

Research Article

Performance of sesamum + pigeonpea intercropping system on farmer's field

■ N.A. HIRWE AND H.S.MAHAJAN

ARTICLE CHRONICLE :

Received:

12.07.2012;

Revised :

23.09.2012;

Accepted:

19.10.2012

SUMMARY : The erratic pattern of rainfall and other climatic situation make it difficult to grown sesamum as sole crop. In order to minimize risk under aberrant weather condition intercropping with pigeon pea is an option for the farmer. The Oilseed Research Station, Jalgaon conducted 12 FLDs during 2007-2011 to observe the performance of sesamum + pigeonpea (4:2) over sole sesamum under real farm situation. The result revealed that, the adoption of sesamum + pigeonpea (4:2) intercropping system increased sesamum equivalent yield by 50.39 per cent and net monetary return by 70.37 per cent over sole sesamum.

How to cite this article : Hirwe, N.A. and Mahajan, H.S. (2012). Performance of sesamum + pigeonpea intercropping system on farmer's field. *Agric. Update*, 7(3&4): 369-371.

KEY WORDS:

Intercropping , FLD, Sesamum equivalent yield, Economics

BACKGROUND AND OBJECTIVES

Sesamum (*Sesamum indicum*) production under rainfed condition mainly reduce due to excess rain at early growth phase causes waterlogged condition and moisture stress in August-September. In Maharashtra, sesamum is cultivated on 52600 ha with production of 18900 tones and productivity of 360 kg/ha in *Kharif* season (Anonymous, 2012). For achieving stable crop production and to provide insurance mechanism against aberrant weather condition as well as to mitigate abiotic stresses during peak period under rainfed agriculture, intercropping is one of the best agronomical option to minimize risk lead to farmer profit and subsistence oriented, energy efficient and sustainable venture (Faroda *et al.*, 2007). Pigeonpea is an important crop grown in state. Its ability to utilize P from Fe-P, does not unduly compete with companion crop for fertilizer P or other sources of P such as Ca-p (Ae *et al.*, 1990). Therefore, it was included in various intercropping system. Among sesamum base intercropping system sesamum + pigeonpea (4:2) is an option under rainfed situation. Hence, Front Line Demonstration with said technology conducted on farmers field at different tahsils.

RESOURCES AND METHODS

Oilseed research station, Jalgaon has groundnut and sesamum as major crop on which research and development activities are formulated and implemented. Several need base and location specific technologies were developed and adopted by the farmer. As an extension activity, this institute laid out the 15 Front Line Demonstrations (FLD s) on sesamum during *Kharif* 2007-2011 at different location of Jalgaon districts. Out of that three demonstrations vitiated due to various biological and environmental factor (Table A). These demonstrations of seamum + pigeonpea (4:2) as improved technology were taken on area of 0.4 ha of each farmer. Simultaneously, one control plot of sole sesamum was also kept to for comparison. Crop was grown under rainfed situation on medium to deep soil.

Interested sesamum growers were selected in consultation with agriculture officer and member of Shetkari Shastradya Manch of the centre. The selected farmer imparted pre demonstration training through off campus mode to import knowledge about improved technology .The demonstration were regularly supervised by team of scientist containing principle scientist ORS,

Author for correspondence :

N.A. HIRWE

Department of
Agronomy, Krishi Vighan
Kendra, Mamurabad
Farm, JALGAON (M.S.)
INDIA

Email: ns_hirwe5mar@
rediffmail. com

See end of the article for
authors' affiliations

Table A : Details of front line demonstration organized under rainfed situation

Year	Location (Tahsil)	No. of FLD organized		
		Successful	Vitiated	Total
2007	Bhusawal, Chopda, Bodwad	05	-	05
2008	Jalgaon, yawal, Erandol	02	2	04
2009	Jalgaon	01	-	01
2010	Jalgaon, Pachora, Bhadgaon	02	1	03
2011	Bhusawal, Chopda,	02	-	02
Total		12	03	15

jalgaon, agronomist, entomologist and scientist from AICRP on sesamum and niger, JNKVV campus, Jabalpur. The primary data were collected from selected FLD farmer with the help of interview schedule, interpreted. Sesamum equivalent yield was calculated by conversion of sesamum and pigeonpea of intercropping into monetary value (Rs./ha) received during each year to compare with sole sesamum and presented in Table 1.

OBSERVATIONS AND ANALYSIS

From the data presented in Table 1, it was observed that under sesamum + pigeonpea (4:2) intercropping system, sesamum yield ranges from 330 to 469 kg/ha where as pigeonpea yield from 440 to 665 kg/ha during 2007-11. The mean value indicate that, farmer achieved an average yield of 412.4 kg/ha for sesamum and 549 kg/ha for pigeonpea. When data were interpreted in equivalent yield and analyzed over five year, sesamum equivalent yield increased by 50.39 per

cent over sole sesamum under real farm situation. It was mainly due to an additional return received from pigeonpea as an intercrop.

Economic analysis of the data indicated that, adoption of sesamum + pigeonpea (4:2) intercropping system promisingly increased mean gross monetary return (Rs 37960/ha), net monetary return (Rs 21161/ha) and B:C ratio (2.26) over the period of five year (Table 2). Though intercropping system slightly increased the cost of cultivation, it utilize all resources more efficiently than sole cropping (Sheoran *et al.*, 2010). Beside that increased total yield and received more returns. Intercropping system increased net monetary return from 55.09 to 83.93 5 over sole cropping during implementation period. Average increased in net monetary return of 70.37 per cent indicate its economic viability. Thus it could be conclude that, adoption of sesamum +pigeonpea (4:2) intercropping system will be more remunerative than sole cropping on farmers field of Jalgaon district.

Table 1 : Productivity potential of sesamum + pigeonpea intercropping under real farm situation

Year	No. of demo.	Intercropping mean seed yield (kg/ha)		Sesamum equivalent yield (kg/ha)	Sole sesamum yield (kg/ha)	Increased equivalent yield (%) over sole sesamum
		Sesamum	Pigeonpea			
2007	05	469 (31)	440 (19)	739	568 (31)	30.11
2008	02	420 (50)	650 (25)	745	454 (50)	64.09
2009	01	330 (55)	440 (45)	690	440 (55)	56.82
2010	02	435 (55)	550 (35)	785	525 (55)	49.52
2011	02	408 (57)	665 (38)	851	562 (57)	51.42
Mean		412.5	549	762	509.8	50.39

* Fig.in () indicated market price of the respective crop in Rs/kg.

Table 2 : Economics of sesamum + pigeonpea intercropping under real farm situation

Year	No. of demo.	Gross monetary return (Rs/ha)		Cost of cultivation (Rs/ha)		Net Monetary return (Rs/ha)		Increase in net return (%) over sole sesamum	B: C ratio	
		Inter cropping	Sole cropping	Inter cropping	Sole cropping	Inter cropping	Sole cropping		Inter cropping	Sole cropping
2007	05	22899	17608	12814	11882	10085	5726	76.12	1.79	1.48
2008	02	37250	22700	14346	9753	23814	12947	83.93	2.78	2.33
2009	01	37950	24200	17382	10938	20568	13262	55.09	2.18	2.21
2010	02	43175	28875	19468	15140	23707	13735	72.6	2.22	1.91
2011	02	48526	32034	20893	15195	27633	16839	64.10	2.32	2.11
Mean		37960	25083	16799	12582	21161	12502	70.37	2.26	2.01

Authors' affiliations :

H.S. MAHAJAN, Department of Agronomy, Oilseed Research Station,
JALGAON (M.S.) INDIA

REFERENCES

Ae, N., Arihara, J., Okado, K., Tyoshiba and Johnson, C. (1990). Phosphorus uptake of pigeon pea and its role in indian subcontinent. *Sci.*, **24** (8) : 477-480.

Anonymous (2012). Research Review Committee report of MPKV, Rahuri (M.S.) INDIA.

Faroda, A.S., Joshi, N.L., Singh, R . and Saxena, A. (2007). yield and economics of intercropping system of maize under rainfed condition. *Indian J. Agric. Sci.*, **76** (9) : 554-556.

Sheoran, P., Sardanand, V., Singh, S. and Bhushan, B. (2010). Bioeconomic evaluation of rainfed maize base intercropping system with blackgram under different spatial arrangement *Indian J. Agri. Sci.*, **80** (3) : 244-247.