

Integrated management of betel vine wilt in Vidarbha

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SUMMARY

Wilt or root rot is a major constraint to betel cultivation in Vidarbha. In present investigation, integrated disease management module (M-III) (soil solarization, *Trichoderma*@ 10 kg/ha (set and soil application), Neem cake@ 2000 kg/ha, NPK @ 100:50:50 kg/ha and drip system of irrigation) was found significantly superior not only in controlling the wilt causing fungus and nematode but also had a favourable effect on growth parameters.

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Key words :

Betel vine, Root rot/wilt, Integrated management

Betel vine is victim of several fungal diseases caused by various organisms. But the most important enemy is wilt. The disease finds favourable with special condition under which betel is cultivated. Due to heavy incidence of wilt in Vidarbha, its cultivation has been abandoned by many of betel growers and the area under cultivation is diminishing steadily. Different workers reported varied losses at different locations, which ranged from 4 to 100 per cent due to wilt disease (Saksena, 1977). Since wilt is more destructive and serious threat to betel vine crop, no individual control measure would serve the purpose. Hence, in the present investigation, efforts were made to evolve the effective plant protection module (set of treatments) for management of wilt disease.

MATERIALS AND METHODS

The fungus, *R. bataticola* was isolated from diseased samples of Kapoori cultivar betel vine and its pathogenicity was proved. Five integrated disease management modules were prepared and set of treatments in each module was randomized in field with randomized block design. The trial was conducted at Betel Vine Research Station,

Diwthana, Dist. Akola (MS). The observations were recorded for 25 months at five months interval. The details of components in each module are given in Table 1.

RESULTS AND DISCUSSION

Integration of different desirable treatments in different sets/IDM modules has found to have a great effect on the incidence of betel vine wilt under natural conditions in field. The data recorded at various intervals upto 25 MAP is presented in Table 1. It was observed that the differences in wilting per cent were not significant up to five months after planting. However, the effect of treatments in arresting the wilting percentage was found increasing continuously up to the period of 25 months of observation.

The IDM module M-III containing *Trichoderma* @ 10 kg/ha + Neem cake @ 2000 kg/ha + NPK @ 100:50:50 kg/ha with drip system of irrigation and soil solarization was found to be the most effective. It resulted in 41.93 per cent decrease in wilting followed by M-II (28.76%) and M-I (24.30%) Over control. The effectiveness of *Trichoderma*, neem cake, solarization in controlling wilt

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Table 1 : Influence of IDM modules on disease incidence and different growth parameters of Betel vine

Modules	IDM module details	% wilting	% disease over control	Av. length vine	Av. no. leaves per vine	Av. no. branches per vine	100 leaf weight	% foliar disease intensity	Nematode population
M I	1. Soil solarization 2. Drenching BM @1% 3. Cutting treated with BM @ 0.5% 4. Phorate @ 10 kg/ha 5. Gypsum @ 2000 kg/ha (20q/ha)	16.86 (4.08)	24.30	418.24	211.67	19.4	209	6.08 (2.47)	1400.00
M II	1. Soil fumigation 2. Drenching with Ridomil @ 0.2 % 3. Spraying BM @ 0.5% 4. Marigold planting before sowing 5. Treat vine with <i>Trichoderma</i> before sowing	14.80 (3.84)	28.76	433.00	234.67	22.2	219	3.04 (1.74)	1533.00
M III	1. Soil solarization 2. Trichoderma (soil+set application) 3. Neemcake @ 2000 kg/ha 4. NPK 100:50:50kg/ha 5. Drip irrigation system	9.93 (3.13)	41.93	468.20	299.0	27.4	248	10.31 (3.21)	1200.00
M IV	1. Copper oxychloride @ 0.25% spraying 2. Phorate @ 10 kg/ha	23.66 (4.84)	10.20	371.80	199.13	16.6	204	6.62 (2.57)	1766.50
M V	Control (No treatment)	29.26 (5.40)		365.40	188.26	14.2	197	12.29 (3.51)	2366.50

corroborates with findings of Tiwari and Mehrotra (1968), Waghe (1991), Sivakumar and Marimuthu (1987). Similarly, the use of optimum irrigation with drip system in reduction of wilt of betel vine was recorded by Waghe *et al.* (1993).

Betel vine wilt is supposed to cause due to root knot nematode also. The control measures like phorate, neem cake and planting of marigold were included in IDM modules being tested for their efficacy in controlling root galls and nematode population. Among different IDM modules, M-III that included neem cake @ 2000 kg/ha was found most effective in nematode population control (1200). It was followed by M-I (1400) containing phorate application @ 10 kg/ha and M-II (1533) with planting of marigold, before sowing. These results corroborate with findings of Jagdale *et al.* (1985) and Medhane *et al.* (1985).

Integration of different treatments in modules has also resulted its favourable impact on growth parameters and reduction of foliar disease. Module III has recorded significantly higher length of vine (468.20), more number of leaves per vine (299.0), more number of branches per vine (27.4) and higher leaf weight (248.0). But the same module III was not that much effective in controlling foliar disease (10.31 per cent). Module II was found more

effective in controlling foliar disease.(3.04 per cent).

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