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Integrated nutrient management for seed production of oat (*Avena sativa* L.) under temperate conditions of Kashmir

B.A. KHANDAY*, A.R. SAMOON, WASEEM RAJA, JHANGIR KHANDAY AND F.A. BAHAR
Division of Agronomy, Sher-E-Kashmir University of Agricultural Sciences and Technology of Kashmir, Shalimar, SRINAGAR (J&K) INDIA

ABSTRACT

A field experiment was conducted during *rabi* season of 2003-04 and 2004-05 at Shalimar Campus of Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Srinagar to study the effect of three levels of FYM (10, 15, 20 t ha^{-1}), three levels of phosphorus (20, 40, and 60 kg ha^{-1}) and two levels of zinc (No zinc, 10 kg Zn ha^{-1}) on seed production of oat (*Avena sativa* L.), laid out in randomised block design with three replications. The observations revealed that seed and straw yields of oat increased significantly upto 15 t ha^{-1} of FYM application. Increase in phosphorus upto 40 kg P_2O_5 ha^{-1} recorded significantly higher seed and straw yields. Significantly higher yield was also recorded with zinc @ 10 kg ha^{-1}. Yield attributes *viz.*, panicle length, grains panicle^{-1}, 1000-grain weight also improved significantly with the application of FYM, phosphorus and zinc upto 15 t ha^{-1}, 40 kg P_2O_5 ha^{-1} and 10 kg Zn, respectively.

Key words : Oats, Seed, Temperate, INM.

INTRODUCTION

In Kashmir province, the total area under fodder production is 28.22 thousand hectares, which is quite insufficient for the present livestock population of 2.27 million. However, one of the major constraint for extension of oat cultivation as a fodder in valley is the inadequate supplies of seed. Currently the seed requirement is met from other states through National Seed Corporation, but the cost is quite exorbitant. The cultivation of oat after paddy as a double cropping system has come up in a big way in recent past in valley. Both the crops being exhaustive and need high inputs of fertilizer. Judicious use of organic and inorganic sources of plant nutrition are to be evaluated under existing climatic conditions. Therefore, to increase the production of oat seed, the productivity need to be increased through integrated nutrients management.

MATERIALS AND METHODS

The present investigation was conducted at Shalimar Campus of Sher-e-Kashmir University of Agricultural Sciences and Technology-Kashmir, Srinagar during *rabi* 2003-04 and 2004-05. The experiment site is situated at 35^{o} 5´ N latitude and 74^{o} 8´ longitude E with altitude of 1587 m above mean sea level. The soil of field was silty clay loam in texture having pH (6.8), available nitrogen (267 kg ha^{-1}), phosphorus (14.5 kg ha^{-1}), potassium (160.0 kg ha^{-1}) and zinc (0.68 mg kg^{-1} of soil). The experiment comprising 18 treatment combinations *viz.*, 3 levels of FYM (10, 15 and 20 t ha^{-1} on fresh weight basis), 3-levels of phosphorus (20, 40 and 60 P_2O_5 kg ha^{-1}) and 2 levels of zinc (0 and 10 kg Zn ha^{-1}) was laid out in randomised block design with three replications. The variety 'Sabzar' was sown in rows spaced 20 cm apart using seed rate of 100 kg ha^{-1}. During both the years the crop was sown in last week of October and harvested at physiological maturity. Well decomposed FYM was mixed in soil in each plot one week before sowing of crop as per the treatments. Total quantity of phosphorus and zinc as per treatments and full quantity of potassium and 1/3rd of nitrogen was band placed just before sowing. The rest of nitrogen was top dressed in two equal splits at tillering and flowering stages.

RESULTS AND DISCUSSION

Effect of FYM:

The significant response was found upto 15 t FYM ha^{-1}, which registered the mean seed yield and straw yield superiority of 11.88 and 10.3 per cent over the mean seed yield and mean straw yield obtained by applying 10 t ha^{-1} FYM, respectively (Table 2). However, the application of 20 t ha^{-1} FYM do not increased seed yield and straw yield significantly than 10 t ha^{-1} FYM application. The increased seed yield and straw yield may be due to reflection of favourable effects of yield attributes (Table 1), besides the application of FYM also encourages the microbial population, improves the physical conditions of soil and hence the crop growth. All these benefits may have resulted in increased mean seed yield and straw

*** Author for correspondence.** Present Address : Division of Agricultural Engineering, Sher-E-Kashmir University of Agricultural Sciences and Technology (K), Shalimar, SRINAGAR (J&K) INDIA