

Research Paper

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## Agronomic manipulations for enhancing productivity of finger millet based on intercropping system

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**ABSTRACT** : Field experiments were conducted for three years during *Kharif* 2008 to 2010 at the Zonal Agricultural Research station, Shenda Park, Kolhapur (Maharashtra) to study the performance of different pulses grown as intercrop with finger millet (*Eleusine coracana* L.) in different row proportions. The result revealed that the blackgram or mothbean is recommended as an intercrop in 8:2 or 4:1 row proportion in finger millet under sub-montane zone situation in rainfall zone IX with shallow and lighter type of soils for obtaining maximum grain and straw yield as well as net profit. The grain equivalent yield was increased in the tune of 42 to 57 per cent over sole cropping.

**Key Words** : Pulse, Finger millet, Row proportion, Intercropping, Equivalent yield

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The significant beneficial effects of green revolution have been confined only to irrigated crops. The productivity of rainfed areas is still very low. The studies on cropping system shown that intercropping with specific plant geometry and selection of compatible crop with suitable varieties is profitable practice and to make proper use of available soil moisture and nutrients more efficiently and thus improving productivity of rainfed crops (Kujur *et al.*, 2010). Finger millet crop is grown during *Kharif* season on very shallow and light soil on sloppy lands under rainfed condition. Finger millet is grown as sole crop by transplanting as well as drilled method in sub-montane zone and ghat zone of Maharashtra. Intercropping is a potential system for maximizing crop production under rainfed condition in terms of space and time in subsistence farming situation (Mitra *et al.*, 2001). The low productivity is due to a number of factors and combination there off. To overcome this situation intercropping of pulses in finger millet is to be helpful to increase the production per unit area and time, and additional returns of legume and also helpful to improve soil health. The stability of yield is greater with intercropping than sole crop (Rao and Willey, 1980). Keeping these views, the present investigation was planned.

### RESEARCH PROCEDURE

Field experiments were conducted for three seasons during

*Kharif* 2008 to 2010 under rainfed conditions at the Zonal Agricultural Research Station, Shenda Park, Kolhapur (Maharashtra). The experimental site was sandy loam with pH 7.20, E.C. 0.10 dSm<sup>-1</sup>, organic carbon 0.96 per cent, available N 101.0, P<sub>2</sub>O<sub>5</sub> 10.6 and K<sub>2</sub>O 198.0 kg<sup>-1</sup>. The pulse crop of black gram (TPU 4) and moth bean (MBS 27) were taken as intercrop in finger millet (GPU 28). The intercrops were sown in finger millet in different row proportions of 2:1, 4:1 and 8:2. The row spacing of 30 cm was maintained for all the crops. The pulse crops were sown by dibbling method. The treatment of farmers' practice which includes growing of finger millet crop without any fertilizer with mixture of other millets. The thinning of pulse crop was done at 15 days after sowing and only one healthy plant was kept per hill by maintaining the 15 cm spacing between the two plants. The experiment was laid out in randomized block design with three replications. Eight treatments were studied *viz.*, T<sub>1</sub> - Sole crop of finger millet, T<sub>2</sub> - Finger millet + Blackgram (2:1), T<sub>3</sub> - Finger millet + Blackgram (4:1), T<sub>4</sub> - Finger millet + Blackgram (8:2), T<sub>5</sub> - Finger millet + Mothbean (2:1), T<sub>6</sub> - Finger millet + Mothbean (4:1), T<sub>7</sub> - Finger millet + Mothbean (8:2) and T<sub>8</sub> - Farmers practice. The gross plot size was 7.20 x 5.40 m and net plot of 6.50 x 5.40 m. The 5.0 tones of FYM ha<sup>-1</sup> with recommended dose of fertilizers (60:30:00 kg NPK ha<sup>-1</sup>) was given to the finger millet crop which was applied through urea and single super phosphate. Half