



Groundnut Based Cropping System for Rainfed Situation in Alfisols of Southern Agroclimatic Zone of Andhra Pradesh

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ABSTRACT

Field experiments were conducted for consecutive *kharif* seasons of 1999 and 2000 in dry lands farm of Regional Agricultural Research Station, Tirupati of Acharya N. G. Ranga Agricultural University to study the production potential of double cropping and suitability of cultivars of sequence crops under rainfed situation. During 1999, groundnut+redgram 7:1 intercropping system resulted significantly the highest groundnut pod equivalents (2101 kg ha⁻¹). Groundnut-greengram sequence resulted significantly lowest groundnut pod equivalents (1181 kg ha⁻¹) compared to the rest of the treatments. Next best groundnut based sequence crops were three red gram varieties (LRG 30, ICPL 87119 and Durga) and blackgram (PBG-32). During the year 2000 also groundnut+redgram 7:1 intercropping system resulted significantly highest groundnut pod equivalents (3841 kg ha⁻¹) followed by groundnut-fieldbean sequence cropping. Groundnut –greengram sequence resulted significantly lowest groundnut pod equivalents (2269 kg ha⁻¹).

Key words : Alfisols, Cropping System, Groundnut

Dry lands constitute about 70 per cent of arable land in India and contribute a good amount of food grains and oil seeds in our country. In Alfisols of Southern Agro-Climatic Zone, generally one crop during monsoon season under bimodal distribution of rainfall (June- December) is normal practice. However, double cropping is possible due to extended growing season, with a short duration sequence crop after groundnut, which is the major *kharif* crop. There is also possibility of failure of the sequence crop if the North – East monsoon withdraws. Therefore, an attempt is made to explore the possibilities of introducing various crops as sequence crops after *kharif* groundnut, in Dryland Farm of Regional Agricultural Research Station, Tirupati.

MATERIAL AND METHODS

Field experiments were conducted during *kharif* 1999 and 2000 at Dryland Farm of Regional Agricultural Research Station, Tirupati. During crop period a total rainfall of 458 mm was received in 30 days during 1999 and 706 mm in 40 days during 2000. The soil was sandy loam, low in organic carbon (0.42%), low in available N (180 kg ha⁻¹), medium in available P₂O₅ (23.5 kg ha⁻¹) and K₂O (175 kg ha⁻¹). The experiment was laid out in a randomized block design consisting of eight treatments viz., T₁ Groundnut + redgram (variety LRG 30) 7:1 intercropping, T₂ groundnut-blackgram (variety PBG-32) sequence, T₃ Groundnut – blackgram (variety PBG-107) sequence, T₄ Groundnut – redgram (ICPL

87119) sequence, T₅ Groundnut – field bean (local) sequence, T₆ Groundnut-greengram (LGG-460) sequence, T₇ Groundnut-redgram (LRG 30) sequence, T₈ Groundnut-redgram (Durga) sequence. The variety of groundnut was Tirupati-1 which is a Spanish bunch. Recommended spacing and fertilizer dose was followed for the crops. Seed yields of sequence crops were converted into pod equivalents of groundnut based on prevailing market prices.

RESULTS AND DISCUSSION

During 1999, groundnut + redgram 7:1 intercropping gave significantly the highest groundnut pod equivalents (2101 kg ha⁻¹) (Table) compared to the rest of the treatments. Next best groundnut based sequence crops were three redgram varieties (LRG 30, ICPL 87119 and Durga) and black gram (PBG-32) with groundnut pod equivalents of 1447, 1426, 1374 and 1425 kg ha⁻¹, respectively which were on par with each other. The lowest groundnut pod equivalents (1181 kg ha⁻¹) were with groundnut-greengram sequence cropping. Due to failure of monsoon, sequence crops were affected resulted into poor yields led to lower groundnut pod equivalents. During the year 2000 also groundnut+redgram 7:1 intercropping system resulted in significantly highest groundnut pod equivalents (3841 kg ha⁻¹) (Table) followed by groundnut-fieldbean sequence cropping (2943 kg ha⁻¹). Next best treatments were groundnut-black gram (two varieties PBG-107 and PBG-32) sequence crops with groundnut pod equivalents of 2767 and

Table. Influence of groundnut based cropping system on groundnut pod equivalent yield (kg ha^{-1}) in rainfed situation during 1999 and 2000.

Treatment	1999			2000		
	Groundnut Pod yield (kg ha^{-1})	Inter / sequence crop yield (kg ha^{-1})	Pod equivalent (kg ha^{-1})	Groundnut pod yield (kg ha^{-1})	Inter /sequence crop yield (kg ha^{-1})	Pod equivalent (kg ha^{-1})
T ₁ Groundnut + redgram 7:1 intercropping	747	1231	2101	1480	2046	3841
T ₂ Groundnut - blackgram (PBG-32) sequence cropping	915	379	1354	1939	610	2642
T ₃ Groundnut - blackgram (PBG-107) sequence cropping	920	438	1425	1921	718	2767
T ₄ Groundnut - redgram (ICPL 87119) sequence cropping	927	433	1426	1954	489	2443
T ₅ Groundnut - field bean sequence cropping	921	278	1242	2007	811	2943
T ₆ Groundnut- greengram (LGG-460) sequence cropping	910	235	1181	1959	269	2269
T ₇ Groundnut- redgram (LRG 30) sequence cropping	914	462	1447	1940	474	2487
T ₈ Groundnut- redgram (Durga) sequence cropping	908	404	1374	1998	499	2574
S. EM±			38.4			59.6
C.D (0.05)			82			127

2642 kg ha^{-1} , respectively and were on par with each other. Groundnut – green gram sequence resulted significantly lowest groundnut pod equivalents (2269 kg ha^{-1}). Groundnut + pigeonpea intercropping system gave 53 per cent yield advantage over their respective sole crops (Rao and Singh, 1990). Highest monetary returns were realized with groundnut + pigeonpea intercropping 6:1 system (Shiva Kumar and Reddy, 1993). It can be concluded that groundnut+redgram (7:1) intercropping system is most suitable compared to groundnut based sequence cropping under rainfed situation in Alfisols of Southern Agro-Climatic Zone of Andhra Pradesh.

LITERATURE CITED

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(Received on 26.08.2008 and revised on 17.02.2010)