



Studies on bunch characters and yield of banana as influenced by planting systems and density

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ABSTRACT

An investigation on the effect of plant density due to different planting systems and planting densities on bunch characters and yield of banana cultivars Grand Naine (AAA) and Basrai (AAA) was carried out at Banana Research Station, Jalgaon (Mahatma Phule Krishi Vidyapeeth) during 2006-07, 2007-08, 2008-09. Analysis of the economics of the cost of cultivation was also worked out. The planting system and plant density had pronounced effect on bunch characters and yield. Highest bunch weight (14.93 kg) was observed in pair row planting system with planting single sucker per hill spaced at 0.9x 1.5 x 2.1 (P₃) which was 10.83% and 11.06% more than P₁ (2x3 m with two suckers per hill with 5001 plants per hectare) and P₂ (1.8x 3.6 m with two suckers per hill with 4629 plants per hectare) planting systems. However, lower bunch weight was compensated by total yields. Per hectare yield was more in high density population and it was highest (68.90 mt /ha) in P₁ (2x3 m with two suckers per hill) due to accommodation of number plants per hectare. Although total yields increased with the increase in plant population, number of hands per bunch, number of fingers per bunch, finger girth and finger length decreased with the increase in plant population. In general the cost of cultivation increased correspondingly with an increase in plant population due to accommodation of more number of plants per unit area. Maximum net returns were realized in pair row planting system with planting of single sucker per hill spaced at 0.9x 1.5x 2.1 m with a population of 4444 plants per hectare. An overall assessment revealed that pair row planting system with planting of single sucker per hill spaced at 0.9x 1.5 x 2.1m) with a population of 4444 plants per hectare appeared to be optimum for both Grand Naine (AAA) and Basrai (AAA) cultivars of banana.

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Key words : Banana, Planting density, Planting systems, Sucker arrangement, Bunch characters, Yield

Banana is one of the most important fruit crops grown in Maharashtra which is cultivated on an area of 83,191 hectares with 52.40 million metric tons (Patil and Rawale, 2009). Although, Maharashtra leads in production and productivity of banana, still there is potential to increase yield. High density planting is one of the novel concepts to increase the yield per unit area without affecting the fruit quality. However, the planting distance to be used depends on the variety grown, duration, method of cultivation, the height and spread of banana and plant growth due to weather conditions (Shanmugavelu *et al.*, 1992). Therefore, the present investigation was undertaken to evaluate the performance of commercial cultivars of banana namely Grand Naine (AAA) and Basrai (AAA) under different planting densities with sucker arrangement on bunch characters, yield and net returns and to find out the optimum plant spacing and plant density.

MATERIALS AND METHODS

The present investigation was undertaken to assess the bunch characters and yield of two commercial cultivars of banana namely Grand Naine (AAA) and Basrai (AAA) under the different planting systems and plant densities with sucker arrangements for three crop cycles at Banana Research Station, Jalgaon (Mahatma Phule Krishi Vidyapeeth) during 2006-07, 2007-08 and 2008-09. The experiment was laid out in Factorial Randomized Block Design comprised of three planting systems *viz.*, planting of 3 suckers per hill spaced at 2x3 (P₁) with 5001 plants per hectare, planting of 3 suckers per hill spaced at 1.8 x 3.6m (P₂) with 4629 plants per hectare and pair row planting (P₃) with planting of only one sucker per pit spaced at 0.9x 1.5 x 2.1 m accommodating 4444 plants per hectare and two varieties namely Grand Naine (V₁) and