

Fusarium Wilt Resistance - Greenhouse/Controlled Environment

Fusarium oxysporum Schlecht f.sp. *medicaginis* (Weirner) Snyder & Hans.

J.E. Brummner and S.L. Nygaard

PLANT CULTURE

Container Bench or tub with adequate depth for root development (6-8 inches)
 Media..... Soil Mix (1:2:1; Top soil: sand: sphagnum/perlite) adequate lime and fertilizer (0:24:24)
 Temp/light 24° to 30°C.; 16+ hour daylength
 No. of Plants 50-60 per replication
 No. of Reps..... 4 replications
 Other..... Inoculate with *Rhizobium meliloti*

INOCULUM CULTURE

Source..... Infected roots
 Storage..... Silica gel crystals or agar cultures
 Temperature..... 4°-10° C
 Storage Life 1 to 2 years

INOCULATION PROCEDURE

Age of Plant..... 8 weeks old
 Type of Inoc Microconidia in water suspension
 Inoc. Culture..... Potato Dextrose Broth; inoculate sterile broth with PDA plugs and incubate on a shaker for 4 days at 20°-24°C.
 Concentration 1 X 10⁶ spores per ml
 Method Clip and bare root soak
 Time of Inoc 20 min at 24°C or 12 hours at 16°C

INCUBATION

Location..... Greenhouse: transplanted into benches or tubs
 Temp/Light..... 28° - 32° C; 16 hour daylength
 Culture..... Provide an arid environment to facilitate symptoms. Clip top growth twice at 5-6 week intervals (at bud or bloom) maintain good growth and control insect pests; fertilize (0-24-24) after each clipping
 Spacing 2.5 cm between plants and 6 cm between rows
 Age of Rating 12-14 weeks after transplanting

RATING

Plants are removed from benches and cross sections of roots are rated

Resistant Symptomless root or discrete dark specks in the stele of the root
 Susceptible..... Any dark discoloration in root with an arc or ring pattern; severe necrosis of entire root; dead plant

CHECK CULTIVARS

	Approximate Expected Resistance*	Acceptable Range (%)
Resistant		
Agate**	45	35-55
Moapa 69	70	60-80
Susceptible		
MNGN-1**	4	0-8

*Controlled environment evaluations can be more severe than field evaluations (check varieties may have a lower resistance when compared to field results)

SOURCE OF INOCULUM AND EXPERTISE

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REFERENCES

See Fusarium Wilt field protocol
 In: STCAC, PG. D-6