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Evaluation of Insecticides for management of *Marucavitrata* in Pigeonpea

The experiment was laid in a Randomized Block Design (RBD) with 12 treatments replicated thrice including the untreated control with 25m^2 size plots for each treatment at RARS Lam farm. The treatments were applied at around 50% flowering synchronizing with moderate infestation of *M.vitrata* in the field. A total of three applications of treatments were given during the crop growth at 10 days interval. For recording the data five plants were selected randomly for each treatment and replication leaving border rows. The observations were recorded before treatment and at 5 days and 10 days after each spray for flower damage, pod damage, finally yield was also recorded.

Effect of treatments on inflorescence damage

The efficacy of different insecticides on inflorescence damage observed at five and ten days after each spray showed that spinosad (84.70%) and emamectin benzoate (82.07%) were superior over rest of the treatments (table-1) and showed more than 80 per cent mean reduction of inflorescence damage over

Table 1. Effect of insecticide treatments on inflorescence damage, pod damage and yield

Treatments	Inflorescence damage percent reduction over control			Mean	Pod Damage	Yield Per Hectare
	1st Spray	2nd Spray	3rd Spray		(%)	(Kg/ha)
Chlorpyriphos (0.05%) + Dichlorvos (0.1%)	62.01^{H}	45.01^{H}	41.81^{I}	49.61	3.33^{BCD}	1046.80^{CD}
	(51.94)	(42.13)	(40.28)	(44.78)	(10.47)	
Pyridalyl (0.002%)	47.41^{K}	41.29^{I}	32.54^{J}	40.41	4.09^{CDE}	1170.03^{BCD}
	(43.45)	(43.45)	(34.76)	(40.55)	(13.05)	
Indoxacarb (0.0145%)	58.82^{I}	64.23^{D}	64.22^{E}	62.42	3.28^{BC}	1388.16^{AB}
	(50.07)	(53.25)	(53.25)	(52.19)	(10.47)	
Lufenuron (0.01%)	69.81^{F}	45.58^{H}	45.83^{H}	53.74	3.68^{BCD}	1138.93^{CD}
	(56.66)	(42.42)	(42.59)	(47.22)	(11.09)	
Thiodicarb (0.075%)	77.37^{E}	52.32^{G}	52.91^{G}	60.86	2.60^{B}	1139.20^{CD}
	(61.89)	(46.32)	(46.66)	(51.62)	(9.28)	
Spinosad (0.015)	95.50^{A}	77.53^{B}	81.08^{A}	84.69	1.24^{A}	1518.40^{A}
	(77.75)	(61.68)	(64.16)	(67.06)	(6.29)	
Flubendiamide (0.006%)	88.69^{B}	74.29^{C}	75.55^{D}	79.57	3.67^{BCD}	1335.76^{AB}
	(70.36)	(59.47)	(60.33)	(63.38)	(11.09)	
Proclaim (0.0025%)	86.94^{C}	82.36^{A}	76.93^{B}	82.07	1.64^{A}	1165.80^{CD}
	(68.78)	(65.20)	(61.27)	(65.08)	(7.27)	
Lambda – cyhalothrin (0.005%)	48.74^{J}	54.90^{F}	59.68^{F}	54.44	3.19^{BC}	1047.16^{CD}
	(44.26)	(47.81)	(50.53)	(47.53)	(10.30)	
Novaluron (0.01%)	78.49^{D}	61.87^{B}	76.22^{C}	72.19	1.62^{A}	1061.70^{CD}
	(62.38)	(51.80)	(60.80)	(58.32)	(7.27)	
Rynaxypyr (0.009%)	64.65^{G}	52.69^{G}	52.75^{G}	56.7	1.61^{A}	1071.93^{CD}
	(53.49)	(46.55)	(47.12)	(49.05)	(7.27)	
Untreated control	0	0	0		5.32^{F}	796.66^{E}
					(13.31)	
F - test	Sig	Sig	Sig		Sig	Sig
SEm±	0.42	0.392	0.196		0.257	75.106
CD (p=0.05)	1.23	1.151	0.575		1.195	220.25
CV%	6.7	8	12.3		7.3	11.2

untreated control. Spinosad is most effective in reducing the pest population due to the active principle spinosyn. The findings are similar to that of Lakshmi *et al.* (2002) who reported that spinosad 48 SC @0.005% was effective in controlling *M. vitrata* on urd bean by recording 63.99% of larval populationreduction over control. Vishal Mittal and Ram Ujagir (2005) reported spinosad90 g recorded lowest larval population against pod borer complex in pigeonpea. Spinosad was effective in reducing larval population of *M. vitrata* in pigeonpea (Ranga Rao *et al.* 2007)

The next best insecticide was emamectin benzoate, which recorded 82.07 percent reduction of inflorescence damage over control. Emamectin benzoate belongs to new class of insecticides Avermectins andinterfers with neurotransmitters of target pests, and results in disruption of nerve impulse. It has both contact and stomach poison action. Srinivasan *et al*. (2007) reported that emamectin benzoate 1.9 EC was effective in reducing larval damage on bollworm complex.

Effect of treatments on pod damage

The insecticides spinosad (1.24%), rynaxypyr (1.61%), novaluron (1.62%), and emamectin benzoate (1.64%) were effective in reducing the pod damage over control and they were on par with each other (Table-1). The results are similar to the studies of Ranga Rao *et al* (2007) who reported that spinosad 45 SC @ 0.4 ml/lit was effective in reducing pod damage to 8.5% against *M. vitrata* in redgram. Spinosad 45SC @ 90 g a.i/ha recorded 10.6% pod damage against *M. vitrata* in pigeonpea (Vishal Mittal and Ram Ujagir, 2005).

Effect of treatments on yield

The maximum pod yield was recorded with spinosad (1518.40 kg/ha), indoxacarb (1388.16 kg/ha) and flubendiamide (1335.76 kg/ha) and these three treatments were on par with each other.Ranga Rao *et al.* (2007) reported maximum yield of 688 kg/ha with spinosad 45 SC against *M. vitrata* in redgram. Plot treated with spinosad 90SC recorded maximum yield of 1744 kg/ha against *M. vitrata* in pigeonpea (Vishal Mittal and Ram Ujagir, 2005). Plot treated with indoxacarb 14.5 SC recorded maximum yield of 750 kg/ha against *M. vitrata*(Ranga Rao *et al.* 2007).

Spinosad (0.015%) and Proclaim (0.0025%) treatments were effective in controlling *Marucavitrata* by recording 84.70 per cent and 82.08 per cent mean reduction of inflorescence damage over control respectively. The least pod damage was recorded in Spinosad (52.10%), rynaxypyr (45.78%), novaluron (45.41%) and Proclaim (44.96%) which were on par with each other. The highest yield was recorded in Spinosad (1518.40 kg/ha), indoxacarb (1388.16 kg/ha) and flubendiamide (1335.76 kg/ha) treatments.

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