

two other species, we must depend upon other measures for preventing the excessive multiplication of the worms.

Larvae in Pastures

(c) **Factors Acting upon the Larvae in the Pastures.**—The factors influencing the increase of the parasites next to be considered are those concerning the development of their free-living stages on the ground. These may conveniently be considered under four headings:—

(1) Factors affecting the development of larvae in the pastures.

(2) Factors affecting the longevity of the larvae.

(3) Factors affecting the relative concentration of larvae in the pastures and their accessibility to the grazing animal.

(4) Factors affecting the disappearance of larvae from the pastures.

Moisture and Drought

(1) Soil moisture is popularly supposed to have a marked influence, and "wet" pastures are usually thought to be "wormy" pastures. There appears to be no valid reason for this supposition, however, and it may reasonably be argued that "moist" pastures are just as dangerous as "wet" ones for the development of diseases caused by nematode worms, the only real difference being between "moist" pastures and "very dry" pastures such as occur in arid countries.

Drought produces rather an interesting result in that it hinders the development of some species of larvae without destroying them, the embryonated eggs remaining viable but not hatching until moister conditions recur. This sometimes leads to the accumulation of a large amount of potential infective material on the pastures during times of drought and a mass release of infective larvae when wet weather appears. This sequence of weather conditions occasionally leads to the widespread appearance of worm disease in apparently epidemic form.

Rain assists larval development by supplying abundant moisture, and although heavy rain washes many larvae off the herbage, they soon climb on to it again.

Frost has no action whatever in destroying the infective larvae, but through hindering their development its effects are similar to those of drought in that the accumulation of potential infection is followed by a mass development of infective larvae as soon as warmer weather conditions recur—rather like the sudden invasion

of our roads by week-end motorists as soon as the weather decides to be warm.

Trampling of faeces into the soil, such as occurs where sheep are penned together, is distinctly favourable to larval development.

Most Lethal Force

(2) As the most lethal of the natural forces acting upon the ensheathed resistant larvae is dryness, the relative moisture of the soil and of the atmosphere doubtless plays a part. Observations made at Weybridge have shown

that the larvae which climb high into the herbage may die within 24 hours in dry weather, but that those which remain close to the ground retain their vitality for months. The nature of the herbage is also of some importance, the longevity of the larvae probably being greater in thick, matted herbage which keeps them near to the ground than in a first or second year's grass ley, or in clover where they are able to climb away from the soil and come into contact with the drying influence of the air.

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