



Research Article

LAND EQUIVALENT RATIO IN RELATION TO INTERCROPPING IN YOUNG MANGO ORCHARD

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Abstract- Trials were conducted at farmers field using various intercrops viz. blackgram, ginger, maize and paddy in 7- 8 years old mango (cv. Totapari and Baiganpalli) orchard under NATP-RRPS-8 Project at JNKVV, Jabalpur. It is observed that the intercrops influenced the yield attributing characters of the mango and black gram performed better as compare to other intercrops. Maximum number of fruits per branch, maximum number of fruits per plant and yield of mango per hectare were obtained with blackgram intercrop. Whereas, maximum fruit weight of mango was observed with intercrop French bean. The maximum LER was also recorded with blackgram intercrops without fillers.

Keywords- Land Equivalent Ratio, Mango, Intercrop, Blackgram, French bean, Ginger, Maize, Paddy

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Introduction

Mango is the most important fruit crop of the India in terms of internal consumption as well as export. The area under mango plantation is increasing day by day in India. Due to higher establishment cost of mango orchard, it is beyond the reach of small and marginal farmers. Hence, the cultivation of intercrops in the young mango orchard is desirable to maximum land and space use efficiency to generate additional income during the juvenile phase of mango orchards, [1]. Land equivalent ratio provides comparison between the intercrops and it may be helpful for selection of the intercrops to be taken in specific location [2]. The present experiments were carried out for comparative evaluation of various intercrops and their economical feasibility.

Materials and methods

The experiment was conducted in farmers field in bearing mango orchard (7-8 years old) during the year 2001-02. The varieties Totapari and Baiganpalli were planted at the distance of 8m x 8m. The intercrops paddy, blackgram, ginger, maize & French bean were grown in the interspace between mango plants. The

pomegranate (cv. Ganesh) was planted between two mango plants as filler crop during July 2001. The half of the area covered with filler crop pomegranate and half was kept without fillers. The scheduled package of practices was followed in mango pomegranate and other intercrops. The treatments were replicated thrice in RBD [3]. Various observations were recorded on yield and yield-attributing characters of mango, yield of various intercrops and land equivalent ratio were also be calculated.

Results and discussion

The inter-cropping treatments influenced the yield and yield attributing characters of mango [Table-1]. The maximum average number of panicles per branch was found with intercrop paddy without fillers and French bean with fillers and it was significantly higher over other treatments. The maximum number of fruits per branch (60), number of fruits per plant (160), yield (37.44 q/ha) and return out of sold fruits (Rs. 18,720/ha) were recorded with the intercrop blackgram without filler plants and which was recorded significantly higher from other intercrop treatments.

Table-1 Yield and yield attributing characters of mango as influenced by intercrops (May' 2002)

Treatment	Average No. of Panicle/ branch	Average No. of fruits/branch	Average fruits/ plant	Average fruit weight (g/fruit)	Average fruit yield (q/ha)	Return out of sold fruits (Rs./ha)
Paddy + Mango	25.0	50	150	140	32.76	16380
Blackgram + Mango	20.0	60	160	150	37.44	18720
Ginger + Mango	15.0	25	75	180	21.06	10530
Maize + Mango	15.0	30	75	190	22.23	11115
Frenchbean + Mango	16.0	45	90	200	28.08	14040
Paddy + Mango + Pomegranate	15.0	45	135	145	30.54	15270
Blackgram + Mango + Pomegranate	20.0	50	150	155	36.27	18135
Ginger + Mango + Pomegranate	16.0	30	105	150	24.57	12285
Maize + Mango + Pomegranate	18.5	30	90	160	22.46	11230
Frenchbean + Mango + Pomegranate	25.0	40	100	175	27.30	13650
CD 5%	2.78	4.84	11.81	18.33	2.06	1029.90

Spacing (mango – mango) = 8m x 8m, Total No. of Plants = 156/ha, Fruits sold @ Rs. 500/qt.

The maximum average fruit weight (200 g/fruit) of mango was obtained with the intercrop French bean without filler crops and it was also found significantly higher over other intercrop treatments. Similar observations were recorded [4-6] while, growing intercrops in mango orchards.

The data present in [Table-2] regarding LER of various intercrops revealed that the intercrops and filler crops influenced the yield of mango. The maximum yield (37.44 q/ha) of mango was recorded with the blackgram as intercrop. However, the minimum yield of mango was recorded with intercrop ginger with filler crops.

The intercrop blackgram recorded the maximum LER value (1.78) without filler crop followed by paddy without filler crop (1.56). Similar findings were reported by Prabhakar and Shukla, with inter cropping of vegetables. The data presented in [Table-2] also indicate that the ginger and maize crops are not suitable as intercrop in young mango orchards. Whereas, intercrop blackgram was found economical. Bhua *et al.*, also suggested intercropping in mango orchard for higher returns.

Table-2 Land Equivalent Ratio (LER) of various mango based intercropping system

Intercrops sown in kharif 2001	Yield of intercrops with mango alone (q/ha)	Yield of intercrops with mango and filler crop Pomegranate (q/ha)	Yield of intercrops in sole cropping (q/ha)	Yield of mango with intercrop (q/ha)	Yield of mango with filler crop intercrops (q/ha)	Yield of mango in sole stand (q/ha)	LER (without filler) (1/3+4/6)	LER (with filler) (2/3+5/6)
Paddy	32	30	37	32.76	30.54	40.50	1.67	1.56
Blackgram	12	10	14	37.44	36.27	40.50	1.78	1.61
Ginger	155	150	165	21.06	24.57	40.50	1.46	1.50
Maize	45000	42000	46000	22.23	22.46	40.50	1.53	1.46
French bean	62	60	70	28.08	27.30	40.50	1.58	1.53

Author Contributions

Author worked as Research Associate under this project.

Abbreviations

RBD- Randomized Block Design, LER- Land Equivalent Ratio, cv. – Cultivar

Conflict of Interest: None declared

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