

Yield loss estimation in fennel (*Foeniculum vulgare* Mill.) due to root knot nematode

D J PATEL, S K PATEL & H V PATEL

Department of Nematology

Gujarat Agricultural University, Anand Campus,
Anand - 388 110, Gujarat, India.

ABSTRACT

Meloidogyne javanica (Patho type 3) is a serious pest of fennel (*Foeniculum vulgare*) in Gujarat and can cause up to 28 per cent loss in grain yield. Application of carbofuran (Furadan 3 G) is effective in reducing the nematode infestation.

Key words: fennel, *Foeniculum vulgare*, root knot nematode, yield loss.

Fennel (*Foeniculum vulgare* Mill) is severely attacked by *Meloidogyne javanica* (Patho type 2) particularly when grown in light soils of Kapadvanj area of Kheda District in Gujarat, India. Infested plants exhibit stunted growth with pale yellow foliage in patches and roots with heavy galling. These plants produce thrifless slightly yellowish grains. Screening of 39 fennel varieties against *M. incognita* and *M. javanica* did not yield any resistance source (GAU 1994; Thakar, Patel & Patel 1987). To determine the yield losses in fennel due to root knot nematode *M. javanica* (Patho type 2), a study was undertaken in a farmers field, Gujarat during 1992-93 and the results are reported here.

The experiment was conducted in a field heavily infested with *M. javanica* (Patho type 2) (initial nematode population 210 J2/200g soil) at Lalpur village in Kapadvanj area of Kheda District in Gujarat. Two treatments viz., carbofuran (Furadan 3 G) @ 2kg/ha and control were tried in paired design (ABBA method) with a plot size of 5.0 × 7.0 m replicated eight times. Seedlings of root knot nematode susceptible cv. Gujarat Fennel 1 were transplanted with inter and intra row spacings of 100 cm and 15 cm, respectively. Carbofuran was applied in two equal splits, a day prior to transplanting (under the crop row) and at 40 days after transplanting (band application). All recommended cultivation practices were adopted dur-

Table 1. Estimation of yield losses due to root knot nematodes in fennel

Treatment	Yield (kg/ha)	Root-knot Index (1-5)*	Percent loss in grain yield
Carbofuran @ 2 kg/ha (Furadan 3 G)	2036.0	1.27	—
Control	1464.0	3.78	28.1
't' value	S	S	
Percent increase (+)/ decrease(-) over control	(+) 39.1	(-) 66.4	

* 1 = free ; 5 = maximum disease intensity

ing the experimentation. Observations on grain yield and root knot index (1-5 scale) were recorded.

Application of carbofuran (Furadan 3 G) @ 2 kg/ha significantly increased grain yield (2036 kg/ha) by 39.1 per cent with 66.4 per cent reduction in root knot index (1.27) over control, and the estimated loss in grain yield of fennel was 28.1 per cent (Table 1). Hence application of carbofuran is required for checking root knot nematode infection and increasing grain yield in fennel.

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