The Andhra Agric. J 72 (4): 467-472, 2025
doi :10.61657/aaj.2025.239

Survey on the incidence of insect pests of sunnhemp in north coastal districts of Andhra Pradesh.

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ABSTRACT

A roving survey was conducted on the incidence of insect pests in sunnhemp growing villages of four North Coastal districts in Andhra Pradesh during *rabi*, 2024-25. The mean per cent flea beetle damage, mean number of *Utetheisa pulchella*, mean number of lycaenid caterpillars, mean number of stink bugs, and mean number of coccinellids were ranging from 9.40 to 20.69 per cent per plant, 0.31 to 0.57 larvae/plant, 0.06 to 0.27 larvae/plant, 0.22 to 0.35 per plant, and 0.32 to 0.50 per plant, respectively in the four districts. The highest per cent of flea beetle damage and *U. pulchella* were recorded in Manyam district, with 20.69 per cent and 0.57 larvae/plant respectively. The highest incidence of lycaenid caterpillars and stink bugs was recorded in the Vizianagaram district, with 0.27 larvae/plant and 0.35 per plant respectively. The maximum number of coccinellids was recorded in Anakapalli district with 0.50 per plant. Low incidence of flea beetle was recorded in Anakapalli district (9.40%) and a low incidence of *U. pulchella* (0.31 larvae/plant), lycaenid caterpillar (0.09 larvae/plant), stink bugs (0.22 per plant) and coccinellids (0.32 per plant) was recorded in Srikakulam district.

Keywords:*Coccinellids, Flea beetle, Lycaenid caterpillar, Stink bugs, Sunnhemp and Utetheisa pulchella*

Sunnhemp (*Crotalaria juncea*) is a legume crop originated in India that is used for fibre production, green manure and soil improvement. Sunnhemp is tolerant to drought and can thrive in areas with less than 200 mm of annual rainfall. The crop is grown for green manure, as a soil improver, and as a disease break in cereal or other crop rotations (Tripathi *et al.,* 2013). Sunnhemp is locally used as fodder (Sarkar *et al.,* 2015). Fiber extracted from its bark is the main economic product. Its fibres are used in the preparation of ropes, cordage, fishing nets, twines, etc.

The Area under sunnhemp in India is around 11 thousand hectares, with a production of 43.6 thousand tons and a productivity of 715 kg ha^{-1}. The area under sunnhemp for seed and fibre in Andhra Pradesh is 7132 ha. In the North Coastal Zone of Andhra Pradesh, the area and production of sunnhemp seed crop are 2110 ha and 2108 tonnes, respectively. In the Srikakulam district, sunnhemp is cultivated in an area of 3000 acres and it is cultivated in an area of 4800 acres in 2024-25, majorly grown during the *rabi* season. During *kharif*, it is limited to 3574 acres only. In the Vizianagaram district of Andhra Pradesh, the crop is grown in an area of 3400 acres. In Anakapalli district of Andhra Pradesh, the crop is grown in an area of 2300 acres and in Manyam district of Andhra Pradesh, the crop is grown in an area of 1850 acres. (Agricultural statistics at a glance, 2022-23).

The factors influencing the yield in sunnhemp are biotic and abiotic stresses during the crop growth period. Pests and diseases are the major biotic stresses that affect yield. The key insect pests that affect the yield of the sunnhemp crop are the sunnhemp hairy caterpillar *Utetheisa pulchella* Linn*,* spiny pod borer *Etiella zinckenella*, lycaenid caterpillar *Lycaena boeticus,* flea beetle *Longitarsus belgaumensis* Jac and sunnhemp stemborer *Laspeyresia tricentra* Meyr. (Chaudhury *et al*. 1997; Sarkar *et al*. 2015).

MATERIAL AND METHODS

A roving survey was conducted during *rabi*, 2024-25 in sunnhemp-growing areas of Vizianagaram, Srikakulam, Manyam, and Anakapalli districts of Andhra Pradesh. The survey was undertaken during the vegetative stage and

reproductive stage of the crop. From each district, three mandals, and from each mandal, three villages with three farmer fields were surveyed for the incidence of insect pests on sunnhemp.

During the roving survey, observations on the number of larvae for thirty plants were recorded in three randomly selected spots of the field regarding sunnhemp hairy caterpillar and lycaenid caterpillar. The number of stink bugs, coccinellids, and the leaf damage by flea beetles for thirty plants were recorded in three randomly selected spots of the field. The per cent leaf damage by flea beetle was worked out using the formula

$$\text{Per cent flea beetle damage} = \frac{\text{Number of damaged leaves}}{\text{total number of leaves}} \times 100$$

RESULTS AND DISCUSSION

Incidence of insect pests on sunnhemp in different mandals of the Vizianagaram district of Andhra Pradesh during *rabi*, 2024-25.

Among the three mandals surveyed in Vizianagaram district, the mean incidence of flea beetle damage was found to be highest in Garividi mandal (18.26% per plant) followed by Merakamudidam mandal (16.11% per plant) and Cheepurupalli (11.02% per plant). The mean larval incidence of *Utetheisa pulchella* was highest in Garividi (0.43 larvae/plant) followed by Merakamudidam (0.39 larvae/plant) and Cheepurupalli (0.25 larvae/plant). The mean larval incidence of lycaenid caterpillar was recorded to be higher in Merakamudidam (0.39 larvae/plant) followed by Garividi (0.3 larvae/plant) and Cheepurupalli (0.14 larvae/plant). The mean population of bugs was highest in Garividi (0.38 bugs/plant) followed by Cheepurupalli (0.33 bugs/plant) and Merakamudidam (0.32 bugs/plant) and the mean number of coccinellids was higher in Merakamudidam (0.40 per plant) followed by Cheepurupalli (0.38 per plant) and Garividi (0.28 per plant) (Table 1).

Incidence of insect pests on sunnhemp in different mandals of the Srikakulam district of Andhra Pradesh during *rabi*, 2024-25.

Among the three mandals surveyed in Srikakulam district, the mean incidence of per cent flea beetle damage was highest in Meliaputti mandal (17.3% per plant) followed by Etcherla (14.7% per plant) and Nandigam (9.9% per plant). The mean infestation of *Utetheisa pulchella* was highest in Nandigam (0.43 larvae/plant), followed by Meliaputti and Etcherla, each with 0.25 larvae/plant. The mean

Table 1. Incidence of pests on sunnhemp in villages of different mandals in the Vizianagaram district, Andhra Pradesh during *rabi*, 2024-25

S. No	District	Mandals	Villages	Month	Stage	Fleabeetle damage(%)	Utethesia pulchella	Lycaenid caterpillar	Stink bugs	Coccinellids
1	Vizianagaram	Cheepurupalli	Ravivalasa	Dec. I FN	Vegetative stage	5.90	0.00	0.00	0.04	0.13
				Feb. II FN	Maturity stage	19.20	1.03	0.13	0.52	0.51
			Ramalingapuram	Dec. I FN	Vegetative stage	4.33	0.00	0.00	0.03	0.20
				Jan. II FN	Pod filling stage	16.19	0.50	0.42	0.82	0.53
			PK.Palavalasa	Jan. I FN	Vegetative stage	8.32	0.00	0.00	0.12	0.20
				Feb. I FN	Flowering stage	12.20	0.00	0.34	0.50	0.70
		Garividi	KL Puram	Dec. I FN	Vegetative stage	10.30	0.00	0.00	0.16	0.10
				Jan. II FN	Pod filling stage	22.30	0.80	0.50	0.70	0.37
			Koduru	Dec. I FN	Vegetative stage	13.30	0.00	0.00	0.26	0.30
				Jan. II FN	Pod filling stage	24.30	0.70	0.70	0.60	0.40
			Thondrangi	Jan. I FN	Vegetative stage	16.90	0.00	0.00	0.03	0.22
				Mar. I FN	Maturity stage	22.50	1.12	0.60	0.53	0.30
		Merakamudidam	Vootapalli	Jan. I FN	Vegetative stage	8.32	0.00	0.00	0.03	0.42
				Feb. I FN	Flowering stage	17.03	0.30	0.80	0.50	0.45
			Bhairipuram	Jan. I FN	Vegetative stage	12.06	0.00	0.00	0.10	0.12
				Feb. I FN	Flowering stage	23.50	0.80	0.75	0.40	0.70
			Uttaravalli	Dec. I FN	Vegetative stage	11.30	0.00	0.00	0.20	0.30
				Feb. II FN	Maturity stage	24.50	1.25	0.50	0.70	0.46
Average means of pest incidence in Vizianagaram district						15.14	0.36	0.27	0.35	0.36

*An average from 30 sunnhemp plants, FN-Fort night

incidence of lycaenid caterpillar was highest in Etcherla (0.19 larvae/plant) followed by Meliaputti (0.07 larvae/plant), with no incidence of lycaenid caterpillar recorded in Nandigam Mandal. The highest mean population of stink bugs was observed in Nandigam (0.29 bugs/plant) followed by Meliaputti (0.19 bugs/plant) and Etcherla (0.17 bugs/plant). The mean population of coccinellids was highest in Etcherla (0.37 per plant), followed by Meliaputti (0.34 per plant) and Nandigam (0.27 per plant) (Table 2).

Incidence of insect pests on sunnhemp in different mandals of the Manyam district of Andhra Pradesh during *rabi*, 2024-25.

In Manyam district among the three mandals surveyed the mean incidence of flea beetle damage was higher in Seethanagaram (21.73% per plant) followed by Parvathipuram (20.5% per plant) and Balijipeta (19.9 per plant), the mean incidence of *Utethesia pulchella* was higher in Balijipeta (0.64 larvae/plant) followed by Parvathipuram (0.59 larvae/plant) and Seethanagaram (0.49 larvae/plant), the mean incidence of lycaenid caterpillar was higher in Parvathipuram (0.2 larvae/plant) followed by Balijipeta and Seethanagaram (0.17 larvae/plant each), the mean population of bugs was higher in Paravthipuram and Balijipeta (0.28 bugs/plant each) followed by Seethanagaram (0.26 bugs/plant) and the mean number of coccinellids was higher in Parvathipuram (0.49 per plant) followed by Balijipeta (0.39 per plant) and Seethanagaram (0.36 per plant) (Table 3).

Incidence of insect pests on sunnhemp in different mandals of the Anakapalli district of Andhra Pradesh during *rabi*, 2024-25.

In Anakapalli district, among the three mandals surveyed the mean incidence of flea beetle damage was higher in Munagapaka (11.8% per plant) followed by Kasimkota (8.32% per plant) and Anakapalli (8.07% per plant), the mean incidence of *Utetheisa pulchella* was higher in Kasimkota (0.57 larvae/plant) followed by Munagapaka (0.44 larvae/plant) and Anakapalli (0.29 larvae/plant), the mean incidence of lycaenid caterpillar was higher in Munagapaka (0.1 larvae/plant) followed by Kasimkota (0.09 larvae/plant) and in Anakapalli mandal, there was no incidence of lycaenid caterpillar, the mean population of bugs was higher in Munagapaka (0.32 bugs/plant) followed by Kasimkota (0.3 bugs/plant) and Anakapalli (0.1 bugs/plant) and the mean number of coccinellids was higher Munagapaka (0.64 per plant)

Table 2. Incidence of pests on sunnhemp in villages of different mandals in Srikakulam district, Andhra Pradesh during *rabi*, 2024-25

S. No	District	Mandals	Villages	Month	Stage	Flea beetle damage(%)	Utethesia pulchella	Lycaenid caterpillar	Stink bugs	Coccinellids
2	Srikakulam	Etcherla	Allinagaram	Dec. I FN	Vegetative stage	5.40	0.00	0.00	0.10	0.50
				Feb. I FN	Pod filling stage	22.60	0.80	0.50	0.36	0.20
			koyyam	Dec. II FN	Vegetative stage	4.30	0.00	0.00	0.00	0.03
				Jan.II FN	Flowering stage	19.80	0.20	0.60	0.32	0.58
			SS Puram	Jan. I FN	Vegetative stage	12.06	0.00	0.00	0.00	0.10
				Feb. I FN	Flowering stage	23.60	0.50	0.00	0.20	0.80
		Meliaputti	Pedda padmapuram	Jan. I FN	Vegetative stage	15.73	0.00	0.00	0.10	0.30
				Feb.I FN	Flowering stage	20.50	0.40	0.00	0.43	0.60
			Sirikandi	Jan. I FN	Vegetative stage	12.40	0.00	0.00	0.00	0.27
				Feb.I FN	Flowering stage	22.70	0.20	0.00	0.30	0.60
			Pattupuram	Jan. I FN	Vegetative stage	10.80	0.00	0.00	0.00	0.10
				Feb.II FN	Pod filling stage	21.50	0.90	0.40	0.30	0.15
		Nandigam	Mondrayavalasa	Dec. I FN	Vegetative stage	6.80	0.00	0.00	0.10	0.10
				Feb. II FN	Maturity stage	24.50	1.03	0.00	0.50	0.27
			Polavaram	Jan.I FN	Vegetative stage	4.50	0.00	0.00	0.00	0.30
				Feb.II FN	Pod filling stage	10.30	1.00	0.00	0.40	0.40
			Pothuluru	Dec. II FN	Vegetative stage	3.70	0.00	0.00	0.00	0.32
				Feb.I FN	Pod filling stage	9.30	0.50	0.00	0.70	0.20
Average means of pest incidence in Srikakulam district						13.92	0.31	0.09	0.22	0.32

*An average from 30 sunnhemp plants, FN-Fort night

Table 3. Incidence of pests on sunnhemp in villages of different mandals in Manyam district, Andhra Pradesh during *rabi*, 2024-25

S. No	District	Mandals	Villages	Month	Stage	Flea beetle damage(%)	Utethesia pulchella	Lycaenid caterpillar	Stink bugs	Coccinel lids
3	Manyam	Parvathipuram	Gangarajapuram	Nov. I FN	Vegetative stage	18.20	0.00	0.00	0.10	0.60
				Feb. I FN	Maturity stage	25.80	1.60	0.10	0.40	0.30
			Addapusila	Nov. II FN	Vegetative stage	14.80	0.00	0.00	0.00	0.70
				Dec. II FN	Flowering stage	20.60	0.40	0.80	0.50	0.50
			Chinna bondapalli	Nov. II FN	Vegetative stage	16.70	0.00	0.00	0.00	0.50
				Feb. II FN	Maturity stage	26.90	1.50	0.30	0.70	0.30
		Balijipeta	Balijipeta	Jan. I FN	Vegetative stage	12.30	0.00	0.00	0.00	0.60
				Mar. I FN	Pod filling stage	25.80	1.30	0.00	0.80	0.10
			Arasada	Jan.I FN	Vegetative stage	17.30	0.00	0.00	0.02	0.40
				Feb. I FN	Flowering stage	22.80	0.90	0.50	0.30	0.70
			Barli	Jan. I FN	Vegetative stage	13.50	0.00	0.00	0.00	0.20
				Mar. I FN	Pod filling stage	27.30	1.60	0.50	0.60	0.30
		Seethanagaram	R.Venkampeta	Nov. I FN	Vegetative stage	16.50	0.00	0.00	0.00	0.50
				Feb. I FN	Maturity stage	27.60	1.12	0.30	0.70	0.12
			Lachayyapeta	Dec. II FN	Vegetative stage	15.70	0.00	0.00	0.00	0.30
				Mar. I FN	Pod filling stage	25.50	1.00	0.50	0.50	0.15
			Chinna bhogili	Dec. II FN	Vegetative stage	18.26	0.00	0.00	0.00	0.30
				Feb. II FN	Flowering stage	26.80	0.83	0.20	0.40	0.80
Average means of pest incidence in Manyam district						20.69	0.57	0.18	0.28	0.41

*An average from 30 sunnhemp plants, FN-Fort night

Table 4. Incidence of pests on sunnhemp in villages of different mandals in Anakapalli district, Andhra Pradesh during *rabi*, 2024-25

S. No	District	Mandals	Villages	Month	Stage	Flea beetle damage(%)	Utethesia pulchella	Lycaenid caterpillar	Stink bugs	Coccinellids
3	Anakapalli	Anakapalli	Venupalem	Dec. I FN	Vegetative stage	2.30	0.00	0.00	0.00	0.10
				Jan. II FN	Flowering stage	10.30	0.60	0.00	0.30	0.20
			Thumpala	Dec. I FN	Vegetative stage	3.80	0.00	0.00	0.00	0.40
				Jan. II FN	Flowering stage	14.56	0.60	0.00	0.00	0.60
			Chintaipulla Agraharam	Dec. I FN	Vegetative stage	5.20	0.00	0.00	0.00	0.40
				Jan. II FN	Flowering stage	12.30	0.50	0.00	0.30	0.80
		Kasimkota	Kasimkota	Dec. I FN	Vegetative stage	1.60	0.00	0.00	0.00	0.50
				Feb. I FN	Pod filling stage	11.80	1.20	0.00	0.70	0.30
			Kanchugummala	Nov. I FN	Vegetative stage	5.30	0.00	0.00	0.00	0.70
				Jan. II FN	Maturity stage	15.40	1.30	0.30	0.60	0.40
			Bayyavaram	Dec. I FN	Vegetative stage	3.50	0.00	0.00	0.00	0.60
				Jan. II FN	Pod filling stage	12.30	0.90	0.20	0.50	0.30
		Munagapaka	Chuchikonda	Nov. II FN	Vegetative stage	2.30	0.00	0.00	0.00	0.80
				Dec. II FN	Flowering stage	17.50	0.50	0.00	0.40	0.80
			Ganaparthi	Nov. II FN	Vegetative stage	10.20	0.00	0.00	0.00	0.60
				Jan. II FN	Pod filling stage	18.60	1.03	0.40	0.70	0.40
			Jaggayyapeta Agrharam	Nov. II FN	Vegetative stage	5.60	0.00	0.00	0.00	0.90
				Jan. II FN	Pod filling stage	16.50	1.12	0.20	0.80	0.30
Average means of pest incidence in Anakapalli district						9.40	0.43	0.06	0.24	0.50

*An average from 30 sunnhemp plants, FN-Fort night

followed by Kasimkota (0.47 per plant) and Anakapalli (0.42 per plant) (Table 4).

Incidence of insect pests on sunnhemp in North Coastal Districts of Andhra Pradesh during *rabi*, 2024-25.

The incidence of insect pests on sunnhemp was recorded in four districts of North Coastal Zone, Andhra Pradesh from November 1st fortnight to March 1st fortnight. Based on the data recorded from the four districts, the highest incidence of flea beetle was observed in Manyam district (20.69% per plant), followed by Vizianagaram district (15.14% per plant), Srikakulam district (13.92% per plant) and Anakapalli district (9.40% per plant).

The highest incidence of the larval population of *Utetheisa pulchella* was recorded in Manyam district (0.57 larvae/plant) followed by Anakapalli district (0.43 larvae/plant), Vizianagaram district (0.36 larvae/plant) and Srikakulam district (0.31 larvae/plant). The highest incidence of lycaenid caterpillar (*Lycaena boeticus*) was recorded in Vizianagaram (0.27 larvae/ plant) followed by Manyam district (0.18 larvae/plant), Srikakulam district (0.09 larvae/ plant) and Anakapalli district (0.06 larvae/ plant) (Table 5).

The current findings lined up with those of Singh and Dhooria (1971), who reported that during their field study in Punjab, *Lampides boeticus* was seen on the pea crop.

Damte and Ojiewo (2017), who conducted field surveys in central and northwest Ethiopia, reported the incidence of the pod borer (*Helicoverpa armigera*), with larval density ranged from 0.10 to 3.75 larvae per m^2, which is similar to the findings, where the mean larval population ranged from 0.06 to 0.57 per plant in chickpea.

The districts with the highest bug incidence were Vizianagaram (0.35 per plant), Manyam (0.28 per plant), Anakapalli (0.24 per plant) and Srikakulam (0.22 per plant). Anakapalli had the most coccinellids

Table 5. Occurrence of insect pests on sunnhemp crop in North Coastal districts of Andhra Pradesh during survey, 2024-25.

DISTRICT	Mean per cent flea beetle damage	Mean Utethesia pulchella	Mean Lycaenid caterpillar	Mean Stink bugs	Mean Coccinellids
Vizianagaram	15.14	0.36	0.27	0.35	0.36
Srikakulam	13.92	0.31	0.09	0.22	0.32
Manyam	20.69	0.57	0.18	0.28	0.41
Anakapalli	9.40	0.43	0.06	0.24	0.50

*An average from 30 sunnhemp plants, mean of three fields in each village and mean of three villages in each mandal.

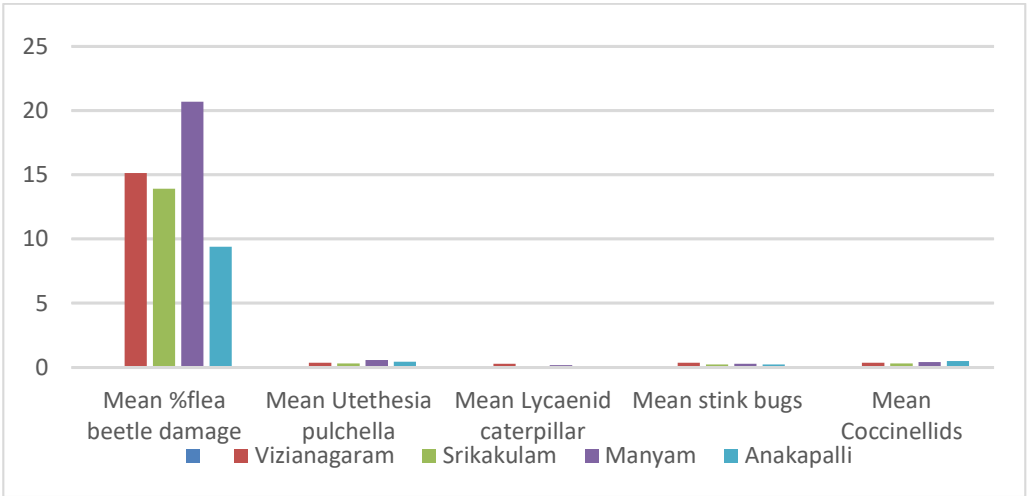

Fig 1. Occurrence of insect pests on sunnhemp crop in North Coastal Districts of Andhra Pradesh during *rabi*, 2024-25

(0.50 per plant), followed by Manyam district (0.41 per plant), Vizianagaram district (0.36 per plant), and Srikakulam district (0.32 per plant) (Fig. 1).

The findings of Attar *et al*. (2023), who observed 0.50 adults/plant in the Haveri district of Karnataka, were consistent with the these observations.

CONCLUSION

The incidence of *Utetheisa pulchella* and flea beetle was found to be more in Manyam district with 0.5 per plant and 20.69 per cent per plant respectively. The high incidence of lycaenid caterpillar and stink bugs were recorded in Vizianagaram district with 0.27 per plant and 0.35 per plant respectively. The more number of coccinellids was recorded in Anakapalli district with 0.50 per plant.

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Received on 12.10.2025 and Accepted on 15.11.2025