

INSECTS OF INDIANA FOR 1925.

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The prediction of insect troubles must be considered an important routine of the economic entomologist's office of the future. The basis for predictions will be our knowledge of the insects and their relation to climatic and other conditions. Our information must necessarily be based in part on past performances of insects. We believe an annual written history of the insects of the season correlated with weather and other factors will be of greatest use in the future for predicting insect problems. With this object in mind we plan to submit annually a history of insect problems of the year. Obviously it is impossible to include all insects observed and our comments will be confined largely to those of economic importance and those of unusual occurrence.

Each year brings forth new problems in entomology. Sudden outbreaks of this or that insect may occur which may be due to weather conditions which interfere with the normal food supply, as in the case of the meadow plant bug, which normally feeds in pastures and other grasses. Thus, in 1925, due to the dry weather and subsequent early drying up of grasses, this insect entered grain fields and damaged wheat in some localities. Weather conditions or other factors may interfere with the normal activity of the natural enemies which usually tend to hold the insect in check. Usually insects gradually increase from year to year until a maximum is reached and then there is a decrease, due to the activity of natural enemies, until the minimum is reached. Except for favorable or unfavorable weather conditions we might expect this rise and fall in abundance to be quite regular.

Weather Conditions. Climatic factors play a significant role in the prevalence or absence of insects, either as a direct influence or by affecting the natural enemies which normally hold insects in check.

March, which may be considered the earliest month for insect activity, was unusually warm and sunshiny, with normal precipitation. At the close of the month the season was about a week in advance of the normal. During April the temperatures were unusually high and precipitation below normal. The advanced season was noticeably reflected by the earlier than normal activity of insect life. During the month of May the temperatures were noticeably below normal, although higher than in 1924, and precipitation was unusually light. The following month, June, warm weather, above normal, prevailed, and the dry weather of late May continued for a week in June, although the average for the month was normal. The average temperature and precipitation for July was approximately normal although the first half was abnormally warm and the last half unusually cool, with irregular distribution of rain. August was also near normal, although the distribution of rainfall was quite irregular. The month of September was unusually warm and there was also an excess of moisture. October was cold, cloudy and very wet with little sunshine, interfering greatly

TABLE 1. COMPARATIVE MONTHLY WEATHER DATA FOR INDIANA

| MONTH | TEMPERATURE | | PRECIPITATION | | NUMBER OF DAYS | | |
|------------------------|-------------|-----------------------|---------------|-----------------------|----------------|---------------|--------|
| | State Mean | Departure from Normal | State Average | Departure from Normal | Clear | Partly Cloudy | Cloudy |
| | °F | °F | Ins. | Ins. | | | |
| March Normal | 40.4 | 3.8 | 3.73 | 1.57 | 10 | 9 | 3 |
| March, 1925 | 43.4 | +3.0 | 3.33 | -0.40 | 16 | 8 | 7 |
| April Normal | 51.7 | 2.0 | 3.47 | 1.23 | 11 | 9 | 10 |
| April, 1925 | 57.3 | +5.6 | 2.26 | -1.21 | 15 | 8 | 7 |
| May Normal | 62.3 | 2.7 | 4.12 | 1.04 | 12 | 10 | 8 |
| May, 1925 | 58.2 | -4.1 | 1.32 | -2.80 | 16 | 9 | 6 |
| June Normal | 71.4 | 2.2 | 3.84 | 0.95 | 13 | 10 | 7 |
| June, 1925 | 74.6 | +3.2 | 3.81 | -0.03 | 15 | 9 | 6 |
| July Normal | 75.3 | 1.7 | 3.45 | 1.11 | 15 | 11 | 5 |
| July, 1925 | 74.4 | -0.9 | 4.27 | +0.82 | 15 | 11 | 5 |
| August Normal | 73.3 | 1.9 | 3.26 | 1.00 | 15 | 10 | 6 |
| August, 1925 | 73.7 | +0.4 | 2.50 | -0.76 | 19 | 8 | 4 |
| September Normal | 66.7 | 2.3 | 3.00 | 0.96 | 15 | 8 | 7 |
| September, 1925 | 72.9 | +6.2 | 5.22 | +2.22 | 12 | 10 | 8 |
| October Normal | 54.6 | 2.7 | 2.70 | 1.20 | 15 | 7 | 9 |
| October, 1925 | 47.0 | -7.6 | 3.80 | +1.10 | 5 | 8 | 18 |
| November Normal | 42.1 | 2.5 | 3.06 | 1.14 | 11 | 7 | 12 |
| November, 1925 | 40.2 | -1.9 | 4.48 | +1.42 | 12 | 7 | 11 |

with the seeding of wheat. November was near normal, temperatures being slightly lower and with slight increase in precipitation.

In general the weather conditions in 1925 were favorable to insect life.

The writer is greatly indebted to H. F. Dietz, B. A. Porter, W. B. Cartwright, and C. R. Cleveland for records.

CEREAL AND FORAGE INSECTS.

Grasshoppers (*Melanoplus femur-rubrum* De G. and *M. differentialis* Thos.). In 1924 there was a noticeable increase in numbers, leading us to predict increasing trouble in 1925. During July, 1925, grasshoppers became noticeable by their injuries, reports coming in from all sections of Indiana. First reports were received July 14 from Evansville. Reports from all sections of the state soon followed. They were more abundant than in 1924, the crops attacked including corn, clover, alfalfa, soybeans, vegetable crops, and flowering plants, especially chrysanthemums. Reports continued to come in until after the first of September. *Melanoplus femur-rubrum* was the predominant species although *M. differentialis* was abundant in a few localities.

White grubs (*Lachnosterna* spp.) were destructive in most sections of Indiana in 1924. Numerous reports were received in the spring of 1925, when they were observed as abundant in plowed fields. Because of weather conditions which permitted the grubs, most of which changed to beetles this year, to continue active for a longer period than usual

in the third year, more injury was noted this season than might have been anticipated. Lawns, sod fields, timothy, corn, wheat, strawberries and tomatoes were crops reported injured. Reports of injury came from LaPorte, St. Joseph, Jasper, Carroll, Randolph, Kosciusko, Hendricks, Owen, and Jackson counties.

Hessian fly (*Phytophaga destructor* Say) did not do much damage in the fall of 1924 although the early sown fields showed a moderately heavy infestation. The first eggs of the spring brood were observed at Lafayette April 11 in 1925. Toward wheat harvest fallen wheat, indicative of fly infestation, was common. The fall generation began to issue and lay eggs September 18 at Lafayette, this emergence following rains of the previous week. Emergence was normal, eggs being observed up to the fly-free date. However, later observations showed larvae and flaxseeds only in wheat sown a week or ten days before the fly-free date. This was due to the cold weather following the fly-free date, which apparently killed the eggs still on the leaves as well as the younger larvae. Because of weather conditions which hindered wheat sowing and the cold unfavorable conditions for the fly, there does not seem to be a serious infestation in most sections of the state.

Chinch bug (*Blissus leucopterus* Say). Spring examinations showed few bugs in the small grain and enabled us to predict no trouble for 1925. Dry weather from May to August was quite favorable for the bugs and they increased to threatening numbers, especially in the north-eastern part of the state where a small amount of damage was reported. Favorable conditions have made it possible for the chinch bug to increase during the season. Many bugs went into winter quarters during September and in some sections of the state they are sufficiently numerous to threaten outbreaks in 1926 unless unfavorable conditions prevail in the spring of 1926.

Common army worm (*Cirphis unipuncta* Haw.). First adults were noticed at Lafayette April 25 and the earliest reports of injury came from Fulton County May 20, where the worms were reported abundant in low-lying meadows. Other reports from central Indiana were received during the last of May and first half of June, but infestations were scattered and no general outbreak occurred.

Cutworms (*Noctuidae*). Generally abundant throughout the state, especially in the northern half, during May, no reports being received after June 2. Corn, vegetable crops, and flower garden plants were more often injured.

Billbugs (*Sphenophorus zeae* Walsh) were reported as infesting and seriously damaging every hill in a 25-acre corn field at Miami. At the time of the injury, May 18, the corn was one to two inches high. Billbugs, (*S. parvulus* Gyll. and other species) were destructive (fig. 2) in other isolated localities.

Wireworms (Elateridae) destroyed considerable corn in the bottom lands at Orestes. This report was received May 21. Reports of damage to corn (fig. 1) were also received from near Valparaiso.

Meadow plant bug (*Miris dolabratus* L.) was found in large numbers May 29 in wheat fields near Lafayette. At that time the wheat heads were just forming and the bugs were beginning to feed on the developing

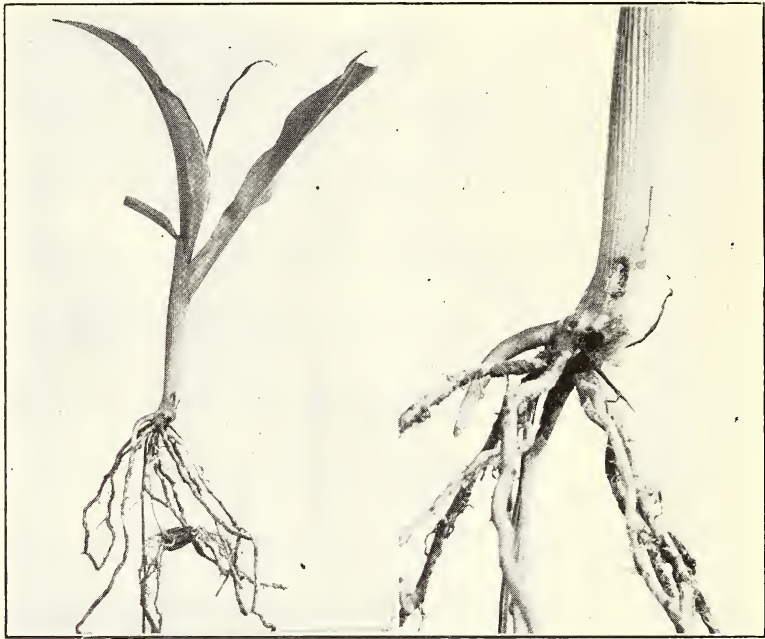


Fig. 1—Corn plant injured by wireworm (*Melanotus* sp.). Note dead central shoot and cavity near base of plant eaten by wireworm. At right, enlarged view showing cavity.

heads. Previously they had attacked the foliage giving it a conspicuous spotted appearance (fig. 2). This species is typically grass-infesting and we have seen no records of its injury to wheat. The infestation in the wheat was apparently the result of the continued drought which caused the pasture grass, the natural host, to dry up, forcing the insect to migrate to the wheat fields nearby.

Corn ear worm (*Heliothus obsoleta* Fab.) was more abundant than any year since 1921, being destructive throughout the state. Serious to sweet corn in southwestern Indiana and in Miami County. Most of the sweet corn, however, especially canning corn, was harvested before the ear worm became abundant. Considerable late injury to field corn occurred throughout the state. Tomatoes were damaged in the southwestern section of the state and reports of injury to gladiolus buds were received from Indianapolis. Heavy flights of moths were observed in different parts of the state September 13 to 16.

Common stalk borer (*Papaipema nitela* Gn.) was unusually abundant, reports of injury being received from Blackford, Cass, Clinton, Daviess, Dekalb, Delaware, Franklin, Hamilton, Hancock, Hendricks, Howard, Jay, LaPorte, Lawrence, Madison, Marshall, Parks, Shelby, Tippecanoe, Tipton, Union, Wabash, Warren, Wayne, Wells, White and Whitley counties. The first reports were received May 29 and were most numerous during June and early July, although injury was reported

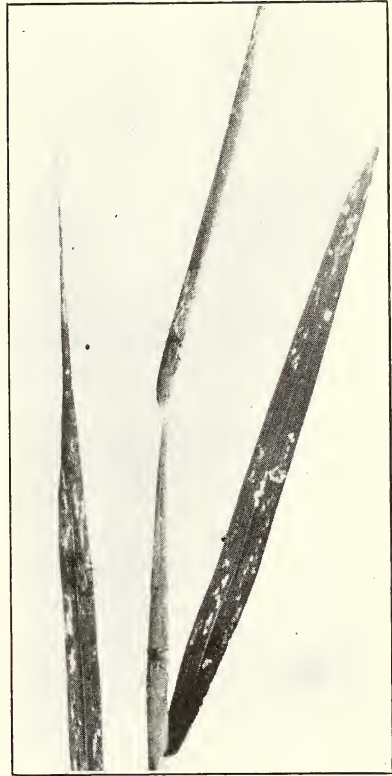


Fig. 2—The bill bug (*Sphenophorus parvulus* Gyll.) punctures the unfolding leaves of corn plants, causing a deformed and worthless plant. Nearly natural size.

Fig. 3—Injury to wheat by a common meadow plant bug (*Miris dolobratatus* L.). Note whitened areas resulting from removal of cell juices. About $\frac{1}{2}$ natural size.

as late as August 4. The injury was principally to corn although frequent reports of injury to mint, wheat, oats, tomatoes, potatoes and flower garden plants, especially dahlias, were received.

European corn borer (*Pyrausta nubilalis* Hbn.) is not known to occur in Indiana. It is gradually spreading westward and is about 25 miles from the Indiana state line in the northeastern corner of the state. We may anticipate a continued slow spread and, with the effective quarantines by the federal government to prevent artificial carriage, we may hope that the pest will not reach Indiana for two or three years. The Purdue Agricultural Experiment Station is attempting to introduce and acclimatize one of the European parasites (*Habrobracon brevicornis*) in Indiana on the common smartweed borer, in hopes of having this parasite on hand when the borer enters our state.

Clover root curculio (*Sitones hispidulus* Fab.) was reported doing considerable damage to soybeans June 17 in Clinton County. This beetle is usually destructive to soybeans following spring-plowed clover sod.

Because clover was in poor condition this spring, many fields were plowed under and planted to soybeans and it was supposed that considerable injury would result. Although no reports with specimens were received, other than the one referred to above, there is evidence that more than the usual damage occurred in central Indiana.

Clover leaf weevil (*Hypera punctata* Fab.) was observed working in clover fields at Lafayette from early April, although no reports of injury were received until April 23 from Aurora. The larvae had been working heaviest according to the reporter, a week previous, and most specimens submitted were full grown larvae or pupae. Additional reports of injury to both alfalfa and clover were received during May from central and southern, especially southeastern Indiana.

Clover hay worm (*Hypsophygia costalis* Fab.) reported abundant and destructive to stored clover hay, July 20, at Hammond.

Pea aphid (*Macrosiphum pisi* Kalt.) was first reported as abundant in alfalfa fields from Adams, Stark and LaPorte counties in the northern part of the state April 28. Later, reports were received from Elkhart, Marshall, Grant and other counties in northern Indiana. From the abundance of ladybird beetle larvae and parasites it was supposed the aphids would soon be reduced to insignificant numbers. However, due to continued cool weather, parasite activity was checked and by May 7 large spots in both alfalfa and clover fields were dying and in some cases whole fields destroyed.

The cowpea aphid (*Aphis medicaginis* Koch) was destructive to cowpeas during the first half of August in southwestern Indiana.

A common leafhopper (*Draeculacephala mollipes* Say) appeared in large swarms at lights, September 17, in Anderson and Indianapolis, according to Dietz.

VEGETABLE GARDEN INSECTS

Mexican bean beetle (*Epilachna corrupta* Muls.) made its initial appearance in Indiana in 1924 in five southeastern counties, namely Harrison, Floyd, Clark, Jefferson and Switzerland, all bordering the Ohio River. The spread in 1925 was rapid and conspicuous. It was first reported from Harrison County June 24; Floyd and Clark, July 2; Crawford, July 3; Washington, July 7; Dearborn, July 8; Ripley, July 9; Jennings and Scott, July 11; Orange, July 18; Monroe, July 20; Fayette, July 22; Franklin and Jackson, August 22; Perry and Spencer, August 29; Dubois and Martin, August 30; Henry and Wayne, September 21. Serious injury to garden beans resulted in all localities. Severe injury by the second brood to canning beans was anticipated but did not entirely materialize, apparently due to the unfavorable weather conditions.

Whether or not the bean beetle will become a pest of soybeans is a moot question. Injury to soybeans near heavily infested garden beans was reported at Madison. Similar reports have been received from other states. Evidence indicates it may seriously damage soybeans if allowed to increase to large numbers on garden beans. Otherwise no trouble to soybeans need be anticipated.

Clover white grub adults (*Colaspis brunnea* Fab.) reported abundant and damaging strawberry, melon, grape, snap beans, and soybeans throughout southern Indiana during July.

Banded flea beetle (*Systema taeniata* Say). More abundant than usual throughout state, injury being especially severe in northeastern Indiana. In this section of the state, weeds grew rank last fall because of the abundance of moisture. Although reports of injury to garden plants was reported as early as April 11, authentic records of injury by this species, based on an examination of specimens, were first received May 21 and continued till June 15. Crops included corn, potatoes and garden truck of all kinds. Corn was most generally and severely injured.

Garden slugs (*Agriolimax agrestis* L.) were abundant and destructive to garden truck such as lettuce and cabbage in central and northern Indiana. Reports were first received April 21 and continued at intervals throughout the season.

Cabbage maggot (*Hylemyia brassicae* Bouché) was more abundant and general than usual, attacking both cabbage and radish in northern Indiana, reports coming in during May and later. Reports of heavy infestations at Indianapolis and Union County were received, this being very unusual for central Indiana.

Cabbage curculio (*Ceutorhynchus rapae* Gyll.) was destructive to cabbage in seed beds at Lafayette and Crawfordsville, early in May, the first reports coming in May 1, at which time eggs and newly hatched larvae were observed.

Cabbage aphid (*Brevicoryne brassicae* L.) was abundant in July in various sections of central and northern Indiana.

Imported cabbage worm (*Pontia rapae* L.). Large numbers of the butterflies were observed at Indianapolis April 12 by Dietz. Wealthy apples and *Cydonia japonica* were just beginning to bloom. During the first half of July reports of abundance of the worms were received from all parts of the state.

Colorado potato beetle (*Leptinotarsa decemlineata* Say). Normally abundant. According to Dietz unusually abundant throughout southwestern Indiana.

Potato aphid (*Macrosiphum solanifolii* Ashm.) reported abundant at Schererville in Lake County, July 12. Specimens not received and therefore determination is not authentic.

Blister beetles, particularly the black blister beetle (*Epicauta pennsylvanica* DeG.), were abundant and damaging potatoes and other garden crops during the period August 7 to 21. In some cases damage was severe. Early in September many complaints of injury to aster flowers were received. July 8 reports of injury to potato by the striped blister beetle (*E. vittata* Fab.) were received from the southwestern corner of the state.

Potato leaf hopper (*Empoasca fabae* Harr.) became abundant on potatoes at Lafayette June 24, an unusually early date, apparently due to hot, dry weather early in June. The insect remained prevalent and continued to injure potatoes through July and August.

Tortoise beetles (Cassidinae). Larvae reported injuring sweet potatoes at Cannelton July 1 and Vincennes July 7.

Onion thrips (*Thrips tabaci* L.) was unusually abundant in northern Indiana, first reports coming in from northeastern Indiana June 16.

Onion maggot (*Hylemyia antiqua* Meig.) was abundant in some sections of northern Indiana, especially in the northeastern part. First reports were received from Milford May 19. Reports were especially common during last of June and the first half of July.

Striped cucumber beetle (*Diabrotica vittata* Fab.) was only normally abundant. First beetles were reported in cold frames in Knox County, April 16. Seldom a year that this insect is not a serious pest in all sections of Indiana.

Melon aphid (*Aphis gossypii* Glov.). Many reports of abundance and injury to melon and cucumber from all parts of the state the first half of July and continuing through August.

Spinach leaf-miner (*Pegomyia hyoseyamii* Panz.). Severely damaged spinach and chard during May at Elkhart.

Asparagus beetle (*Crioceris asparagi* L.). Normally abundant and destructive in central and northern Indiana, first reports being received May 17.

Squash vine borer (*Melittia satyriniformis* Hbn.). Reports of injury more numerous than usual, all coming during last of July and early August and from the northern half of the state.

A myriopod was reported damaging ripening strawberries at Winamac May 29 and Lebanon August 14. Injury to a variety of garden crops was reported during July from several widely separated sections of the state.

Green peach aphid (*Myzus persicae* Sulz.). A heavy invasion of winged migrants occurred on tomato at Lafayette beginning June 27 and lasting for a week or ten days. Wingless progeny began to develop but heavy rains early in July checked the increase. However, as a result of the invasion, mosaic spread extensively throughout the fields, the disease symptoms appearing about two weeks after the greatest abundance of migrants.

The tomato and tobacco worms (*Protoparce sexta* Johan. and *P. quinque-maculata* Haw.) were normally abundant.

Strawberry leaf roller (*Ancylis comptana* Frohl.) damaged strawberries during July in the strawberry section near Borden. This insect is generally prevalent and destructive throughout the state.

Cabbage aphid (*Aphis brassicae* L.) was abundant as usual.

False cabbage aphid (*Aphis pseudobrassicae* Davis) was abundant as usual on late turnips.

Agonoderus pallipes Fab. was reported from Garrett, August 4, with the information that the beetles were feeding on the roots of cucumbers. Whether or not this beetle was really responsible for the initial injury could not be determined.

Garden slug (*Limax* sp.) was abundant in many sections of the state, damaging garden crops and also annoying in cellars.

Egg plant lace bug (*Gargaphia solani* Heid.) damaged egg plants at Evansville, August 6.

Fungus gnat larvae (*Sciara* sp.) were destructive to small tomato seedlings at Jasonville, February 9.

An unusual injury was reported from Bloomfield, May 2, May beetles being reported as damaging truck crops. Full details were not received.

FRUIT INSECTS

San Jose scale (*Aspidiotus perniciosus* Comst.). The fall conditions in 1924 permitted scale to increase noticeably but the following winter the low temperature resulted in a high mortality. Porter's counts at Vincennes showed a 61 to 81 per cent mortality. In an orchard where the mortality was 28 per cent for the winter of 1922-23 and 57 per cent 1923-24, it was 79 per cent the past winter (1924-25). Even where a good control by spraying was obtained the past winter the infestations are again serious this fall, calling for prompt and thorough treatments on the part of the orchardists. While severe infestations have been largely confined to southern Indiana the past four years, at present the scale is increasing as a serious problem in central Indiana. In 1925 Porter observed the first crawlers at Vincennes, May 20, which was 7 to 10 days ahead of normal and 20 days ahead of 1924. Second brood crawlers began appearing about July 12 at Vincennes. The unseasonably hot weather in early June, when the first brood of crawlers were appearing, apparently permitted the insect to increase much faster than normally.

Scurfy scale (*Chionaspis furfura* Fitch) has been very abundant on apple throughout the state in orchards which are only occasionally or not at all sprayed during the dormant season.

Oyster shell scale (*Lepidosaphes ulmi* L.). According to Dietz the light brown form began hatching at Indianapolis April 22 to 26 which was the earliest since 1922, when hatching began April 24. Last year (1924) the first young (fig. 4) were observed May 16 and hatching continued until June 1. At Lafayette the first young were observed April 29. As in former years the oyster shell was a serious pest of lilac. In orchards sprayed with a dormant spray the scale is of no importance but rather abundant on improperly sprayed apple trees. This year the oyster shell scale was spottedly abundant at Vincennes, which is farther south than the usual range of destructiveness. Dietz also observed the apple form in Greene County, which is farther south than the usual range.

Apple aphids (*Aphis pomi* DeG., *Anuraphis roseus* Baker and *Rhopalosiphum prunifoliae* Fitch). The first hatched aphids were observed at Vincennes March 9, which was unusually early because of the abnormally early spring. At no time during the year were they more than moderately abundant and very little injury resulted.

Woolly apple aphid (*Eriosoma lanigera* Haus.) was abundant in many sections of the state.

Apple red bug (*Lygidea mendax* Reut.) was not abundant in any section of the state.

Codling moth (*Carpocapsa pomonella* L.). Most severe outbreak of codling moth for several years, resulting in serious losses. Even in the

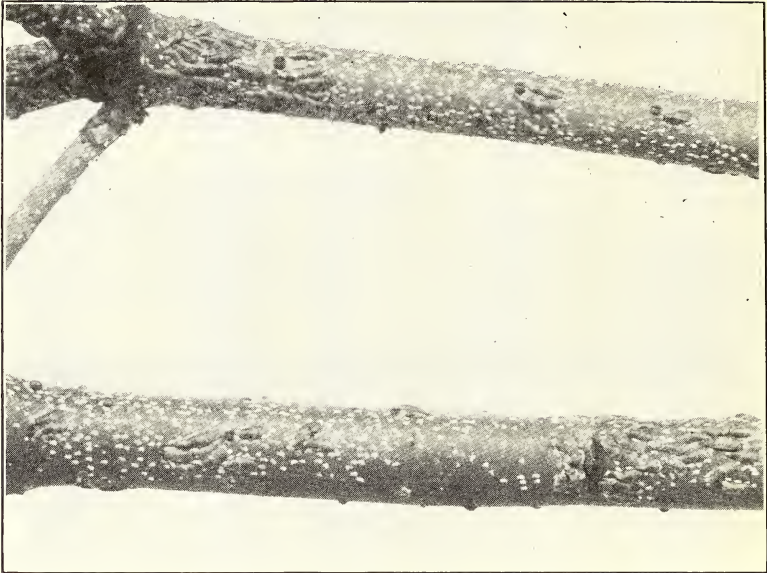


Fig. 4—Oyster shell scale (*Lepidosaphes ulmi* L.) on cornus. Note large mature scales and the white specks representing the recently hatched and settled scales. About $1\frac{1}{2}X$ natural size.

well-sprayed orchards a noticeable amount of wormy fruit occurred. Weather conditions were probably responsible for their abundance. Aside from an early spring the second generation moths were out in greatest abundance about June 20 (at Vincennes) when the weather was very hot and dry and favorable for maximum oviposition and hatching.

According to Porter's records at Vincennes, the first moths appeared in cages May 10 but the cool weather following delayed emergence of the majority of moths several weeks. He observed the first brood larvae leaving fruit as early as June 9. No definite break was observed between the first and second brood of larvae.

Lesser apple worm (*Laspeyresia prunicora* Walsh) was common but not conspicuously destructive, in many sections of the state. Apparently it is gradually increasing in numbers.

Apple maggot (*Rhagoletis pomonella* Walsh) seriously damaged apple fruit at Goshen, the report being received September 18.

Apple flea weevil (*Orchestes pallicornis* Say). Slightly more abundant in southern Indiana than the previous year. Seems to be increasing. Porter observed the first pupae May 7 at Vincennes and May 16 practically all larvae were full grown and a third had pupated. Most of the weevils entered hibernation between July 10 and 15.

Buffalo tree hopper (*Ceresa bubalus* Fab.). Damage to apple, especially in young orchards, as a result of egg punctures by this insect, common throughout the state, but especially in northern Indiana. Injury seems to predominate in orchards where alfalfa has been grown or the orchard weedy the previous fall.

Apple fruit chafer (*Metachroma interruptum* Say). This insect made its first appearance as a pest of apple (fig. 5) in Indiana in 1922



Fig. 5—Apples characteristically eaten by a fruit chafer beetle (*Metachroma interruptum* Say).

or 1923 near Decker. Each year since then more or less injury has resulted each season, but the pest does not seem to be extending its range of activities nor increasing appreciably. This past year injury occurred early in July.

Red-banded leaf roller (*Eulia velutinana* Walk.). In moderate numbers in apple orchards of southern Indiana. In one orchard at Vincennes injury amounted to over 20 per cent of the fruit (fig. 6).

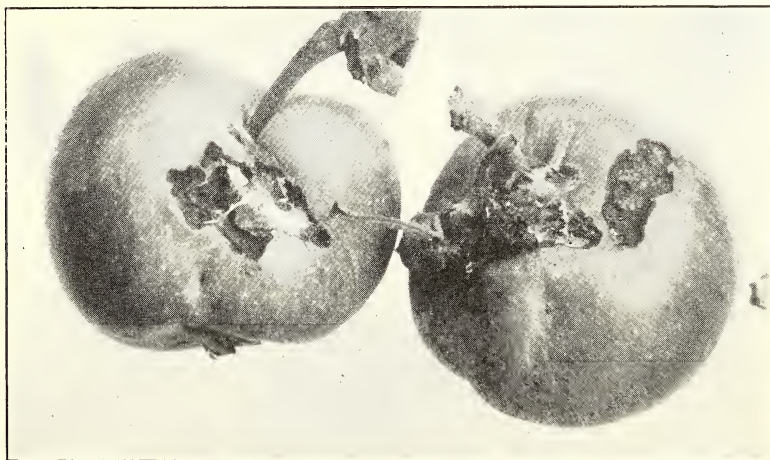


Fig. 6—Apples damaged by the red-banded leaf roller (*Eulia velutinana* Walk.). The apples are spread apart to show injury. Usually attacks where apples touch or where leaf touches side of fruit. About natural size.

Use of alfalfa as a cover crop in orchards apparently has the effect of increasing the trouble from this insect.

Bud moth (*Tmetocera ocellana* Schiff.). Dietz found this insect a common pest of nursery stock in the southwestern part of the state.

Fall webworm (*Hyphantria cunea* Drury). Abundant on apple and shade trees in most sections of the state. Quite common during July in Martin County.

Yellow-necked apple caterpillar (*Datana ministra* Drury) was more abundant than usual, frequently defoliating apple trees in central Indiana. Injury occurred, according to reports received, from July 21 to August 27.

Red-humped caterpillar (*Schizura concinna* S. & A.) moderately abundant in the southern half of the state. In most cases injury to apple was reported. In one case to raspberry.

Tussock moth (*Hemerocampa leucostigma* S. & A.) defoliated small plum trees at Union City.

Cecropia moth (*Samia cecropia* L.). Many specimens of the larva, cocoon and moth of this insect were submitted. Apparently the insect was conspicuously more abundant than usual. Only one definite report of injury was received, that from near Lafayette where the caterpillars defoliated apple trees.

Leaf hoppers (*Erythroneura obliqua* Say and var. *dorsalis* Gill.) were abundant in southern Indiana. Less abundant are the species *E. hartii* Gill. (= *maculata*, var. *maculata* Gill.) and *E. illinoienses* Gill. Determinations by Ackerman.

Plum curculio (*Conotrachelus nenuphar* Hbst.). Apparently increasing in the state, especially in southern Indiana. Larvae began leaving fruit at least as early as June 1 at Vincennes according to Porter.

Tarnished plant bug (*Lygus pratensis* L.). Injury to apple, almost certainly that of this plant bug, was received from the southern half of the state. The injury resembles red bug injury. The "cat-facing" of peaches, which is caused by this plant bug, continues to be a serious problem to the peach growers of southwestern Indiana.

Shot-hole borer or fruit tree bark-beetle (*Eccoptogaster rugulosus* Ratz.) continues as an important pest in many peach orchards of the state but is noticeably less so than in 1924.

Peach tree borer (*Synanthedon exitiosa* Say) has always been an important problem to peach growers. Practically all commercial growers now use the paradichlorobenzene treatment, which is practical in every sense of the word. The home garden peach trees apparently maintain a good supply of moths, making it necessary up to the present for commercial growers to treat regularly each year.

Lesser peach tree borer (*Synanthedon pictipes* G. & R.) has increased very noticeably the past year and there is a heavy infestation generally in southern Indiana.

Oriental fruit worm (*Laspeyresia molesta* Busck) was first discovered by Porter last year (1924) in southwestern Indiana, the determination having been made from reared specimens. There is no further positive evidence of its occurrence. However, from its actions in other

sections of the United States we may anticipate its increase and spread in Indiana in a few years and reckon it among the most serious peach pests.

The peach twig borer (*Anarsia lineatella* Zell.) was moderately abundant in southern Indiana. This species may easily be confused with the oriental fruit worm injury to twigs.

Cotton leaf worm (*Alabama argillacea* Hbn.). Specimens of the moth were collected at several places in central Indiana but no flights or injury were observed. The caterpillar is not harmful in our state but occasionally the moths fly into Indiana from the south and puncture and injure ripening fruit, especially peaches (fig. 7).

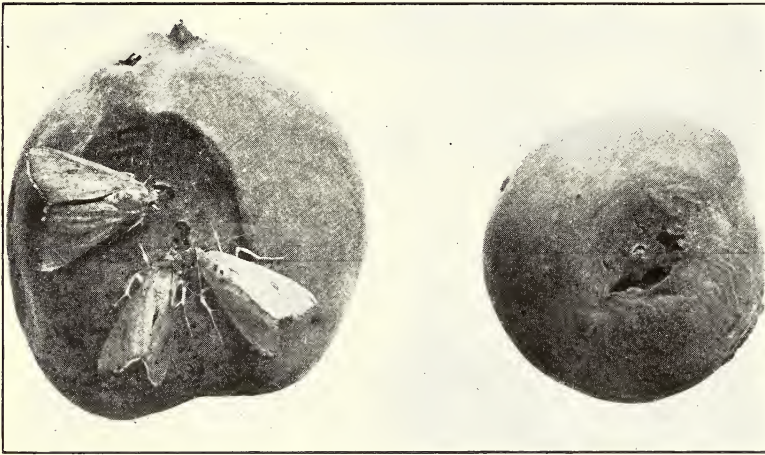


Fig. 7.—Cotton caterpillar moths (*Alabama argillacea* Hbn.) migrate northward in the fall, usually arriving about the time peaches are ripening. They puncture tender skinned fruits and suck the juices, causing a rot to develop. Slightly less than natural size.

Broad-winged tree cricket (*Oecanthus latipennis* Riley). Common throughout Indiana, injuring peach by the numerous egg punctures. Injury to raspberry also common.

Black cherry aphid (*Myzus cerasi* Fab.). Abundant and destructive in spotted sections of the state.

Pear and cherry slug (*Caliroa cerasi* L.). Common in a few sections on pear and cherry but not nearly as generally abundant and destructive to either cherry or pear as in 1923 and 1924.

Grape leaf hopper (*Erythroneura comes* Say). Common in central Indiana, becoming especially noticeable in July.

Six-spotted grape beetle (*Pelidnota punctata* L.). According to Dietz, very abundant at Indianapolis July 25, damaging grapes.

Imported currant worm (*Pteronidea ribesi* Scop.). Usual abundance in the state. Dietz observed eggs hatching April 27 at which time the fruit was about the size of small peas or 10 days after blooming.

Currant aphid (*Myzus ribis* L.) was normally abundant.

Gooseberry aphid (*Aphis houghtonensis* Troop) was moderately abundant throughout the northern half of the state, although scarcely as many inquiries as in 1924.

SHADE TREE AND SHRUB INSECTS.

Boxelder aphid (*Periphyllus negundinis* Thos.) was generally and normally abundant. At Connersville they were reported as sufficiently abundant April 25 to cause shedding of leaves.

Elm cockscomb galls (*Colopha ulmicola* Fitch) were abundant on elm as usual, as were also aphids on rose, bridal wreath and maple.

Pine bark louse (*Chermes pinicorticis* Fitch) was reported very abundant on pine at Spiceland April 19.

Maple phenococcus (*Phenococcus acericola* King) caused drying up of maple foliage at Salem July 24. This insect is common every year but seldom does noticeable damage.

Obscure scale (*Chrysomphalus obscurus* Comst.) was found to occur abundantly on pecan in certain sections of southwestern Indiana by Dietz.

Elm scurfy scale (*Chionaspis americana* Johns.) was very abundant on elms in central Indiana and responsible for considerable injury to young trees. Eggs were hatching at Lafayette April 30.

Pine leaf scale (*Chionaspis pinifoliae* Fitch) has been repeatedly reported abundant and destructive throughout the state on pine and spruce. Eggs were hatching at Lafayette April 30.

Tulip tree scale (*Toumeyella liriodendri* Gmel.) was abundant, as usual, in the southern part of Indiana.

Cottony maple scale (*Pulvinaria vitis* L.) occurred more extensively in the state and in many localities was more abundant than for a number of years. It was conspicuous but not destructive in the extreme south end of the state, reports coming from Vincennes and New Albany. This extreme southern occurrence is very unusual the insect being typically an inhabitant of the northern half of the state.

Boxelder plant bug (*Leptocoris trivittatus* Say) was more abundant this fall than ever before observed. Numerous inquiries were received from every section of the state, the first coming in July 21 and reports continued to be received up to November 21. Injury to boxelder trees was noticeable in many cases. However, the probable cause for most inquiries was anxiety due to the conspicuousness of the red and black or red bugs and to the annoyance as the bugs began to enter houses in their search for winter quarters towards late fall.

Locust leaf-folder (*Epargyreus tityrus* Fab.) was destructive to moss locust (*Robinia hispida*) at Evansville, June 16.

Forest tent caterpillar (*Malacosoma disstra* Hbn.) common in Martin County during July.

Bagworms (*Thyridopteryx ephemeraeformis* Haw.) were common in the southern third of the state, occurring commonly on deciduous trees as apple, maple, boxelder, pecan and plum but especially on conifers such as cedar and arbor vitae. Especially destructive during the last of June and July.

Catalpa sphinx caterpillars (*Ceratonia catalpae* Boisd.) not as generally abundant as in 1924 but defoliating trees in a few isolated localities, especially in southern sections of the state, during July.

White-marked tussock moth caterpillars (*Hemerocampa leucostigma* S. & A.) defoliated plum trees at Union City during September. Apparently less conspicuous than the year before as a shade tree pest.

Walnut caterpillar (*Datana integerrima* G. & R.) defoliated walnut trees in central and southern Indiana the last of July and first half of August.

Flat-headed borer (*Chrysobothris femorata* Fab.) was normally abundant throughout the state, especially in the northern half, causing the death of many young hard maple trees. In a large commercial eight-year-old apple orchard at Bloomington about 10 per cent of the trees have been killed by this borer.

Bladder maple gall (*Phyllocoptes quadripes* Shim.) abundant during June in central and south central Indiana.

Gouty vein gall (*Dasyneura communis* Felt.) was reported abundant on hard maple at Washington, Ind., July 18. Galls had opened and insects left. Have no previous record in the state.

Red spider (*Tetranychus telarius* L.) was common throughout the state, seriously damaging trees, ornamentals and other plants. These included evergreens of all kinds, such as cedar and Norway spruce as well as bush honeysuckle, Buddlea, hydrangea, raspberry, hard and soft maples, phlox, delphinium, columbine, sweet pea, aster, gladiolus, bean, beets, watermelon, pumpkin and tomato. In many cases complete defoliation resulted. Early reports were received the last of April and continued through July. Especially noticeable the last of May and early June, due no doubt to the hot dry weather preceding.

FLOWER GARDEN AND GREENHOUSE INSECTS.

Serpentine leaf-miner (*Agoromyza pusilla* Meig.) was destructive to columbine (*Aquilegia*) at various places in central Indiana during May.

Iris root borer (*Macronoctua onusta* Grt.) is an annual pest of iris. Eggs began hatching at Indianapolis April 14, according to Dietz, this being fully a month ahead of 1924. Injury was severe to iris throughout the state, probably more so than usual.

Green fruit worms (*Xylina* spp.) have not been observed as a pest of apples, its common host, the past season but Dietz observed them feeding on rose buds at Indianapolis during May.

Thrips (*Frankliniella tritici* Fitch) injured gladiolus in an extensive planting at Loogootee, the report being received June 18.

A beetle (*Trichiotinus piger* Fab.) was observed by Dietz early in June damaging the flowers of hybrid perpetual roses. Dietz reports that the beetles were apparently after the pollen but were ruining the flowers in their attempts to get to the stamens.

Spotted cucumber beetle (*Diabrotica 12-punctata* Fab.) was exceedingly abundant and damaging flowers of gladiolus, daisy, phlox and zinnia at Indianapolis during July.

White fly (*Aleyrodes vaporariorum* Westw.) reported abundant on coleus and other house plants during July in various sections of the state.

The phlox plant bug (*Lopidea* sp.) caused considerable damage to phlox in Evansville nurseries during July.

Rose curculio (*Rhynchites bicolor* Fab.) injured *Rosa rugosa* at Indianapolis and West Baden the latter part of June.

Rose slugs (species?) were common in a few localities according to letters received.

Rose aphids attacking flowering plants were apparently general and moderately destructive in most parts of Indiana as in former years. The corn root aphid (*Aphis maidiradicis* Forbes) and the white flocculent species (probably *Prociphilus erigeronensis* Thos.) were commonly attacking aster. The latter species also attacked various other flowering plants. November 17 reports were received of serious injury to sweet peas in a greenhouse at Jeffersonville.

The nasturtium aphid (*Aphis rumicis* L.) was reported destructive to nasturtiums in various sections of the state, for instance, at Bloomington May 20, Frankfort July 8, LaGrange August 18.

STORED PRODUCTS.

Angoumois grain moths (*Sitotroga cerealella* Oliv.) was reported in a few cases damaging stored seed corn. No reports of injury to wheat in the field or shock have come in from southern Indiana where such injury was prevalent in 1924.

Indian weevil moth (*Plodia interpunctella* Hbn.) was reported damaging peanuts and flour in storage at Fort Wayne and South Bend.

ANIMAL AND HUMAN PESTS.

Rose chafer (*Macrodactylus subspinosus* Fab.). For several years the rose chafer has been a serious pest in isolated areas throughout the state. They commonly attack garden beans, corn, mulberry, locust, curly dock and a number of shrubs, as well as the fruit of cherry, peach, grape and plum. Probably more important is the loss to young poultry from eating beetles which contain a toxic material fatal to chicks under six weeks old. Reports of trouble of this nature was first reported the past year from Corydon on May 18, West Baden May 22, Evansville May 23, St. Anthony May 24, Fremont May 25, Princeton May 27, Spencer May 29 and Springville June 4.

In the northern part of the state less injury to chicks but serious to crops the first part of June.

Chiggers (*Trombicula irritans* Riley) normally abundant in southern half of Indiana being especially noticeable in July. In some sections usually abundant in grass and shrubbery.

Ox warble (*Hypoderma lineatum* DeVill.) was common throughout the state as usual. Reports of dockage at markets on botty cattle indicate considerably more importance than generally supposed.

Sheep tick (*Melophagus ovinus* L.) was reported as heavily infesting sheep during March and April in south and central Indiana.

Horn fly (*Haematobia irritans* L.) not abundant early in season owing to long drought in late May and early June. Rains apparently brought about an abundance of the flies which were very annoying to cattle during July.

Lice on horses, cattle and poultry were common but no more abundant than any other year.

Saddle-back caterpillar (*Sibine stimulea* Clem.) was not common the past year according to inquiries received. For several years past this insect has been commonly reported in the fall as causing severe irritation to persons coming in contact with them.

HOUSEHOLD AND ANNOYING INSECTS.

Ants were the subject of many inquiries throughout the season but probably no more than in past years. The reports referred to ants primarily as pests of the lawn and in the household.

Cloth moths (probably *Tinea pellionella* L.) was apparently more troublesome the past season than formerly, this insect and probably others being particularly destructive to mohair furniture.

Fleas (*Ctenocephalus canis* Curt.) were unusually troublesome. Never before have we had so many inquiries. Often reports were received of trouble in city residences and in basements but more usually in hog houses and other out-buildings on farms. Reports came from every section of the state and in many instances it was noted that the farm was being rented, the occupant having only recently moved onto the place.

Cockroaches (*Blattella germanica* L., *Periplaneta americana* L. and *Blatta orientalis* L.) were reported from all sections of the state. They were not only annoying in the household but merchants complained of annoyance and damage from these obnoxious insects. Control is a simple matter. For example, following a demonstration at Bedford we received the following letter from Mr. Geo. H. Megnin, in whose store the demonstration was given: "I want to thank you for your good work in demonstrating and killing cockroaches in my store this summer. I had tried everything that anyone recommended and had spent about \$100.00 trying to kill them but it did no good. Today one cannot find a living cockroach on the place".

Other insects which were reported annoying or destructive included the bedbug, buffalo beetle, cricket, and the cigarette beetle, the latter oftentimes infesting the packing of plush or mohair furniture.

MISCELLANEOUS.

Every year an increasing number of reports of damage to buildings by termites are received. One correspondent reports an unusual injury, namely to rhubarb.

Two reports of injury to building joists and studdings by powder post beetles were received. One January 3 from Connersville and the other September 28 from Pine Village.

