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JOINTWORM STUDIES IN UTAH[1]

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ABSTRACT

Infestation of dry-farm wheat during 1931 by the second brood of the wheat strawworm, *Harmolita grandis* (Riley), was considerably lower, and that of irrigated wheat but slightly reduced as compared with conditions during the preceding year. During 1931 the wheat jointworm, *H. tritici* (Fitch), was found infesting wheat in three Utah areas, the principal injury occurring in the Tooele-Lake Point section. The rye strawworm, *H. websteri* (Howard), is frequently encountered in rye-growing areas of northern Utah, being more generally distributed than the rye jointworm, *H. secalis* Fitch.

THE WHEAT STRAWWORM. Considerable infestation fluctuation occurred in the amount of wheat strawworm, *Harmolita grandis* (Riley),

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in many Utah counties during the past two seasons. A reduction of approximately one-third resulted for dry-farm wheat during the unusually dry summer of 1931 as compared with the average infestation for the preceding year. A slight reduction also occurred in the infestation of irrigated wheat.

Examination of 170 samples of irrigated wheat, totaling 8500 culms, showed an average infestation of 29.31 per cent for 1931 as against 33 the year previous. Fifty straws were examined to a sample during 1931, while twice the number were examined in most samples the year before. In 1931 samples were taken from ten counties and from as many localities in each county as opportunity afforded. The infestation was highest in Box Elder County, the average for twenty-six samples being 53.23 per cent. Uintah came next with two samples averaging 52 per cent. Infestations in other counties were: Cache, 32.56 per cent; Davis, 23.29; Duchesne, 0; Salt Lake, 32.55; Millard, 20; Utah, 16.4; Wasatch, 6; and Weber, 21.79 per cent. The 3236 larvae and pupae found in 2492 infested culms were distributed to the joints as follows: 292 worms at joint I; 1157 at joint II; 1277 at joint III; 476 at joint IV; 33 at joint V; and 1 worm at joint VI. Most of the infested straws contained but one larva or pupa, but 509 culms contained two, 102 contained three, 9 contained four and 1 contained five immature *H. grandis*. Thirteen joints contained two immature *H. grandis* at a joint, usually one above and one below; in one culm, three were found at one joint.

Examination of 12,050 culms of dry-farm wheat, comprising 241 samples, showed an average of 19.64 per cent to be infested in 1931. Infestation was highest in five samples from Salt Lake County, 46 per cent of the straws showing the condition. Infestations in other counties were as follows: Box Elder, 17.98 per cent; Cache, 28.62; Davis, 27; Juab, 7.37; Millard, 6.75; Tooele, 12.56; Utah, 16.91; and Weber, 35.14 per cent.

The 2861 larvae and pupae of *grandis*, found in 2367 infested culms, were distributed in the dry-farm wheat as follows: 104 worms at joint I; 726 at joint II; 1209 at joint III; 782 at joint IV; 40 at joint V; and no worms at joint VI. Most of the infested straws contained but one larva or pupa, but 418 culms contained two, and 38 contained three immature *H. grandis*. Seven joints were infested with two maggots at a joint.

THE WHEAT JOINTWORM. In 1931, only three northern Utah areas were found to be infested by the wheat jointworm, *Harmolita tritici* (Fitch), as indicated by an examination of 20,550 culms. Infestations in The Tooele area were highest, varying from 2 to 54 per cent at Lake Point. Dry-farm wheat samples in Tooele County averaged 4.8 per

cent infested at Erda, 19.3 at Lake Point, and 15.5 per cent infested at Tooele. One sample taken at Starr, Juab County, showed an infestation of 2 per cent. Only one sample of irrigated wheat was affected by *H. tritici;* this was collected at Garland, Box Elder County, and showed an infestation of 4 per cent.

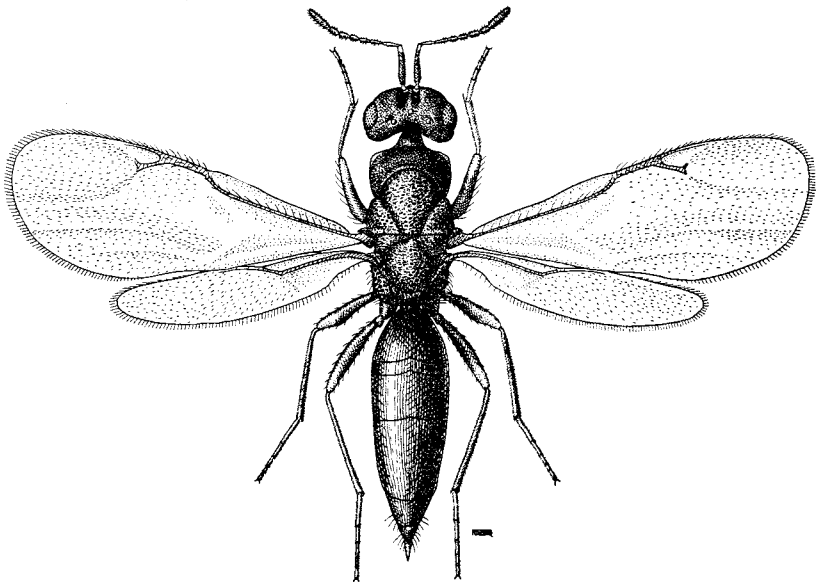

FIG. 86.—Adult female wheat jointworm, *Harmolita tritici* Fitch.

Infestations were much lower in 1930 and were found only in the Lake Point-Tooele area. Apparently this species has not yet become generally distributed throughout the wheat-growing sections of Utah. Mounted specimens of this species are in the college collection, labeled "Murray, Utah, June 1918, H. R. Hagan."

THE RYE JOINTWORM, *Harmolita secalis* (Fitch), was reared from material collected at Vernon during the fall of 1930, and 6 per cent of the culms in one rye sample collected at Snowville during 1931 was infested. In certain localities of Utah rye is raised year after year in the same area. In a few places, rye is the principal grain crop and is repeatedly grown on the same land or on adjoining farms. Should the growing of rye become a more important farm crop in such areas, this jointworm might at times assume a more important aspect. During the years 1930 and 1931, *H. secalis* was scarce in northern Utah.

THE RYE STRAWWORM, *Harmolita websteri* (Howard), has frequently been found in rye fields of northern Utah and has been observed in

samples collected at Clover, Far West, Santaquin, Snowville, and has been reared from material collected at Vernon. The highest infestation encountered during 1930 was at Vernon, one sample showing an infestation of 26 per cent. Five samples were not infested. The average for the twelve samples examined during 1930 was 7.83 per cent.

One sample of rye examined from the Snowville area during 1931 showed an infestation of 32 per cent. Five samples examined from northern Utah localities showed no infestation by *H. websteri.* The average for the thirteen samples examined during 1931 was 9.07 per cent infested.