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## Evaluation of cow-based organics against groundnut pests

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### Abstract

A field experiment was conducted to identify the best cow based organic against the pests of groundnut in the research farm of Agricultural Research Station, Utukur, Kadapa during *Kharif*, 2017. The treatments in the experiment are Neemastra@ 20ml/l, Bramhastra@ 20ml/l, Agniastra@20ml/l, NSKE (organic check), Imidacloprid@ 0.4ml/l and water spray as untreated check. The present investigation revealed that, imidacloprid 0.4 ml/l was found to be effective at seven days after spraying with lowest foliar per cent damage of leaf hopper (6.49%) and thrips (4.39%) followed by neemastra 20 ml/l (14.87% and 10.72%) and NSKE 5% (13.83% and 11.56%) at 7 days after spraying. Agniastra 20 ml/l found to be effective against spodoptera per cent damage (2.70%) followed by bramhastra 20ml/l (4.71%) and neemastra (5.34%) at 7 DAS. In groundnut sucking pests are effectively controlled by imadacloprid @ 0.4 ml/l than any other cow based organics but, regarding *Spodoptera* incidence Agniastra@ 20ml/l was found to be superior among the organics evaluated.

**Keywords:** cow based organics, Neemastra, Brhamastra, Agniastra

### Introduction

Groundnut (*Arachis hypogaea* L.) is a leading oilseed crop in India and an important oilseed crop of tropical and subtropical regions of the world. Nutrient and pest management are the two key issues in groundnut production for realizing higher yields and productivity. Good seed groundnut are rich in quality, aroma and in appearance. These add the value to the cultivation of groundnut. Organic production are eco friendly and fetch higher prices for organic groundnut in the market. Groundnut produced by organic practices had higher seed quality and aroma (Mendoza, 2004) <sup>[5]</sup>. The information on organically grown and pest management in groundnut is not available and scanty under rainfed condition. Groundnut crop is attacked by about 90 species of insect pests (Wightman *et al.*, 1990) <sup>[8]</sup>. The total yield loss due to insect pests of groundnut was up to 40.2 per cent (Baskaran *et al.*, 2013) <sup>[2]</sup>. In order to control the loss caused by pests in groundnut, lot of pesticides were proved to be effective, but there are no studies on pest management with botanicals and cow based organics. A very little attention has been paid on the usage of botanicals and cow based organics against leaf hoppers, thrips, leaf miner and *Spodoptera* in the groundnut ecosystem of Andhra Pradesh, hence the present investigation has been carried out at Agricultural Research Station, Utukur, Kadapa.

### Materials and Methods

A field experiment was conducted during *Kharif*, 2017 at Research farm, Agricultural Research Station, Utukur, Kadapa ARS, Utukur, Kadapa with the following six treatments with four replications of each plot size 4.8 x 4.0 m, sowing was done on 21.06.2017 with Dharani variety and was crop was harvested on 08.10.2017.

- T1: Neemastra @ 20 ml/l
- T2: Bramhastra @20 ml/l
- T3: Agniastra @20 ml/l
- T4: NSKE (Organic check)
- T5: Imidacloprid@ 0.4 ml/l
- T6: Untreated check (water spray)

### A. Preparation of Neemastra

#### Material required

1. 100 L Water

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2. 5 L of Deshi Cow Urine
3. 2 Kg Deshi Cow dung
4. 5 Kg Neem leaves crush (pulp)

**Procedure:** 100 l of water was taken, 5 L urine of deshi cow, 2 Kg of deshi cow dung and 5 kg of crushed Neem leaves pulp was added then solution was fermented for 24 hours, stirred this solution twice a day by a stick and then filtered by cloth.

### B. Preparation of 'Bramhastra'

#### Material required

1. 10L Deshi cow urine
2. 3 Kg Pulp of Neem leaves
3. 2Kg Seetaphal pulp (Custard apple leaves)
4. 2Kg Guava leaves pulps

**Procedure:** 10 l of deshi cow urine was mixed with 3kg pulp of Seetaphal (Custard apple) leaves, 2 kg pulp of Papaya leaves, 2 kg pomegranate (Danamma) leaves pulp, 2 kg of Guava leaves pulp. Then boiled this solution for 5 times, Kept the solution quite stable for 24 hours, filtered this solution with a cloth and store this Bramhastra in a can or bottles.

### C. Preparation of 'Agniastra'

**Procedure:** 10 l deshi cow urine was taken in a pot, 1 kg tobacco leaves (after crushing), 500 g of chilli pulp and 500 g of garlic pulp were added to that cow urine. Next 5 kg pulp of neem leaves was added to that and boiled the solution for 5

times continuously, kept this solution quite stable for 24 hours. Then filtered the solution by cloth and stored this Agniastra in the can or bottles.

#### Data collected

1. Per cent incidence of thrips, leaf hopper, leaf miner and *Spodoptera litura* before spraying, 7,14 and 21 days after spraying
2. Natural enemies
3. Yield attributes
4. B: C ratio

#### Results and Discussion

Imicloprid @ 0.4ml/l of water had significantly reduced the thrips population and the per cent thrips damage as 4.39%, 6.42%, 7.78% at 7, 14 and 21 DAS respectively with highest yield of 2139 kg/ha and BC ratio of 1:2.19, followed by Neemastra @ 20ml 10.72%, 12.79%, 13.39% at 7, 14 and 21 DAS respectively (Table 1). The present results are in conformity with the studies conducted by Bariya, K.P 2000 [1], Singh *et al.*, 2012 [7] and Naresh kumar *et al.*, 2016 [6]

Agniastra @ 20ml/lit water significantly reduced the per cent Spodoptera damage as 2.70%, 3.58%, 6.76% at 7, 14 and 21 DAS respectively, followed by Bramhastra @ 20ml 4.71% at 7 DAS, Imidacloprid 6.09% at 14 DAS and NSKE 10.42% at 21 DAS (Table 2). Bhatnagar *et al.*, 2014 [3] and Mane and Mohitte, 2014 [4] confirmed that Agniastra controlled Spodoptera very effectively. Leaf miner incidence was very low in all the treatments and it was found to be non significant.



Preparation of cow based organics at ARS, Utukur, Kadapa, Andhra Pradesh during kharif, 2017





**PREPARATION OF COW BASED ORGANICS**

Preparation of Cow Based Organics



**Experimental view**

Experimental view

**Table 1:** Efficacy of cow based organics against leaf hopper and thrips in groundnut during kharif, 2017

Treatments	Per cent leaf hopper damage				Per cent thrips damage			
	Pre treatment	7DAS	14DAS	21 DAS	Pre treatment	7DAS	14DAS	21 DAS
T1	26.45 (31.11)	14.87 (22.86)	17.08 (24.32)	18.92 (25.65)	18.70 (25.50)	10.72 (19.37)	12.79 (20.92)	13.39 (21.45)
T2	28.03 (32.16)	18.59 (25.48)	20.56 (26.95)	20.78 (27.21)	18.98 (26.05)	11.27 (19.75)	13.48 (21.54)	13.35 (21.50)
T3	27.01 (31.32)	20.13 (26.47)	21.45 (27.68)	22.84 (28.52)	17.95 (25.25)	13.19 (21.11)	15.65 (23.16)	15.79 (23.34)
T4	29.14 (33.21)	13.83 (21.91)	16.26 (23.79)	19.98 (26.76)	16.92 (24.27)	11.56 (19.85)	12.84 (21.11)	13.91 (21.85)
T5	29.92 (33.52)	6.49 (14.89)	8.69 (17.16)	10.14 (18.62)	17.66 (24.76)	4.39 (12.23)	6.42 (14.84)	7.78 (15.72)
T6	29.34 (32.77)	30.88 (33.55)	31.56 (34.28)	31.81 (34.12)	18.20 (25.25)	22.13 (28.06)	23.79 (29.26)	22.35 (28.25)
CD @0.05	1.23	4.69	4.25	3.89	1.02	3.83	3.53	3.10
SEm±	0.40	1.55	1.41	1.29	0.33	1.27	1.17	1.03
Sig / NS	Sig	Sig	Sig	Sig	NS	Sig	Sig	Sig

**Table 2:** Efficacy of cow based organics against Spodoptera and leaf miner in groundnut during kharif, 2017

Treatments	Per cent spodoptera damage				Per cent leaf miner damage				Yield (kg/ha)	CB ratio
	Pre treatment	7DAS	14DAS	21 DAS	Pre treatment	7DAS	14DAS	21 DAS		
T1	7.10 (15.54)	5.34 (13.30)	7.73 (16.31)	14.33 (21.89)	1.52 (6.74)	4.72 (12.47)	5.02 (12.91)	3.98 (11.18)	1583	1: 1.57
T2	5.64 (13.59)	4.71 (12.75)	6.36 (14.57)	13.75 (21.70)	1.97 (7.94)	3.72 (10.85)	4.48 (12.07)	4.33 (11.62)	1475	1:1.46
T3	6.96 (15.36)	2.70 (9.51)	3.58 (10.98)	6.76 (15.33)	1.06 (4.66)	3.45 (10.83)	4.28 (11.61)	4.68 (12.66)	1832	1:1.81
T4	5.75 (13.80)	6.54 (4.85)	7.12 (15.18)	10.42 (18.85)	2.67 (9.16)	3.53 (10.87)	4.74 (12.78)	4.60 (12.53)	1914	1:1.89
T5	6.79 (15.29)	5.73 (13.56)	6.09 (14.09)	12.98 (20.92)	2.80 (9.30)	3.03 (9.88)	4.75 (12.90)	4.22 (11.83)	2139	1:2.10
T6	6.70 (15.15)	9.52 (17.98)	11.19 (19.58)	15.49 (23.28)	1.85 (8.54)	3.22 (10.39)	4.15 (11.25)	3.52 (8.37)	1199	1:1.20
CD @0.05	1.18	2.14	2.26	2.23	3.43	0.91	1.28	3.08	570.22	-
SEm±	0.03	0.71	0.75	0.74	1.13	0.30	0.42	1.02	189.17	-
Sig / NS	Sig	Sig	Sig	Sig	NS	Sig	NS	NS	Sig	-

### Conclusion

Imidacloprid @ 0.4 ml/lit water reduced effectively reduced the leaf hopper and thrips incidence than the cow based organics with highest yield and BC ratio, *Spodoptera* and leaf miner incidence were effectively reduced by Agniastra.

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