

Effect of plant density and fertilizer levels on seed yield and seed quality in Ashwagandha

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SUMMARY

An experiment was undertaken with a view to study the effect of plant density and fertilizer levels on the growth, seed yield, quality and yield-contributing characters in Ashwagandha with three replications by using three different spacing S_1 (30 x 10 cm), S_2 (30 x 20 cm) and S_3 (30 x 30 cm) and four different fertilizers levels. The wider spacing of 30 x 30 cm recorded early flowering, higher number of branches and berries per plant. While plant count at harvest, seed and root yield per hectare were maximum with the closer spacing of 30 x 10 cm. Fertilizer application of 10 t FYM with 80:40:20 kg NPK/ha recorded significant effect on early flowering, number of branches⁻¹, number of berries⁻¹, plant height, seed yield⁻¹ and per hectare, 1000 grain weight and germination percentage. While root yield⁻¹ and per hectare were maximum with the fertilizer level of 10 t FYM with 60:30:15 kg NPK/ha. The number branches⁻¹, number of berries⁻¹ and seed yield⁻¹ was highest due to S_3F_3 , S_3F_3 and S_3F_3 , interaction, respectively.

Key words : Ashwagandha, Plant density, Fertilizer level, Interaction

Ashwagandha is one of the important medicinal plant. There exist considerable gap between demand and supply of medicinal land aromatic plants, which provide raw material to pharmaceutical industries. The importance and demand of Ashwagandha is increasing in all system of medicines. The cultivation of Ashwagandha crop is mostly restricted to Mandasapur district of Madhya Pradesh and adjoining villages of Kota district of Rajasthan. In recent years its cultivation has been started in Maharashtra State particularly in Jalgaon, Buldhana, Akola, Ahmednagar, Pune and Nashik district. However, the crop has not been extensively studied for many aspects including Maharashtra conditions. Keeping these points in view, efforts have been made in the present investigation to assess the effect of different spacing and fertilizer levels and their interaction effect of plant density and fertilizer levels on seed yield and seed quality characters of Ashwagandha for Kolhapur region.

MATERIALS AND METHODS

The present study was undertaken with a view to find out the effect of different spacing, fertilizer levels and their interaction on the growth, yield and the yield contributing characters, seed yield and the quality of seed

in Ashwagandha. The experiment with 12 treatments was laid out in FRBD with 3 replications on well prepared piece of land at Agril. Botany section farm, College of Agriculture, Kolhapur during *kharij* 2007-2008. The local collected genotypes were used as planting material. The 12 treatments combinations were formulated from three spacing *i.e.* S_1 (30x 10 cm), S_2 (30x 20 cm), S_3 (30x 30 cm) and four fertilizers levels *i.e.* F_1 (Control), F_2 (40:20:10), F_3 (60:30:15) and F_4 (80:40:20). The combinations were as S_1F_1 , S_1F_2 , S_1F_3 , S_1F_4 ; S_2F_1 , S_2F_2 , S_2F_3 , S_2F_4 ; S_3F_1 , S_3F_2 , S_3F_3 , S_3F_4 ; S_4F_1 , S_4F_2 , S_4F_3 and S_4F_4 . Half dose of N and full dose of P_2O_5 , K_2O and FYM was applied uniformly at sowing as a basal dose remaining half dose of N was given as top dressing in two equal splits. The allocation of these treatments was done randomly. All other cultural practices were followed as per recommended. The data were recorded on 14 different character like days to 50% flowering, number of branches⁻¹, number of berries⁻¹, plant height, number of plant/plot, seed yield⁻¹, seed yield/ha, root yield⁻¹, root yield/ha, 1000 seed weight, recovery percentage, germination, vigour index, dry matter content/10 seedlings. The data were analysed as per Panse and Sukhatme (1967). The germination percentage of seed was tested according to the ISTA rule (Annoymous, 1985) and vigour index was calculated by equation suggested by Abdual-Baki and Anderson (1973).

RESULTS AND DISCUSSION

The character 50 % flowering was significantly early in the case of wider plant spacing of S_3 (30x 30 cm) (84.00

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