

Survival of *Rhizobium trifolii* with seed dressing fungicides

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Fungicide seed treatment can improve seedling survival and growth, increasing the likelihood of successful pasture establishment (3). Pasture legumes appear to be the most susceptible to plant pathogens and therefore respond to fungicide treatment; however, legume seed is also commonly inoculated with *Rhizobium*. This experiment investigated the compatibility of a *Rhizobium* inoculant with three seed dressing fungicides.

Methods

Peat inoculant (*Rhizobium trifolii*) (20 g) was mixed in sealable glass bottles with 2 g of each of the three fungicides (thiram, metalaxyl, and fosetyl-AI), giving a ratio of inoculant:seed similar to that applied to treated and inoculated seed. The fungicide-peat treatments were compared with a control of peat inoculant alone. Treatment bottles were maintained in an incubator at 18°C day/ 10°C night (12 hour/ 12 hour). At 0, 3, 7, 10, and 24 days after fungicide contact, two 1 g samples were taken from each bottle and mixed with 99 mLs of Ringers solution. These solutions were shaken on a side arm flask shaker for 20 mins at 20°C. Samples (1 mL) were taken from the shaken bottles and dilution series repeated up to 10⁻⁸. Each of the dilutions was plated in duplicate on Yeast Mannitol Agar (2) and colonies/plate were counted after 4 days of incubation at 25°C.

Results and discussion

Fig. 1 shows that after 3 days of fungicide-rhizobia contact, all fungicide treatments significantly reduced the number of rhizobia/g of peat compared to the control, and after 6 days all fungicide treatments significantly reduced the number of rhizobia below the standard required of peat inoculants for the Australian Inoculants Research and Control Service (AIRCS). Metalaxyl was significantly less toxic to rhizobia than thiram, the fungicide commercially recommended to be safe to rhizobia ('Nitrogerm' - Biocare Technology Pty. Limited). Although all fungicides significantly reduced the viable numbers of rhizobia, it appears that, if inoculation and fungicide treatment are carried out within a few days of sowing, the effect of the fungicides on seedling nodulation may be slight, especially if the inoculation rate is adjusted to ensure that there are approximately 10⁴ *Rhizobium trifolii* per seed at the time of sowing (1).

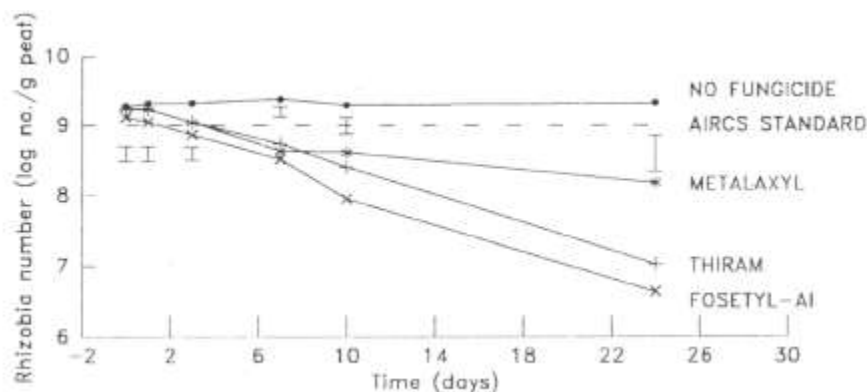


Figure 1. The influence of fungicide on *Rhizobium trifolii* survival.

References

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