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WEED MANAGEMENT IN CUSTURD APPLE *(Annona Squacmosa)* GREEN GRAM (*Vigna radiate* L.) AGRI-HORTICULTURAL BASED INTERCROPPING SYSTEM

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Abstract: *Crops along with agro horticulture based agro forestry can yield more productivity and great enhancement in obtaining greater productivity and also food grains. So, to mitigate the problems related to drought condition it is very compulsory to select suitable crops and agro horticulture system. Keeping in view of the above problem this experiment was planned along with proper weed management were conducted.*

Keywords: *Green gram, Intercropping system, Agroforestry, Agrihorticultural system, weed management.*

Introduction: In India, due to increasing population and also fighting or competition for the limited resources has result a drastic change in sustainable production and availability of food grains and thus it has result difficulties in maintaining present arable land i.e. 142mha.According to current data and estimation, developing country in an agreement decided to increase enhancement in food, fodder and fuel by 60-65% in the next 25 years just to fulfil the need of growing population. It can only be achieve through implementation of technology, planning and advanced based system like agro horticulture of agro forestry system. Earlier, extra force were made to impose crop yielding plant on agricultural field to obtain grain and fodder crops and because of this planning certain important agro forestry trees were neglected and were keep aside and this lead the drought condition and affecting the live of the people badly. About 95-99% area in our country is under rain fed condition that supports 40% of human and 65% live stock population. But, this is a fact that if crops along with agro horticulture based agro forestry can yield more productivity and great enhancement in obtaining greater productivity and also food grains. So, to mitigate the problems related to drought condition it is very compulsory to select suitable crops and agro horticulture system. Keeping in view of the above problem this experiment was planned.

Materials and Methods

For the above severe problem, experiments were conducted at Rajiv Gandhi south campus, backachha, Mirzapur. In the year 2014-2015, during kharif season experiment with different treatment and replication were imposed on ago horticulture based agro forestry system. Geographically, the experiment site falls under the semi-arid to sub-humid zone and located in vindhayan region of district Mirzapur, (25^0 18' N latitude, $82^0$37' E longitude and altitude of 128.93 m above mean sea level) occupying over an area of more than 1000 ha where variety of crops like agricultural, horticultural, medicinal an aromatic plants are grown. The soil of this region comes under agro-climatic zone III A (semi arid eastern plain zone. Estimated maximum Temperature in summer is as high as 45^0 c and minimum temperature in winter falls below 10^0 c. The annual rainfall of locality was 1081.1 mm in 2012, of which nearly 90% is contributed by south-west monsoon between July to September.

The experiment was laid in randomised block design on uniform topography and well drains soil which has homogeneous fertility and textural make up. Soil is sandy clay loam in texture, neutral in reaction, low in available

nitrogen (135.8 kg/ha) and phosphorus (10.5kg/ha) and medium in available potassium (182.7kg/ha). The total rainfall during the crop duration was 411.8 mm in the year 2014 (2 august to 10 October). Major part of rainfall received in the month of august during the experimentation. The maximum rainfall of 296.4 mm was recorded during 38th week of 2014 while the minimum was 4.1 mm in week 43rd week of 2013.

The weekly mean maximum and minimum temperature during the experiment ranged from 28.9° c to 33.1° c and 15.8° c to 29°c respectively. The temperature begins to rise from the month of February and reaches humidity in this region ranged between 68 and 94 % from June to September. Total number of treatments were six i.e. Imazithapyre, pendimethalin, Imazithapyre+one H.W.,pendimethalin+one H.W.,(hand weeding), weed free and weedy check replicated fourthly in 5.0 m* 4.0m net plot size. The chemical formula of Imazithapyre is (+)-2-4,5-dihydro-4 methyl-4-(methylethyl)-5—oxo-1H-Imidazol-2-Y11-5-ethyl-3-pyridine carbolic acid whereas the trade name is pursuit. The chemical formula of pendimethalin is N-(1-ethlpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine and the trade name is stomp. The crop was sown on 15, July, 2014 and harvested on 15, September.2014.

Results and Discussions

The data related to total weed density as influenced by weed control treatment at different stages of crop growth is given in table 1 and it revealed that density of weeds increased up to 45 DAS and there after it decreased at successive stages of crop growth. Minimum total weed density was recorded with pendimethalin +1 H.W. which was significantly superior over rest of the herbicidal treatment. The next best treatment in this respect was pendimethalin +H.W. Application of pendimethalin + 1H.W. recorded maximum weed control efficiency i.e.81.88, 78.25 and 80.95 followed by Imazithapyre +1H.W. 67..95,70.42,and 74.08 at60 days after sowing. Results are in conformity with the findings [1 & 2]. The details of weed flora observed in the experimental field are given in table-2.fontes [3] also reported that the crop which had minimum weed growth during the critical period had better growth and yield attributes. pendimethalin +one H.W. showed better efficiency in increasing the grain and straw yield in comparison to other herbicide. Spraying of pendimethalin +one hand weeding recorded maximum seed and straw yield as compared to other weedicide application. Conducted an experiment on mung and found that application of pendimethalin (0.75 kg/ha)+one hand weeding (30 DAS) recorded the highest grain yield (889 kg/ha) [4]. The data presented in table 2 clearly showed that pendimethalin + one H.W gave maximum net return of Rs 41104 per ha, followed by Imazithapyre +one H.W.

Table 1.Effect of herbicides on grain yield, Stover yield, and harvest index of Mung bean and custard apple based agri horticultural system.

Treatment	Total Weed Density (20 DAS)	Weed Control Efficiency at 20 DAS (%)	Weed Control Efficiency at 40 DAS (%)	Grain Yield (q/ha)	Straw Yield (q/ha)	Net Return (Rs/ha)
Imazithapyre	8.79	47.82	40.33	11.25	21.23	29974
pendimethalin	8.01	57.72	58.88	12.31	24.74	34199
Imazithapyre+H.W.*	4.08	67.95	70.42	13.06	25.58	35739
Pendimethalin+ H.W,	4.42	81.85	78.25	14.50	27.13	41104
Weed free	0.71	100	100	15.00	28.67	42614
Weed check	12.23	0.00	0.00	5.25	20.21	10774
S.Em.+	0.24	--	--	0.387	0.893	--
C.D.(0..05)	0.43	--	--	1.168	2.69	--

**H.W.=Hand weeding*

Table 2 Details of weed flora of the experimental plot

S.N.	Common name	Botanical Name
1.	Jungle rice	*Echinochloa colonum*
2.	Nut grass	*Cyperus rotandus*
3.	Hourse purslane	*Trianthema monogyma*
4.	Cow foot grass	*Dactyloctenium aegyptium*
5.	Bring raj	*Eclipta alba*
6.	Slander amaranthus	*Amaranthus virdis*

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