was 783.6, 392.6, and 860.6 mm in 40, 31 and 44 rainy days in 2004, 2005 and 2006, respectively.

RESULTS AND DISCUSSION

Effect of fertilizer levels:

The grain and fodder yield of pearl millet hybrid Saburi was influenced significantly due to different fertilizer levels. All the treatments produced significantly higher grain and fodder yield over control (T_1). The application of 60:30:30 kg NPK/ha + 5 tones of FYM recorded significantly higher grain and fodder yield during all three years. The data pooled over years showed significantly higher grain yield (35.27q/ha) and fodder yield (60.04 q/ha) in application of 60:30:30 kg NPK/ha + 5 tones of FYM (T_8) over rest of the treatments except in application of 50:25:25 kg NPK/ha + 5 tones of FYM (T_7) which was at par with T_8 and produced grain yield (34.46q/ha) and fodder yield (58.36 q/ha). The results are in conformity with the finding of Gautam (2000), Chaubey *et al.* (2001) and Manirathnam *et al.* (2002).