

## **Dodder (*Cuscuta reflexa* Roxb.), a severe parasitic weed on fennel (*Foeniculum vulgare* Mill.)**

D S BHATI<sup>1</sup>

All India Coordinated Spices Improvement Project

SKN College of Agriculture, Rajasthan Agricultural University

Jobner - 303 329, Rajasthan, India.

### **ABSTRACT**

A survey on weed infestation in fennel (*Foeniculum vulgare*) undertaken in Tonk District of Rajasthan, India during *rabi* season of 1986-87, indicated that the parasitic weed *Cuscuta reflexa* was observed in 6 fields among the 11 fields surveyed. In infested fields, 70.70 to 23.04 per cent plants were parasitised. The seed yield was 25.27 to 11.32 g / plant in healthy plants and 10.18 to 4.47 g / plant in infested plants. The reduction in estimated seed yield due to infestation by *C. reflexa* ranged from 14.04 to 30.07 per cent. One hundred per cent infestation reduced the seed yield by 31.21 to 71.52 per cent.

Key words : *Cuscuta reflexa* , dodder, fennel, *Foeniculum vulgare*, parasitic weed, yield reduction.

Fennel (*Foeniculum vulgare* Mill.) is an important seed spice of Rajasthan (India) mainly grown in Sirohi, Tonk, Jodhpur, Ajmer, Pali and Bharatpur districts. In Tonk District, dodder (*Cuscuta reflexa* Roxb.) is a serious weed in fennel fields. *C. reflexa* (Family : Convolvulaceae) is a root and leaf-less non-chlorophyll bearing complete stem parasite. The slender thread-like yellow to orange twining stems of the plant fasten to their hosts with attachments known as haustoria. The twining vines not only deprive the host plants of nutrients, but also inhibit their growth and seed formation and transmit

diseases. It emerges along with the germinating crop seedlings and parasitises them soon by attaching themselves to the host and reducing the yield by 45-70 per cent (Mishra *et al.* 1981; Svetievski, Obeolnikovski & Lozanvski 1975; Sepasgosarian, Daffari & Purmiza 1974) in several field crops (except Graminae) like clover, berseem, flax, linseed and niger.

A detailed survey was undertaken in 11 locations (fennel fields) during the last week of March and first week of April 1987 in *C. reflexa* infested areas of Tonk district of Rajasthan to esti-

<sup>1</sup> Present address : Chief Scientist-cum-Head, Krishi Vigyan Kendra, Kotputli - 303 108, Rajasthan, India.

**Table 1. Effect of *Cuscuta reflexa* infestation on fennel in Tonk District of Rajasthan**

Field No.	Plants/ha (000)		Infested plants (%)	Seed yield (g/plant)		Estimated yield (q/ha)			Seed yield (q/ha)		Per cent reduction in seed yield	
	Infested	Uninfested		Infested	Uninfested	Infested	Uninfested	Total	If 100% plants infested	If 100% plants uninfested	Actual reduction	If 100% plants infested
1	0.0	71.9	-	-	23.40	-	16.82	16.82	-	16.84	-	-
2	20.9	56.9	26.86	9.87	25.27	2.06	14.38	16.44	7.68	19.66	16.38	60.94
3	43.2	17.9	70.70	10.18	17.75	4.40	3.18	7.58	6.22	10.84	30.07	62.62
4	20.3	67.8	23.04	7.07	14.92	1.44	10.12	11.56	6.23	15.73	26.73	60.54
5	25.4	57.2	30.75	9.16	22.03	2.33	12.60	14.93	7.57	18.20	17.97	58.41
6	28.1	34.2	45.10	7.78	11.32	2.19	3.87	6.06	4.85	7.05	14.04	31.21
7	0.0	81.1	-	-	16.61	-	13.47	13.47	-	13.47	-	-
8	0.0	63.4	-	-	20.17	-	12.79	12.79	-	12.79	-	-
9	28.0	45.7	37.99	4.47	15.67	1.25	7.16	8.41	3.29	11.55	27.19	71.52
10	0.0	78.7	-	-	25.07	-	19.76	19.76	-	19.76	-	-
11	0.0	83.5	-	-	19.78	-	16.52	16.52	-	16.52	-	-
Maximum	43.20	83.50	70.70	10.18	25.27	4.40	19.76	19.76	7.68	19.76	30.07	71.52
Minimum	0.00	17.09	23.04	4.47	11.32	1.25	3.18	6.06	3.29	7.05	14.04	31.21
Mean	15.10	59.90	39.07	8.09	19.27	2.28	11.88	13.12	5.97	14.77	22.07	57.54

Insect on fennel

mate the yield losses in fennel due to infestation by *C. reflexa*. Four randomly selected spots of 25 m<sup>2</sup> (5m × 5 m) area were selected from each field and infested and healthy crop plants were counted to obtain per cent infestation. To obtain seed yield per plant from infested and healthy plants, 10 plants of each category were randomly selected and yield per plant was recorded. The estimated seed yield, seed yield if 100 per cent plants were infested or if 100 per cent of plants were healthy, actual per cent reduction in seed yield and per cent reduction in seed yield if 100 per cent plants were infested were also calculated.

The survey showed that the out of 11 fields of fennel selected for the study, 6 were infested (Table 1). In infested fields, 70.70 to 23.04 per cent of plants were parasitised with an average of 39.07. The seed yield was 25.27 to 11.32 g/plant in infested plants. The average yields of an infested plant was 8.09 g/plant which was 52.02 per cent less than the yield (19.27 g/plant) obtained from a healthy plant. The maximum estimated seed yield (19.76 q/ha) was recorded when the crop was not infested with *C. reflexa* and minimum seed yield (6.06 q/ha) was observed in infested

fields, which was 69.33 per cent less than the former. The reduction in estimated seed yield due to infestation by *C. reflexa* ranged from 30.04 to 14.04 per cent with a mean reduction of 22.07 per cent. It was further observed that if 100 per cent infestation of *C. reflexa* occurred, it reduced the yield by 71.52 per cent and with a minimum of 31.21 per cent infestation, the average reduction in yield was 57.54 per cent.

### References

- Mishra A, Tosh G C, Mohanty D C & Patro G K 1981 Herbicidal and selective effect of pronamide for control of dodder in niger. In : Proc. Eighth Asian - Pacific Weed Sci. Soc. Conf. (pp. 225-257).
- Sepasgosarian H, Daffari A & Purniza A 1974 Comparative study of the effect of herbicide on dodder and resulting yield of alfalfa crop. Quarterly Bull., Faculty of Sci., Tehran Univ. 6 (1) : 54-63.
- Svetievski P, Obeolnikovski B & Lozanovski R 1975. The control of dodder (*Cuscuta* spp.) on sugarbeet with the use of propyzamide. Agrohemija 17 : 440-445.