

Research Paper

ADVANCE RESEARCH JOURNAL OF
C R P
IMPROVEMENT
Volume 3 | Issue 1 | June, 2012 : 35-39
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Yield and economic advantage assessment in fingermillet based intercropping systems in *Alfisols* of Karnataka

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ABSTRACT : A field experiment was conducted at agronomy experimental unit, University of Agricultural Sciences, Bangalore during *Kharif* 2001 to evaluate fingermillet and castor intercropping. The experimental design followed was split plot repeated thrice. Intercropping systems were in main plots and fertility levels as sub plots. There were four intercropping systems fingermillet + pigeonpea (8:2), fingermillet + *Akkadi* (unproportion mixture of cowpea, sorghum, niger, avare) (5:1), fingermillet + castor (4:1) and 8:1 compared with sole fingermillet and castor. Sub plots nutrition levels included recommended fertilizers (50:40:25 kg NPK/ha), recommended fertilizers + poultry compost (5 tonne/ha) and 50 per cent recommended nitrogen through compost and rest of NPK through fertilizers. Biomass production, yield and economic advantage assessment indicated that intercropping systems were superior over sole crops. Pigeonpea or castor as intercrops after every eight rows of fingermillet found to be advantageous than traditional *Akkadi* intercrops (5:1). Combined application of fertilizers and 5 tonne/ha of compost resulted in higher yield and economic returns.

Key Words : Biomass, LER, Grain equivalent yield, *Akkadi*, Aggressivity, RCC

How to cite this paper : Umesh, M.R., Anand, N. and Meena, M.K. (2012). Yield and economic advantage assessment in fingermillet based intercropping systems in *Alfisols* of Karnataka, *Adv. Res. J. Crop Improv.*, **3** (1) : 35-39.

Paper History : Received : 15.03.2012; Revised : 04.05.2012; Accepted : 22.05.2012

Traditional mixed/ intercropping system is normally followed by many farmers to meet their domestic demands. Selection of crops and cropping systems in relation to soil and climate is a key factor for successful crop production. Finger millet was predominant crop in *Alfisols* of Karnataka. Intercropping is a system of growing more than one crop species on the same piece of land at the same time. The benefits perceived or realized by intercropping systems include greater land use efficiency improvement in soil fertility. Intern, several factors like cultivar selection, seeding ratios, planting pattern and competition between mixture components affect the growth of species in intercropping (Caballero *et al.*, 1995, Carr *et al.*, 2004). Several legume species including pigeonpea, cowpea, soybean etc. were evaluated for their feasibility as an intercrop. The intercropping system of cereals + pigeonpea/legumes were tested and found to be profitable systems (Dhoble *et al.*, 1990; Prasanna Kumar *et al.*, 2008). Tall statured legumes were like pigeonpea are better option. But pigeonpea has the problem of more pest load, uncertain pod setting and lower yield potential look for other alternate crop. Castor was drought hardy crop well suited to dry land condition mainly due to many options of high yielding varieties and

hybrids. A present trial was conducted with an objective to identify appropriate intercrop and row proportion with finger millet under rainfed condition.

RESEARCH PROCEDURE

A field experiment was conducted during the crop season of 2001 at Agronomy field unit, Gandhi Krishi Vignana Kendra, University of Agricultural Sciences, Bangalore on a sandy clay loam soil with a pH of 6.4. The experiment was laid out in split plot design in three replications with cropping systems in main plots and fertility levels in sub plots. Cropping systems comprised of sole finger millet (C_1), sole castor (C_2), fingermillet + pigeonpea in 8:2 (C_3), fingermillet + castor in 4:1 (C_4) and fingermillet + castor in 8:1 (C_5). These systems were supplied with three fertility levels *viz.*, recommended dose of fertilizers (RDF) for both fingermillet and castor (F_1), RDF + 5t of poultry compost (F_2) and 50 per cent N through poultry compost and rest through fertilizers (F_3).

Finger millet popular variety 'GPU-28' and castor cv. DCS-9 were sown in 0.3m spaced rows. In intercropping systems both the crops fertilizers were applied based on recommendation