Curr. Agric. Vol. 30, No. 1-2, 2006, 49-52.

PRODUCTION POTENTIAL OF ARID LEGUME BASED INTERCROPPING SYSTEM IN ARID WESTERN RAJASTHAN

N.D. Yadava and R.K. Beniwal
Central Arid Zone Research Institute, Regional Research Station, Bikaner-334004

ABSTRACT

An experiment was conducted during two summer seasons (2004 and 2005) at Bikaner to study the effect of different planting systems of arid legume (mothbean and clusterbean) + pearlmillet (*Pennisetum glaucum*) intercropping systems for their total productivity and economic feasibility under arid rainfed condition of western Rajasthan. Pearlmillet intercropped under (4:1) planting system with clusterbean produced highest biological (5.26 q/ha) and grain yield of pearlmillet (1.17 q/ha) whereas the total productivity in terms of pearlmillet equivalent yield (PEY) of 14.55 q/ha was recorded with mothbean + pearlmillet (5:1) planting system. The highest net returns (Rs 9184/ha), benefit: cost ratio (1.83) and income equivalent ratio (IER) of 2.32 were recorded with cluster bean + pearlmillet (5:1) planting system.

INTRODUCTION

Arid legumes viz. mothbean (*Vigna aconitifolia* Marchal) and cluster bean (*Cymopsis tetragonoloba* (L)Taubert) are the important kharif legumes grown in arid rainfed condition of western Rajasthan. About 85 percent of total area under mothbean and cluster bean of country ,is spread in Rajasthan (Kumar, 2003). As per the 1997-98 statistics, in Rajasthan, mothbean and cluster bean are grown on 12 lakh and 19 lakh ha with a production of 2.7 lakh and 7.30 lakh, respectively (Singh *et al*, 2002 and Kumar, 2003). The soil and climatic conditions are found to be more suitable for its cultivation in Rajasthan. Mixed cropping of pearl millet with mothbean and cluster bean is a common practice in the fragile ecosystem of western Rajasthan since ancient times. Hence there is a gradual change or shift in cropping pattern from sole pearl millet to intercropping, as its reduces the risk of complete crop failure with multiple produce even under adverse weather situation also. The development of drought hardy, high yielding and short duration varieties of these legumes has opened a new avenue for their mixed or intercropping with pearl millet. The present investigation was planned to find out the most productive and remunerative crop combination of arid legume + pearlmillet intercropping and planting systems in arid western Rajasthan under rainfed condition.

MATERIAL AND METHODS

A field experiment was conducted during Kharif season of 2004 and 2005 at the Farm of Central Arid Zone Research Institute, Regional Research Station, Bikaner. The soil was sandy loam (> 85 % sand), low in organic carbon (0.07%), low in available nitrogen (61 kg/ha), phosphorus (14.2 kg/ha) and medium in available potassium (136.6 kg/ha).The experiment comprised of 12 treatments with three sole crops of mothbean, clusterbean and pearl millet and three planting systems of (4:1), (5:1) and (6:1) on row ratio basis. The one row of pearl millet was intercropped with 4,5 and 6 rows of arid legumes (mothbean and clusterbean) under randomized block design with 3 replications. The crops were sown and harvested on 15 July and 25 October during 2004 and 16 July & 22 October during 2005, respectively. All the crops were sown at an uniform row spacing of 45 cm with the application of recommended dose of fertilizer (@ 100kg DAP/ha) as a basal application for legume crop only at the time of sowing. The cultivars used were for mothbean var RMO-40, cluster bean var RGC-936 and