

Research Paper

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Effect of row ratio in cereal-legume fodder under intercropping systems on biomass production and economics

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ABSTRACT

Field experiments were conducted during summer season 2007 and 2008 at college farm, Navsari campus on clayey in texture soils with different cereal-legume fodders under sole and intercropping systems for getting higher fodder yield and economics. Green and dry fodder yields of sorghum/maize, cropping systems either sole sorghum or sorghum + cowpea in the ratio of 2:1 were equally good and significantly superior to rest of the systems. The intercropping of sorghum with cowpea in a row ratio of 2:1 recorded maximum land-equivalent ratio (1.51), gross (Rs. 60744/- ha⁻¹) and net (Rs. 50031/- ha⁻¹) realization along with higher benefit: cost ratio (5.67).

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KEY WORDS : Cereal-legume intercropping, Row ratio, Fodder yield, Economics

Quality forage production plays an important role in dairy industry. Availability of green forage to animals is the key to success of dairy enterprises and it is difficult to maintain the health and milk production of the livestock without supply of the green fodder. Fodder and feeds are the major inputs in animal production especially in milch animals, which account for about 60 to 70 per cent of total cost of milk production. The present availability of green fodder is about 513 million tonnes projecting a deficit of 53 per cent and that of dry fodder is around 400 million tonnes against the requirement of 676 millions tonnes (Mukherjee *et al.*, 1998). Intercropping has been recognised as a beneficial system of crop production as well as is one of the potent means of better utilization of resources and higher fodder production per unit area per unit time. The intercropping of pulses with sorghum enhances the dry matter accumulation in sorghum as reported by (Kulkarni, 1976 and Bainade, 1979). The beneficial effects of a suitable row ratio for cereal-legume intercropping system can be assessed through various competition functions (Rafey and Prasad, 1996).

RESEARCH PROCEDURE

An experiment was conducted during summer

season of 2007 and 2008 at the farm of the College of Agriculture, Navsari, Gujarat. The soil of the experimental field was clayey in texture, medium in available nitrogen (259 kg ha⁻¹) and phosphorus (30.63 kg ha⁻¹) and fairly rich in available potassium (348 kg ha⁻¹) with pH 7.7. Total 9 treatments consisted of T₁: sole sorghum, T₂: sole maize, T₃: sole cowpea, T₄: sorghum + cowpea 1:1, T₅: sorghum + cowpea 1:2, T₆: sorghum + cowpea 2:1, T₇: maize + cowpea 1:1, T₈: maize + cowpea 1:2 and T₉: maize + cowpea 2:1 in RBD with three replications. The varieties GFS-5, African tall and EC-4216 were used as test crop, respectively for sorghum, maize and cowpea which were sown, 30 cm spacing in row proportion as per treatments in first week of march. The seed rate under sole cropping was maintained at 40, 60 and 40 kg ha⁻¹, respectively for sorghum, maize and cowpea. The package of practices recommended for crops were adopted for cultivation of fodders. Three crops were harvested for green-dry forage yield. The economics was worked out considering the current market prices.

RESEARCH ANALYSIS AND REASONING

The results obtained from the present investigation have been discussed in the following sub heads :