



P-ISSN: 2349-8528

E-ISSN: 2321-4902

[www.chemijournal.com](http://www.chemijournal.com)

IJCS 2020; 8(5): 912-913

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Received: 19-05-2020

Accepted: 28-07-2020

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## Effect of weed management practice on yield and economics of Mungbean [*Vigna radiata* (L.)] in guava based Agro-horti system

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DOI: <https://doi.org/10.22271/chemi.2020.v8.i5m.10414>

### Abstract

A field experiment was conducted Agricultural Research Farm, Rajeev Gandhi South Campus, Barkachha, Mirzapur (U.P.) during *kharif* season of 2009-10. Application of imazethapyr 125g/ha at 20 DAS was recorded significantly higher grain yield (1123.33kg/ha) and straw yield (883.33 kg/ha) and gross return Rs.41589 ha<sup>-1</sup>, net return (Rs.29114 /ha) and B:C ratio (2.33) over rest of the herbicidal treatments.

**Keywords:** Herbicide, mungbean, yield and economics

### Introduction

Greengram [*Vigna radiata* (L.)] is an excellent source of high quality protein and contains about 25 per cent protein. In India, greengram contributes 14 per cent in total pulse area and 7 per cent of total pulses production. Greengram is an important grain legume of the country having wider adaptability throughout the year and is grown during *kharif* and *zaid* in north India and in *rabi* season in south India. India occupies an area of 3.10 million hectare, total production of 1.1 million tonnes with a productivity 0.41 tonnes ha<sup>-1</sup>.

Guava [*Psidium guajava* (L.)] of the family Myrtaceae, one of the most gregarious fruit trees and is popular among local farmers of eastern Uttar Pradesh. Guava being a hardy plant and planted at a wider spacing provides an excellent opportunity for intercropping during its early growth stages.

Traditionally, weed control in mungbean is done by physical methods. Often 2-3 hand weeding are required to keep the crop weed free. Manual weeding is costly because it is not only time consuming but labour intensive also. However, its additional advantage of providing greater aeration and soil moisture conservation can not be ignored. But, with the increasing crisis of labour, exploring the possibility of herbicidal weed control in mungbean deserves attention.

### Materials and Methods

The present investigation was carried out during *kharif* season of 2009-10 at the Agricultural Research Farm, Rajeev Gandhi South Campus, Barkachha, Mirzapur (U.P.). The research farm is situated at a distance of about 11 km in South-East from Mirzapur on Mirzapur-Robertsgunj road. Geographically, experimental site falls under the sub-tropical zone and located on 25° N latitude 85° E longitude and at an altitude varying from 168 to 365 meters above mean sea level. The soil of the experimental field was loamy sand in texture with low in organic carbon (0.27%), low in available nitrogen (137.8 kg/ha), medium in available phosphorus (4.5 kg/ha) and potassium (185.7 kg/ha) and slightly alkaline in reaction with pH 7.4

### Results and Discussion

#### Effect on yield

The data revealed that the treatments had significant effect on grain yield, straw yield and harvest index and have been presented in (Table 1) An examination of data revealed that all the weed management treatments significantly increased the grain yield of greengram over

weedy check. The weed free treatment recorded the maximum grain yield (1213.33kg/ha). In herbicidal treatments application of imazethapyr 125g/ha at 20 DAS was recorded maximum grain yield (1123.33kg/ha) and straw yield (2426.67 kg/ha) and was significantly superior to other herbicidal treatments at all the growth stages. The minimum grain yield (480kg/ha) and straw yield (883.33 kg/ha) was recorded in weedy check. The minimum grain yield was recorded under weedy check which was attributed due to more weed growth, total weed dry weight and poor yield attributing characters. Results are in agreement with the findings of Naeem (2001) <sup>[2]</sup>, Dungarwal *et al.* (2003) <sup>[1]</sup>, Raman *et al.* (2005) <sup>[3]</sup>, Sardana *et al.* (2006) <sup>[4]</sup>, and Sharma and Yadav (2006) <sup>[5]</sup>.

### Effect on economics

Economics of different treatments have been presented in

**Table 1:** Effect of herbicides on grain yield and straw yield of Mungbean in Guava based Agro-Horti system

Treatment	Rate (g ha <sup>-1</sup> )	Time of application (DAS)	Grain yield kg/ha	Straw yield kg/ha
Imazethapyr 10% SL + 0.2% Surfactant	75	10	840.00	1936.67
Imazethapyr 10% SL + 0.2% Surfactant	75	20	1000.67	2280.00
Imazethapyr 10% SL + 0.2% Surfactant	100	10	980.00	2243.33
Imazethapyr 10% SL + 0.2% Surfactant	100	20	1066.67	2336.67
Imazethapyr 10% SL + 0.2% Surfactant	125	10	1093.33	2390.00
Imazethapyr 10% SL + 0.2% Surfactant	125	20	1150.00	2426.67
Hand weeding	-	20 & 40	1213.33	2526.00
Weedy check	-	-	422.00	1150.00
SEm+-			8.12	33.36
C.D.(P=0.05)			24.56	100.96

**Table 2:** Effect of herbicides on economics of Mungbean in Guava based Agro-Horti system

Treatment Combinations	Gross return (Rs./ha)	Net return (Rs./ha)	B:C ratio
(W1) imazethapyr 75g at 10 DAS	30624	18979	1.62
(W2) imazethapyr 100g at 20 DAS	36420	24362	2.02
(W3) imazethapyr 125g at 10 DAS	35704	23229	1.86
(W4) imazethapyr 75g at 20 DAS	38682	27037	2.32
(W5) imazethapyr 100g at 10 DAS	39654	27596	2.28
(W6) imazethapyr 125g at 20 DAS	41589	29114	2.33
(W7) Hand weeding 20&40 DAS	43818	29910	2.15
(W8) Weedy check	15651	5493	0.54

### Conclusion

Based on the results of one year experimentation, it seems quite logical to conclude that potential production, profit and effective weed management in *kharif* mungbean in guava based Agro-Horti system. Application of imazethapyr 125g at 20 DAS showed maximum grain yield (1213.33 kg/ha) and net returns (Rs. 29114 ha<sup>-1</sup>) and benefit: cost ratio (2.33) was also recorded maximum in this treatment.

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(Table 2) The data recorded under different components of economics revealed that gross return increased with increasing grain and straw yield of crop obtained under different treatments. The data on economics of various herbicidal treatments revealed that the plot treated with imazethapyr 125g at 20 DAS recorded maximum gross return Rs.41589 ha<sup>-1</sup> and gave the maximum net return of Rs.29114/ha and benefit: cost ratio 2.33. Data indicates that the total cost of cultivation was maximum Rs. 12475 ha<sup>-1</sup> for greengram, respectively in all the treatments. Thus the higher cost involve in manual weeding was not compensated by additional grain yield obtained in hand weeding resulting lower benefit: cost rates. These results are in close conformity with the finding of Dungarwal *et al.* (2005) and Sardana *et al.* (2006) <sup>[4]</sup>.

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