

Biological control of nematodes by nematophagous fungi

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With the increasing problem of worm parasites showing drench resistance, farmers are becoming more aware of the need for alternative control methods rather than depend on chemical drenches that exist to date. Certain fungi show great potential as biological control agents against animal worm parasites. Nematophagous (nematode-destroying) fungi are widespread and abundant in rich agricultural soils. They catch their prey by forming specialized trapping organs. These "traps" come in a number of different forms such as three-dimensional adhesive networks, adhesive knobs and rings. Shortly after it captures the nematode worm, the fungus penetrates and destroys it. Although nematophagous fungi have been known for many years, very little work has been done in Korea until recently. However, in other countries, they undertook large scale screenings of fungi, focussing on fresh dung samples from grazing livestock. For fungi to be a practical proposition, their spores need to survive passage through the gastrointestinal tract of the animal. The fungi then must germinate, colonize the fresh dung and capture the infective stages of the worm parasite before they contaminate the pastures. According to the Australian studies on screening of fungi, several ideal fungi have been found which is able to do just this. Rather than treating the parasitic worm in the host, as is the case with drenching, biological control cuts the life cycle of the parasite in the field, where it exists in its free-living stage. Biological control will not remove the worms completely from the pastures, but will reduce the level of infection. When given at strategic times that correspond to the seasonal peaks in infective larvae, the fungi will eliminate the rise in larval numbers that leads to production losses or parasitic disease. On going research into suitable deployment technology has shown that fungi can be successfully administered to sheep in feed supplement blocks or in intra-ruminal capsules. For field testing, the large quantities of fungal material required can be easily grown on wheat or other grain substrates. Scaling-up the production for commercial quantities is not expected to be a major problem. Commercial development is now proceeding and it is anticipated that biological control will soon be a valuable addition to nematode control programs.