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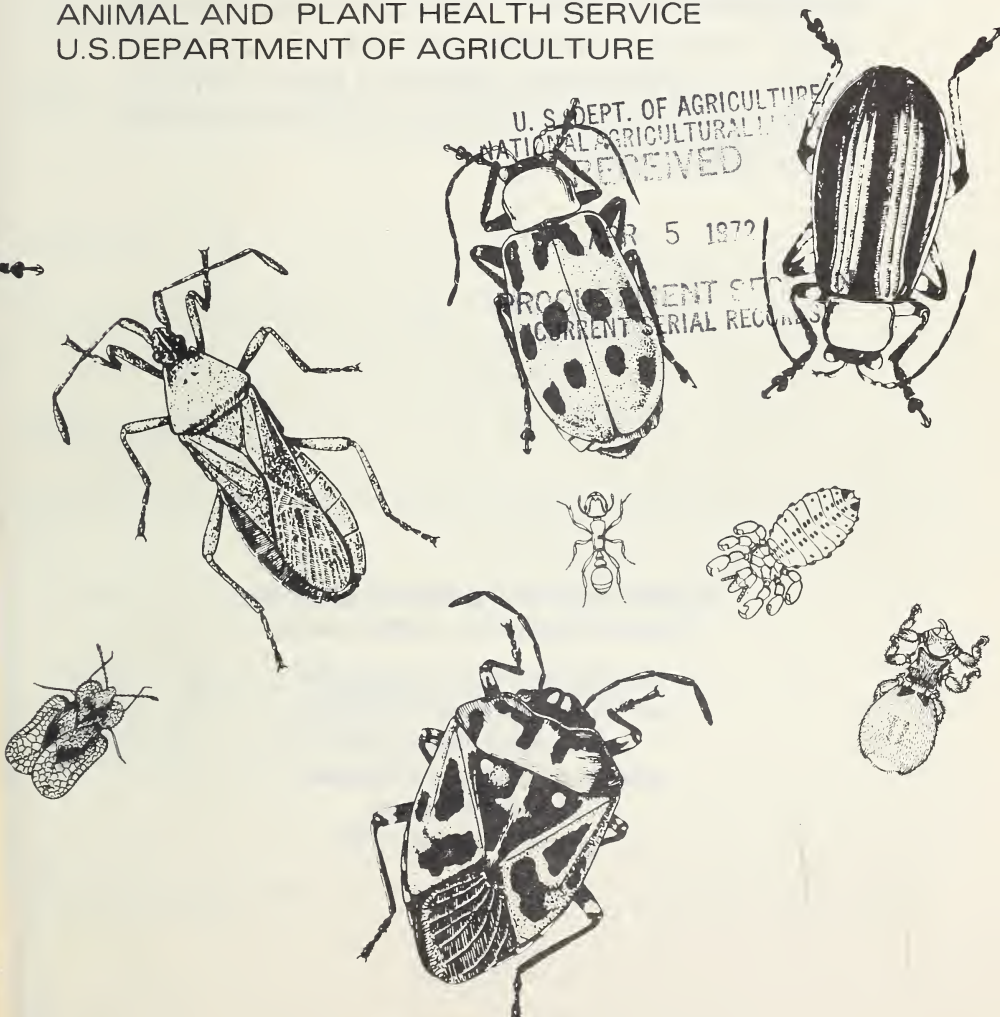
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Cooperative Economic Insect Report

Issued by
PLANT PROTECTION AND QUARANTINE PROGRAMS
ANIMAL AND PLANT HEALTH SERVICE
U.S. DEPARTMENT OF AGRICULTURE

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ANIMAL AND PLANT HEALTH SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
ECONOMIC INSECT SURVEY AND DETECTION STAFF

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearinghouse and does not assume responsibility for accuracy of the material.

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Economic Insect Survey and Detection
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Animal and Plant Health Service
United States Department of Agriculture
Federal Center Building
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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMY CUTWORM larvae appeared on wheat in Kansas and were economic on some wheat in Colorado. (p. 127).

ALFALFA WEEVIL larvae heavy on alfalfa in Texas and Oklahoma. (p. 128).

SPRING CANKERWORM expected to be serious on elms during 1972 in eastern Kansas. (p. 129).

Detection

For new county records see page 130.

Special Reports

Alfalfa Blotch-Miner Situation in Eastern United States (pp. 132-133).

Taxonomy of the Alfalfa Blotch-Miner. (pp. 134-137).

Summary of Insect Conditions in the United States - 1971
Potatoes, Tomatoes, Peppers (pp. 138-140).
Beans and Peas (p. 140).
Cole Crops (p. 140).
General Vegetables (p. 141).

Reports in this issue are for week ending March 10 unless otherwise indicated.

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WEATHER OF THE WEEK ENDING MARCH 13

Reprinted from weekly Weather and Crop Bulletin supplied by
Environmental Data Service, NOAA.

PRECIPITATION: A storm centered over southern Alberta Monday morning, March 6, caused 40 to 50 m.p.h. gusty winds in portions of the Rocky Mountains, Great Plains, Great Lakes region as it moved eastward and intensified. Gusts reached 100 m.p.h. at Lander, Wyoming, and one gust at Cheyenne, reached 107 m.p.h. Much of the City of Lander was without power Monday afternoon. A front draped southward and southwestward from the storm center. Southwesterly winds occurred ahead of the front, shifting to northwesterly with the frontal passage. Scattered snow flurries occurred near the Great Lakes. Freezing rain fell in the Milwaukee, Wisconsin, area late Monday. Windy weather continued Tuesday, causing some difficulty to motorists in northeastern North Dakota, where snow drifted and blowing snow reduced visibility. By midmorning Tuesday, the storm front extended from New York along the Appalachians to the gulf coast. Showers preceded, accompanied or followed the frontal passage. Amounts of precipitation ranged from 0.50 to 1.00 inches in the Deep South, but from 0.10 to 0.50 inch from the Ohio River northeastward to New England. The northern portion of the front was marked by snow flurries rather than rain showers. Little precipitation fell elsewhere over the Nation at midweek. Three precipitation areas began to shape up as the weekend approached. A storm in the Pacific Northwest brought occasional rain from Washington to northern California. A storm centered in West Virginia caused light snow from northern and central Ohio to central Pennsylvania. Light rain or drizzle also fell in extreme south Texas. Most of the southwestern quarter of the Nation received no rain or only light scattered sprinkles.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - TEXAS - Moth collections increased from 30, the week ending March 3, to 225 this period in McLennan County blacklight trap. (Cowan).

ARMY CUTWORM (Euxoa auxiliaris) - KANSAS - Larvae averaged 1 per row foot in 2 fields of wheat in Mead County and 1 per row foot in single field in Clark County period ending March 3. (Bell). COLORADO - Infestations scattered in winter wheat in Washington, Logan, Phillips, and Yuma Counties. Most larvae second and third instars and ranged 1-12 per linear foot; economic infestations mostly in Washington County. (Pilcher, Hantsbarger).

GREENBUG (Schizaphis graminum) - TEXAS - Continues light on small grains in most Rolling Plains counties; some scattered controls applied in Knox, Wilbarger, Wichita, and Baylor Counties period ending March 3. Increased this period throughout Rolling Plains area; some controls applied. Heavy infestations still scattered. Generally, populations light to medium throughout most of area. (Boring). OKLAHOMA - Ranged 200-300 per linear foot of wheat in Washita County. Continues heavy in scattered fields in Cotton, Stephens, and Jefferson Counties. Moderate in Garvin County and averaged 50 per linear foot in Garfield County. Light in Kingfisher and Noble Counties and ranged up to 10 per linear foot in Payne County. Ranged 0-9 per linear foot in few wheatfields in Rogers, Wagoner, Muskogee, Bryan, Marshall, and Carter Counties. (Okla. Coop. Sur.). ARIZONA - Light in barley and wheat in Cochise County and at Parker Valley, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Light, up to 100 per linear foot of barley at Roswell, Chaves County. (Mathews).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Surveys negative at Albuquerque, Bernalillo County. (Heninger).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - INDIANA - Recovered 44 live and 10 dead larvae from 144 row foot of standing stalks in plowed field in Hancock County. (Meyer).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - OKLAHOMA - Light in scattered fields of wheat in eastern areas. Ranged up to 2 per linear foot in Rogers, Wagoner, Bryan, Carter, and Muskogee Counties. (Okla. Coop. Sur.). ARKANSAS - Counts variable, ranged as high as 500-600 per 100 sweeps of small grain in northwest area. About 90 percent parasitized. (Boyer). Light in wheat in east-central areas. (Sterling).

AN APHID (Rhopalosiphum padi) - OKLAHOMA - Ranged 5-40 per linear foot of wheat in Rogers, Wagoner, Bryan, and Marshall Counties. (Okla. Coop. Sur.).

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Controls applied in some areas of Baylor County. Infestations light to moderate on small grains in Young County. (Boring).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - UTAH - Adults emerged from orchard duff at Manti, Sanpete County, and from moss in mouth of Blacksmith Fork Canyon of Cache County. (Knowlton, Judd). NEVADA - Adults observed in southern Washoe County alfalfa; no mating and no eggs found. (Bechtel). TEXAS - Infestations scattered and heavy on alfalfa period ending March 3 in Houston, Ft. Bend, and Robertson Counties. Some controls applied. (Gayle, Matthies). Larvae this period ranged 42-168 per square foot in Burleson County. First-generation adults appearing. OKLAHOMA - Infestations ranged up to 100 percent of terminals with up to 10 larvae per terminal in alfalfa in Choctaw, Bryan, and Marshall Counties. Damage moderate to heavy. Terminals infested ranged 68-96 percent in Wagoner, Muskogee, Johnston, Murray, and Garvin Counties. Damage light to moderate. Heavy in Cotton, Stephens, Jefferson, Grady, and Washita Counties. Larvae ranged 4-8 per terminal in many fields. Present in 68 percent of terminals in Mayes County field and 40 percent of terminals in Tulsa County field. Light in Kingfisher and Cleveland Counties and Garfield County. (Okla. Coop. Sur.). ARKANSAS - Eggs ranged 20-40 per 6-inch-square sample in Washington County. (Dumas). KENTUCKY - Eggs averaged 148 per square foot of alfalfa in Pendleton County, and 143 in several fields in Fayette County. (Barnett).

PEA APHID (Acyrtosiphon pisum) - OKLAHOMA - Ranged 200-1,000 per square foot of alfalfa in Garvin County and 120-130 in Murray County. Ranged 5-80 per square foot in fields in Tulsa, Mayes, Wagoner, Muskogee, Choctaw, Marshall, Bryan, and Johnston Counties. Light in Garfield County. (Okla. Coop. Sur.).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - OKLAHOMA - Adults light in alfalfa in Muskogee, Choctaw, and Murray Counties. (Okla. Coop. Sur.).

TARNISHED PLANT BUG (Lygus lineolaris) - OKLAHOMA - First of season in alfalfa in Murray County. (Okla. Coop. Sur.).

CITRUS

Citrus Insect Situation in Florida - End of February - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 71 (norm 65) percent of groves; economic in 46 (norm 43) percent. Population decreased but still above normal and in high range. Decrease on leaves will continue, increase expected on fruit. Highest districts south, west, and central. CITRUS RED MITE (Panonychus citri) infested 22 (norm 29) percent of groves; economic in 2 (norm 14) percent. Population lowest for February in 21 years of record. Little change expected. All districts will remain in low range. TEXAS CITRUS MITE (Eutetranychus banksi) infested 17 (norm 30) percent of groves; economic in 7 (norm 11) percent. February population lowest since 1962 and will go lower. Very low levels of infestation will continue in all districts. SIXSPOTTED MITE (Eotetranychus sexmaculatus) below normal and in few groves, but will gradually increase. GLOVER SCALE (Lepidosaphes gloverii) infested 69 (norm 78) percent of groves; economic in 2 (norm 13) percent. Will decrease and remain at low level through March. Highest district south. PURPLE SCALE (L. beckii) infested 74 (norm 74) percent of groves; economic in 2 (norm 8) percent. Population below normal and will remain of little importance despite temporary increase in March. Highest district west. CHAFF SCALE (Parlatoria pergandii)

infested 43 (norm 54) percent of groves; economic in 1 (norm 6) percent. YELLOW SCALE (Aonidiella citrina) infested 61 (norm 61) percent of groves; economic in 1 (norm 10) percent. These scales below normal abundance and will be unimportant in all districts. BLACK SCALE (Saissetia oleae) infested 46 (norm 28) percent of groves; economic in 21 (norm 11) percent. Will continue to decrease but still more abundant than in any prior February on record. High districts east and central; others low. AN ARMORED SCALE (Unaspis citri) infested 30 percent of groves; economic in 22 percent. Population higher than in any prior month. Slight increase expected. WHITEFLY larval and pupal stages will decrease; adults and eggs will increase to above normal numbers. Highest district east. APHIDS appearing in scattered groves. Strong increase expected. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

OMNIVOROUS LEAF ROLLER (Platynota stultana) - ARIZONA - Few larvae entered grapefruit and found feeding just under rind, on east side of Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

ORNAMENTALS

AN ADELGID (Adelges tsugae) - VIRGINIA - Adults collected on Hemlock at Rocky Mount, Franklin County, by C.C. Tucker on March 2. Determined by J.A. Weidaas. This is a new county record. (Allen).

BROWN GARDEN SNAIL (Helix aspersa) - OREGON - Single live specimen found in survey of 10 greenhouses and garden centers in Multnomah, Washington, and Clackamas Counties. (Larson).

FOREST AND SHADE TREES

TENT CATERPILLARS (Malacosoma spp.) - OKLAHOMA - M. americanum (eastern tent caterpillar) hatched on wild plum in southeast and south-central areas. Larvae about 0.50 inch long in Choctaw and Bryan Counties and about 0.25 inch long in Marshall and Johnston Counties. (Okla. Coop. Sur.). ARIZONA - Malacosoma spp. tents noted in several areas in Salt River Valley cottonwoods in Maricopa County. (Ariz. Coop. Sur.).

SPRING CANKERWORM (Paleacrita vernata) - KANSAS - Expected to be serious on elms in eastern areas in 1972. During late February, males noted in Shawnee and Riley Counties, and 2 gravid females noted in Riley County. (Bell).

ELM LEAF BEETLE (Pyrrhalta luteola) - NEVADA - Numerous adults emerged from hibernation in Reno and Sparks area of Washoe County. (Nev. Coop. Rpt.).

MAN AND ANIMALS

SCREWORM (Cochliomyia hominivorax) - Total of 2 cases reported in U.S. February 27 to March 4, as follows: Hidalgo and Zapata. Total of 154 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 48, Chihuahua 22, Coahuila 8, Nuevo Leon 13, Tamaulipas 63. Total of 47 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. (Anim. Health).

COMMON CATTLE GRUB (Hypoderma lineatum) - KENTUCKY - Averaged 11.7 (ranged 0-30) on backs of untreated cattle in Jessamine and Fayette Counties. (Herald, Barnett). Grubs averaged 4.8 per animal on backs of dairy cows of various ages in Fayette County. (Barnett). ALABAMA - Occurring on cattle in Colbert County. Controls applied in Bullock County. (Rose et al.).

CATTLE LICE - OKLAHOMA - Mainly Haematopinus eurysternus (short-nosed cattle louse) heavy on cattle in Cimarron, Delaware, Creek, Lincoln, and Cotton Counties. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

WESTERN SUBTERRANEAN TERMITE (Reticulitermes hesperus) - WASHINGTON - Winged forms noted March 6 in basement of home at Ephrata, Grant County. (Hunter, Retan).

MISCELLANEOUS WILD PLANTS

A MEALYBUG (Spilococcus ventralis) - CALIFORNIA - On roots of Encelia farinosa at Ocotillo, Imperial County. This is a new county and host record. (Cal. Coop. Rpt.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

OBSCURE SCALE (Melanaspis obscura) - CALIFORNIA - Infestation in Capitol Park at Sacramento, Sacramento County. Eradication treatment underway by systemic injections. (Cal. Coop. Rpt.).

RANGE CATERPILLAR (Hemileuca oliviae) - NEW MEXICO - Egg clusters scattered and very light in most areas March 8 and 9. Only one area showed high egg cluster count northeast of Encinoso, Lincoln County. Occasional egg cluster noted in rangeland areas treated in 1971. (Riddle, Nielsen).

A SATURNIID MOTH (Hemileuca hualapai) - ARIZONA - Adult male reared by R. Wielgus from larvae collected September 1971 at Empire Mountains, Pima County. Doubtful that any of remaining unhatched pupal cases will contain H. oliviae (range caterpillar) specimens. (Ariz. Coop. Sur.).

DETECTION

New County Records - AN ADELGID (Adelges tsugae) VIRGINIA - Franklin (p. 129). A MEALYBUG (Spilococcus ventralis) CALIFORNIA - Imperial (p. 130).

HAWAII INSECT REPORT

General Vegetables - Larvae of IMPORTED CABBAGE WORM (Pieris rapae) trace in 0.25 acre of daikon (Raphanus sativus longipinnatus) at Koko Head, Oahu; less than 5 percent of plants infested. Adults moderate at large. BEET ARMYWORM (Spodoptera exigua) larvae light in 5,000 square feet of green onions at Waimanalo, Oahu; heavy in 0.2 acre of same crop at Koko Head, about 60 percent of leaves infested with 1+ larvae. CARMINE SPIDER MITE (Tetranychus cinnabarinus) moderate in 0.5 acre of eggplant at Punaluu, Oahu; as many as 250+ nymphs and adults per square inch on leaves. (Kawamura).

Fruits and Nuts - COCONUT SCALE (Aspidiotus destructor) trace to light on 100+ coconut trees at Hawaii Kai, Oahu. About 15 percent of pinnae on 20 percent of older fronds with light colonies. Older fronds exhibit effects of previous infestation. Nymphs and adults of lady beetles (Telsimia nitida and Lindorus lophanthae) preying on scales. (Kawamura).

Man and Animals - During February collected 373 VEXANS MOSQUITO (Aedes vexans nocturnus) and 4,551 SOUTHERN HOUSE MOSQUITO (Culex pipiens quinquefasciatus) from 56 light traps from Oahu. Catches of Aedes ranged 0-289 per trap at Punaluu, and Culex ranged 0-996 per trap at Kailua. (Mosq. Contr. Br., State Dept. Health).

Beneficial Insects - On Kauai, field collected cowpea and snap bean material infested with BEAN FLY (Melanagromyza phaseoli) found parasitized from 80-100 percent by braconids (Opius phaseoli and Opius sp.). (Sugawa).

Miscellaneous Pests - Destroyed total of 141 GIANT AFRICAN SNAIL (Achatina fulica) specimens during February on Kauai; 134 at Poipu and 7 at Wahiawa. Detected 20+ snails on Hawaii at White Sands area. Aerial bait drops planned. (Sugawa, Yoshioka).

CORRECTIONS

CEIR 22(7):56 - Map legend ... "COUNTIES IN WHICH EUROPEAN CORN BORER REPORTED IN 1972" should read "NEW COUNTIES IN WHICH EUROPEAN CORN BORER REPORTED IN 1971." (PP).

CEIR 22(9):101 - "The Southeastern Branch Entomological Society of America, " ... should read ... "The Southeastern Branch of Entomology Society of America, comprising the States of Louisiana, Mississippi, Alabama, Georgia, Florida, South Carolina, North Carolina, Tennessee, and Arkansas ..." (PP).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 3/3-9, BL, Granulate cutworm (Feltia subterranea) 4, saltmarsh caterpillar (Estigmene acrea) 2, tobacco budworm (Heliothis virescens) 1, yellowstriped armyworm (Spodoptera ornithogalli) 1, armyworm (Pseudaletia unipuncta) 2. MISSISSIPPI - Stoneville, 3/3-9, BL, Temp. 30-70F., precip. 0.09, Black cutworm 5, armyworm 13, variegated cutworm (Peridroma saucia) 11. TEXAS - Waco, 3/4-10, BL, Armyworm 225, yellowstriped armyworm 27, black cutworm 22, variegated cutworm 152, granulate cutworm 58, saltmarsh caterpillar 1.

ALFALFA BLOTCH-MINER SITUATION IN EASTERN UNITED STATES

Infestations of a leafminer (Agromyza sp.) in alfalfa have been reported in some of the Eastern States during the past several years. These occurrences have been reported in the Cooperative Economic Insect Report on a weekly basis since July 1969.

Prior to 1972, this leafminer was considered, by K. A. Spencer, a specialist of Agromyzidae in England, to be an undescribed species, especially in Massachusetts, New Hampshire, New Jersey, New York, and Connecticut, because of deviation of characters in available descriptions. United States taxonomists suspected that the species involved in these States was Agromyza frontella, a European species. Early in 1972, it was taxonomically confirmed by Spencer that this species is present in Massachusetts, New Jersey, and New York.

A questionnaire was submitted to cooperators in 18 Eastern States in an attempt to ascertain the distribution, economic impact, and controls used for this species. The responses from 15 of these States indicate the problem to be most significant in Massachusetts. Damage was first noticeable in this State during 1968 when infestations were reported in most of the State but population densities were recorded only in the 3 western counties. In 1971, infestations were heavy in southern Berkshire County, medium in Franklin, Hampshire, and Hampden Counties, light in Worcester County, and very light in Bristol County. There is no information available concerning infestations of this leafminer in alfalfa for the remaining two counties in Massachusetts. The heaviest larval damage to alfalfa leaflets during 1971 was 58 percent on June 14 in Berkshire County. (Personnel of Entomology Research Division, USDA, state that damage to alfalfa in some fields in the western portion of Massachusetts was so heavy that nothing remained of plants but the stems). The problem was first apparent during the first cutting of alfalfa when damage was at its peak. Damage declined slightly during the summer and sharply in September. This leafminer was not observed on any other crops in the State, and very little, if any, alfalfa was treated during 1971. The dollar loss to the alfalfa crop in Massachusetts (30,000 to 40,000 acres, not pure alfalfa) was negligible. Loss was mostly due to a lower quality of the crop.

The first noticeable damage to alfalfa in New York was during 1970 in Dutchess County and other adjacent counties. In 1971, this species was more important in this area than the alfalfa weevil. This leafminer apparently has not moved into other crops in New York. Controls using phosphate insecticides have been tested and show satisfactory results. Surveys in New Jersey during 1971 revealed infestations statewide. There were no reports of damage to alfalfa in 1971.

It is suspected that many of the reports on Agromyza sp. which follow may in fact be Agromyza frontella. Agromyza sp. first caused noticeable damage to alfalfa in Connecticut during 1969 in New Haven County. Approximately 2,000 acres were involved. In 1970, this pest was a problem on about 8,000 acres of alfalfa in New Haven, Litchfield, and Tolland Counties, but was not a problem during 1971. No treatment for this pest on alfalfa was reported in Connecticut. Although no yield data are available, it is estimated that this leafminer caused a loss of about 10 percent to the 1969-1970 alfalfa crop, or about nine dollars per acre, in

Connecticut, involving the first and second cuttings. In Rhode Island, a leafminer, possibly Agromyza sp., damaged alfalfa during 1970. By the time damage was noted the mines were empty; thus, no specimens could be collected for identification. Although damage was quite extensive in a 40-acre field of alfalfa, the best estimate of damage available was a loss of 50 percent in some areas of the field. No leafminer infestations were reported in alfalfa in Rhode Island during 1971.

Agromyza sp. is believed to be present in alfalfa throughout Vermont and to cause some damage in isolated areas. Infestations have been confined to alfalfa in the Concord area of Vermont, with no apparent involvement of other crops. This leafminer first caused noticeable damage to alfalfa in New Hampshire during the 1969 season. It is estimated that 100 acres of alfalfa were affected in both 1969 and 1970; however, no damage was reported in 1971. The alfalfa acreage in Maine has always been very small and is steadily decreasing, due to frost killing and the increasing use of corn for silage. Many of the alfalfa stands in the State are very poor (10 percent stand or less); thus, a significant evaluation of the Agromyza sp. situation in alfalfa is very difficult. Damage was first noticed about July 20, 1971. Infestations were found in only two fields with less than a 10-percent stand. Both fields were in extreme southern York County near Springvale and Alfred. These infestations were observed only in the early bloom stage about ready for the second cutting. Damage was not significant and no treatment was made. Infestations was noticed only in alfalfa.

Leafminers were first noticed as being common in Delaware alfalfa about 1964 or 1965. These pests affected about 50 percent, or 2,500 acres, of the alfalfa in the State at that time, but were much less common in 1971. Although Agromyza sp. appears to occur statewide, it is not known in what areas significant damage occurs. Leafminers have been observed to be much heavier in lima beans planted adjacent to alfalfa than in plantings some distance from alfalfa, but it is not known whether this is A. frontella. As no data are available on the economic threshold of this leafminer, it is difficult to determine the economic damage caused to alfalfa in Delaware. Agromyza sp. has been collected from alfalfa in Roanoke and Montgomery Counties, Virginia. There are records of this pest in Montgomery County since 1963, but it is not believed to cause economic damage to alfalfa in the State. Leafminers are difficult to find in most fields of alfalfa in Virginia and a small amount of leaf drop is not considered damaging to the crop. Very light infestations of a leafminer have also been observed in red clover since 1968 and there is a record of the pest on red clover as early as 1963. Populations have not been sufficiently heavy in Virginia to warrant treatment.

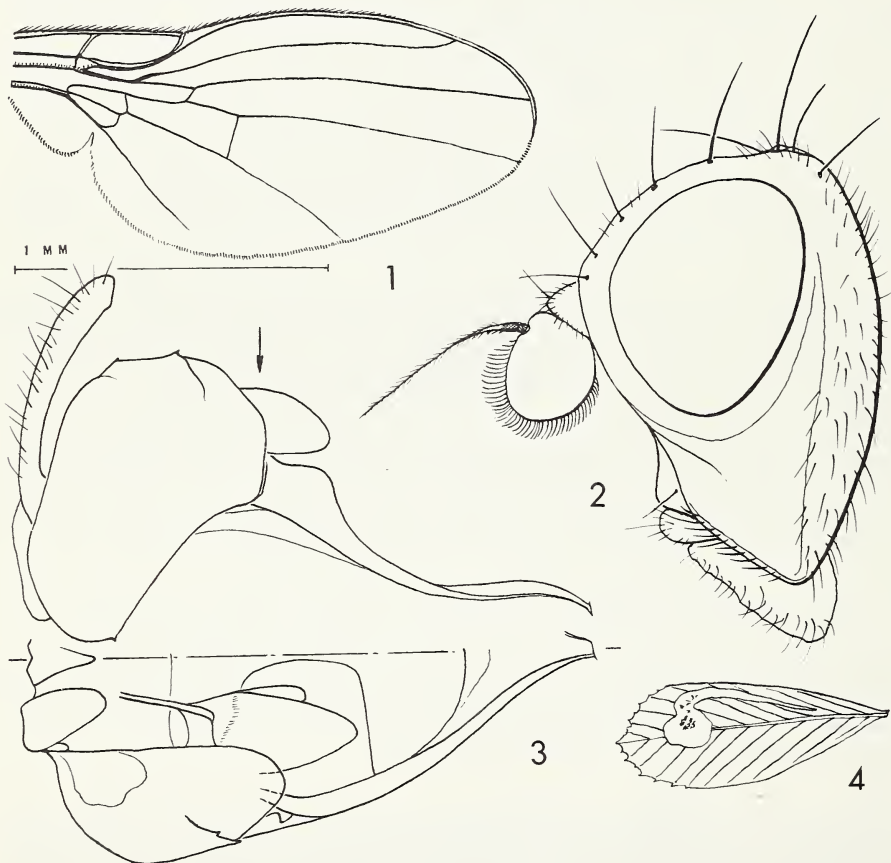
There are no records of Agromyza sp. on alfalfa in Maryland. In Pennsylvania, no noticeable damage by this pest has been observed on alfalfa. However, careful examination of alfalfa in Wyoming County showed that a few leaves on about 2 percent of the plants were infested with a leafminer during the summer of 1971. As the infestation was light, no treatments were made. In West Virginia, there is no information available concerning economic infestations of Agromyza sp. in alfalfa.

Agromyza sp. is not known to infest alfalfa in Ohio, Tennessee, or North Carolina.

The Taxonomy of the Alfalfa Blotch-Miner,
Agromyza frontella (Rondani)

George C. Steyskal 1/

The species was originally described by Camillo Rondani in 1874 (Boll. Soc. Entomol. Ital. 7:175) as Domomyza frontella from the vicinity of Parma, Italy. The genus Domomyza is now considered a synonym of Agromyza. The species was for some time confused with Agromyza nana Meigen, but at least since 1924 has been adequately distinguished from that and other closely related species mining the leaves of various legumes. In North America, the species was at first considered to be an undescribed species because of deviation from characters in available descriptions, but after examination of sufficient material its identity with the European species was confirmed.

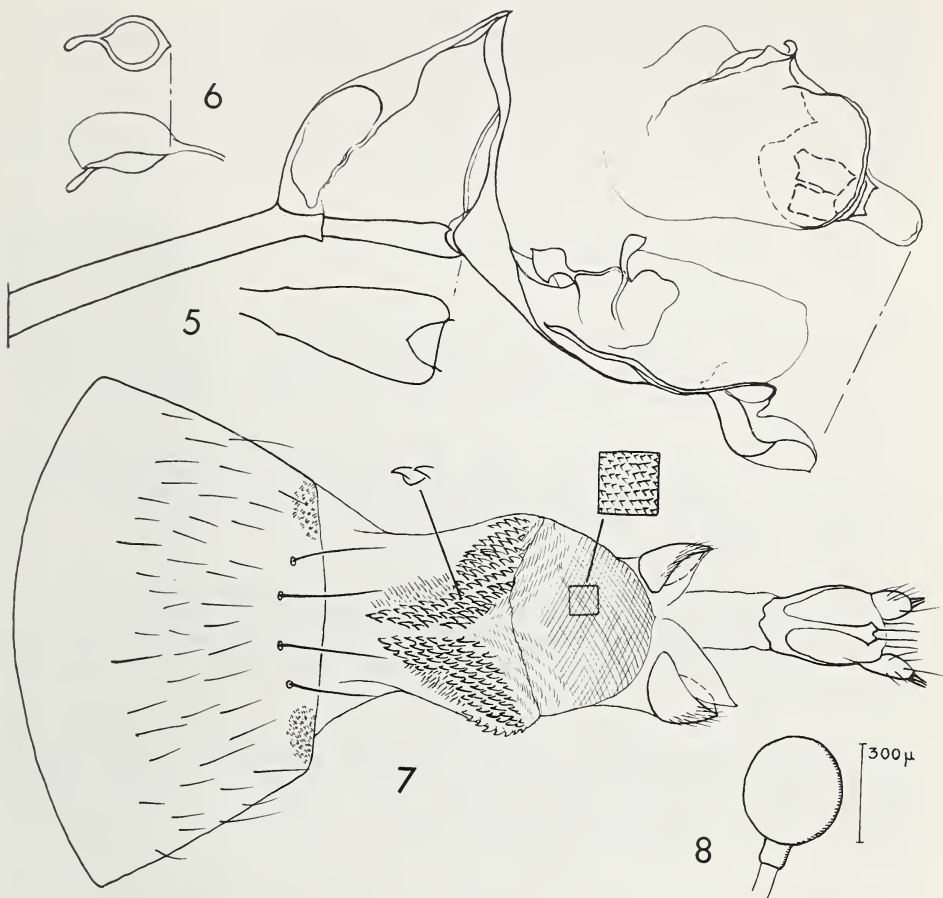


Figs. 1-4. Agromyza frontella (Rondani). 1, wing; 2, lateral view of head, male; 3, male postabdomen, less phallosome, lateral and ventral view (latter, a half-view in direction of arrow); 4, mine in leaflet of alfalfa. Scale refers to fig. 1 only.

1/ Systematic Entomology Laboratory, ARS, U.S. Dept. Agr.

Agromyza frontella has been reported from a wide area in Europe: Italy, France, England, Holland, Denmark, Sweden, Germany, Austria, Bulgaria, and Russia. It seems to have attracted little attention as a pest in Europe, inasmuch as the only specific report on its habits and morphology is one by H. Bollow (1955, Pflanzenschutz, Munchen, 7:141-143), who cites a mass occurrence on alfalfa in Germany.

The host-plants are various species of Medicago (M. falcata, M. lupulina, M. sativa), Melilotus, and Trifolium. The preferred host is apparently alfalfa, M. sativa.



Figs. 5-8 Agromyza frontella (Rondani), 5, male phallosome, lateral view, with dorsal view of base of phallopodeme and ventral view of aedeagus; 6, sperm pump; 7, female postabdomen, dorsal view; 8, spermatheca.

The mine of A. frontella (fig. 4) usually begins near the base of a leaflet, broadens toward tip of leaflet as the larva grows, and finally expands into a distinct blotch, which may occupy a large part of the leaflet.

The larvae of American Agromyzidae are so little known in detail that it is practical at this time only to state that the larva of A. frontella differs from those of the serpentine leafminers (Liriomyza species) in the dorsal cornu of the cephalopharyngeal skeleton. That part in A. frontella is broad and divided into 2 arms; in Liriomyza spp., it is slender and simple.

The adult of A. frontella will run in the key by Frick (1959, Proc. U. S. Natl. Mus. 108:362) to A. spiraeae, a leafminer of Rosaceae, and in the key by Spencer (1969, Mem. Entomol. Soc. Can. 64:30) it will run to couplet 28, beyond which point variability in color of the front and squamal fringe (both from yellowish to dark brown) will give difficulty. The species may be distinguished most readily from other North American species of Agromyzidae by the following characters:

- 1) Wing (Fig. 1) with subcostal vein complete to costa, touching first vein just before the latter forms a wedge-shaped area in joining the costa.
- 2) Halteres white.
- 3) Prescutellar acrostichal bristles present.
- 4) Body black, dully shining, knees, foretibia, basal 3 tarsal segments, middle and anterior part of front, large part of face and cheeks, and basal antennal segments yellowish to brownish.
- 5) Dorsocentral bristles 4, all large, 3 postsutural and 1 antesutural, the latter well anterior to presutural bristle.
- 6) Midtibia without median bristle (posterior when present).
- 7) Male and female postabdominal characters distinctive (figs. 3-7).

Additional characters are to be found in the wing (Fig. 1), the costa of which is evanescent between the tips of the third and fourth veins; the posterior crossvein a little basad of middle of the fifth vein; and the sixth vein long, but fading out before wing margin.

The head (Fig. 2, male) is characterized by unusually high cheeks and oblique oral margin, broadly fringed antennae in the male, and in both sexes by a rather short and pubescent arista, dark basally and in most of the slender part, but with a yellowish section where the thicker basal section tapers off.

The male postabdomen, removed along with part of the preabdomen and macerated for about a minute in freshly made 10 percent solution of soda lye (NaOH), shows decisive distinguishing characters (Figs. 3-6). The sperm pump (Fig. 6) is unusually small, with a very short stem and nearly circular head.

The female postabdomen, treated in the same manner as for the male, is also characteristic. Although this part is very difficult to handle when the ovipositor is withdrawn into the sheath, the spermathecae may be easily examined. In A. frontella

(Fig. 8), they are a pair of virtually globular black structures lying in the hind part of the abdominal cavity. If the abdomen of freshly killed female specimens is carefully squeezed, the ovipositor will usually extrude and a little gentle pulling will leave the parts in a position that will make eventual slide preparation, preferably in euparal, much easier.

All figures here given have been prepared from American specimens.

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POTATOES, TOMATOES, PEPPERS

Highlights:

Green peach aphid became a problem in Oregon commercial and seed potato fields, overshadowed all other pests of potatoes and peppers in Michigan, and was difficult to control in Maine and Florida. Potato tuberworm was a severe problem to unharvested late spring potatoes in Virginia.

BEE TUBERWORM (Spodoptera exigua) larvae appeared in August and were heavy on fall potatoes and beets in VIRGINIA. While only scattered damage was observed during 1970, all potatoes were seriously infested on the Eastern Shore. CABBAGE LOOPER (Trichoplusia ni) populations started slowly, but dry weather from June to August helped the population in August. Larvae ranged 50-75 per tomato plant on the Eastern Shore.

EUROPEAN CORN BORER (Ostrinia nubilalis) was found in potatoes in central WISCONSIN in mid-July. Some stalks were killed in this area, however, controls were applied during periods of moth activity and damage was generally light. In MICHIGAN, European corn borer was controlled by the use of recommended procedures on peppers and potatoes. Damage to these crops was light. Damage to untreated sweet peppers in DELAWARE ranged 30 to 80 percent in Sussex County late August and in September. First-generation larvae were heavy on potatoes in some areas.

VARIEGATED CUTWORM (Peridroma saucia) larvae peaked during mid-summer throughout the potato-growing area of the Willamette Valley in OREGON. Defoliation was the most obvious damage but some larval feeding on shallow tubers also occurred. Larvae pupated in mid-August and first adults of the second generation emerged in late August. Economic populations of third-generation larvae failed to develop, apparently due to effects of weather and parasites. Larvae caused extensive damage on a wide variety of crops in OHIO. Heavy feeding was noted in tomato fields in northern areas, up to 8 holes were noted in individual tomato fruit.

POTATO TUBERWORM (Phthorimaea operculella) infestations started slow on spring potatoes on the Eastern Shore of VIRGINIA. Toward the end of the season economic populations occurred on unharvested spring potatoes. Some fields were abandoned due to injury in the soil. Heavy damage was noted to fall potatoes in August; but decreased afterwards due to adverse weather. In MICHIGAN, this pest was not a problem in potatoes in the field. Populations were heavy in potatoes in Monterey County, CALIFORNIA.

TOMATO PINWORM (Keiferia lycopersicella) was light in FLORIDA tomatoes in the greenhouse and in the field. Damaging populations were noted for the first time in MISSISSIPPI in several years. Populations in CALIFORNIA were late in developing and scattered.

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) infestations on potatoes and tomatoes in northern and central UTAH, were above normal. Controls were applied to most commercial fields and some gardens twice. Larvae of the Colorado potato beetle appeared in

COLORADO the first week of June. Economic populations of 24 per 10 sweeps were common on potatoes in Weld County. Controls were applied to most fields. Adults and larvae were observed infesting potatoes throughout TENNESSEE the first week of June. Controls were effective when applied; however, in some few cases where no controls were applied, damage was severe. The earliest report in KENTUCKY was from Warren County on June 4. Populations rapidly increased and caused considerable damage to potatoes in Whitley and Fayette Counties and to tomatoes in Fayette County. Adult population was lighter than several previous years on the Eastern Shore of VIRGINIA. Untreated potatoes at the Eastern Shore Branch Station were defoliated at least 3 weeks later than in 1970 and produced 80-100 bags of U.S. number 1 potatoes per acre as compared with a 100 percent loss in 1970. Damage to tomatoes was also much less. Fall infestations appeared to be about equal with those of previous years and should insure a potentially heavy overwintered population for 1972. Adult feeding and egg laying in MARYLAND started the week ending May 14 in Somerset, Wicomico, and Worcester Counties. Populations appeared slightly below 1970's levels, but were moderate to heavy throughout the season. Potato and tomato growers depended heavily on scheduled spray programs to avoid economic damage. Colorado potato beetle was found throughout RHODE ISLAND by July 15. Several infestations on tomatoes were reported in Providence County. By July 19, larvae and adults were reported in Kent and Washington Counties. This insect did not cause economic damage in commercial fields.

GREEN PEACH APHID (*Myzus persicae*) buildup was noted in commercial and seed potato fields in Klamath County, OREGON, during July. An estimated 2,500 acres was economically infested and counts ranged 35-100 infested leaves per 100 leaf sample. Leaf roll symptoms were common and some commercial growers reportedly did not harvest. Green peach aphid appeared on potatoes and peppers about 10-14 days earlier than usual in MICHIGAN. Populations became established and overshadowed all other pests of these crops for the remainder of the season. Stem mothers were found on Canada plum in central and southern MAINE on May 21 and in northern areas on May 28. In Aroostook County, green peach aphid colonies increased in size by June 11 and winged migrants started to move to early planted potatoes on June 16. Winged migrants were collected in yellow pan traps on June 25. The heaviest counts of alate forms were observed on August 20, after which populations were reduced sharply due to a fungus disease. Several potato seed stock and chip growers had difficulty in controlling green peach aphid late in the season because of heavy foliage and perhaps some resistance. Systemics were good early control. Infestations were heavy on Irish potatoes during early July in Kent County, DELAWARE, and on some peppers during August and September in Sussex County. Also present in damaging populations during April and May on tomatoes in greenhouses in New Castle County. On the Eastern Shore of VIRGINIA, green peach aphid caused considerable damage to late Irish potatoes but was no problem to spinach in the spring. Very heavy infestations developed on fall potatoes in late October, along with a fungus. Plants infested earlier, more abundantly, and over a longer period in the season than observed for over 20 years in FLORIDA; heavy populations in the spring caused control problems on potatoes in St. Johns County. Heavy in many tomatoes in the Homestead area; worse than for many years or possibly than every before. Heavy colonies of green peach aphid

developed on peppers in Belle Glade area during the late winter and early spring and was the most important vector of virus diseases on this crop, causing very heavy losses throughout the producing areas. No problem during the fall but populations were heavy in the spring at Bradenton.

Colonies of POTATO APHID (Macrosiphum euphorbiae) nymphs, with wing pads, were observed on June 11 in MAINE on wild rose, where winged migrants were abundant by June 18 and observed moving to potatoes. Peak per plant infestation reached 94.83 percent on July 30 but declined to 38 percent at topkilling time on August 27.

BEANS AND PEAS

PEA LEAF WEEVIL (Sitona lineatus) infestations were heavy throughout the Palouse area of eastern WASHINGTON. Damage to untreated peafields was moderate to heavy in this area. Adults in IDAHO reached outbreak numbers in some fields in Latah, Benewah, and Kootenai Counties early May. Counts of 2-20 adults per square foot were found about mid-May. The plants outgrew the feeding damage in most fields.

PEA WEEVIL (Bruchus pisorum) activity was retarded by cool, wet weather in WASHINGTON until harvest. Populations at that time were heavier than in 1970. Some growers indicated that populations were the heaviest in many years.

MEXICAN BEAN BEETLE (Epilachna varivestis) infestations were heavy throughout ALABAMA on pole and lima beans.

VARIEGATED CUTWORM (Peridroma saucia) larvae ranged up to 30 per square yard of bush beans in the Willamette Valley of OREGON. In some fields, larvae had not been detected until harvest. In these fields pod damage was excessive and crop was plowed under.

WESTERN YELLOWSTRIPED ARMYWORM (Spodoptera praefica) larvae ranged up to 15 per square yard of peas in Nez Perce County, IDAHO, about June 16. Damaged leaves and stems in this area. Economic populations were reported in Clearwater, Idaho, Nez Perce, Latah, and Lewis Counties in peas and lentils from July 26 to August 4. Controls were applied in these counties. EUROPEAN CORN BORER (Ostrinia nubilalis) larvae infested snap beans in late July in WISCONSIN. Controls were applied by commercial growers.

COLE CROPS

CABBAGE LOOPER (Trichoplusia ni) continues to be the main problem on cabbage in the Everglades area of FLORIDA. Populations were light during the winter, but considerable damage occurred during the spring whenever control procedures were relaxed. Heavy populations caused control problems at Hastings during the spring and fall. This pest in CALIFORNIA was troublesome on cabbage and broccoli.

IMPORTED CABBAGEWORM (Pieris rapae) damaged untreated cabbage in Larimer and Weld Counties, COLORADO, the week of July 24-30. Populations continued troublesome through August and September until harvest. Very common and widespread throughout CALIFORNIA on cole crops.

GENERAL VEGETABLES

CABBAGE LOOPER (Trichoplusia ni) required almost continuous controls in the Parker Valley Lettuce growing area of ARIZONA from mid-October through mid-December. Larvae in east-central OKLAHOMA caused heavy damage to 200 acres of spinach and turnips in late October and early November. The first treatment was not effective and these fields had to be retreated.

BET ARMYWORM (Spodoptera exigua) larvae were found in lettuce throughout the season in ARIZONA. Controls were needed to maintain quality. In Yuma County, some difficulty was encountered in controlling this pest by some growers. Beet armyworm larvae caused much damage to many vegetables in CALIFORNIA. Populations were more prevalent this year than during previous years.

Continuous controls were needed for ARTICHOKE PLUME MOTH (Platyptilia carduidactyla) in CALIFORNIA. Loss to artichoke ranged 15-20 percent of the crop.

ASPARAGUS APHID (Brachycolus asparagi) was common on asparagus fern in late August in New Castle and Kent Counties, DELAWARE. This was reported as a new State record. Asparagus aphid was recovered for the first time in a small garden of asparagus in Prince Georges County, MARYLAND. However, this aphid is not established in the commercial asparagus production areas of Maryland. This occurrence was reported as a new State record.

ONION MAGGOT (Hylemya antiqua) controls held heavy populations in check in Michigan. Heavy damage occurred to 400 acres where a nonrecommended insecticide was used.

ONION THRIPS (Thrips tabaci) was reported on onions in Delta, Montrose, Larimer, and Arkansas Valley areas of COLORADO. Populations were more abundant than usual, up to 75 per plant. This pest caused damage from late August until harvest. This species was a major pest of cabbage in Bay, Berrien, Cass, Monroe, and Van Buren Counties, MICHIGAN. T. tabaci also damaged green onions and seed onions throughout CALIFORNIA.

Weather of the week continued from page 126.

TEMPERATURE: Sunny weather prevailed over much of the Nation early in the week. A storm center moved from southern Alberta to the Great Lakes region and continued to Ontario and Quebec. An Arctic air mass pushed into the northern Great Plains and spread southward and eastward. A long front marked the advance of cold Arctic air. Southwesterly winds warmed an area south of the front. Hill City, Kansas, warmed to 93 degrees Monday afternoon, March 6. Grand Island, Nebraska, registered 84 degrees with less than 5 percent relative humidity, strong winds picked up dust from dry areas. Visibility in some dust storms became reduced to less than one-half mile. Cold northerly winds behind the eastward moving storm brought falling temperatures. Subzero weather came to the upper Great Lakes area Monday, to northern New England Tuesday, and northern portions of North Dakota and Minnesota on Wednesday. Some places northerly winds gusted to more than 50 m.p.h. They picked up snow and dust and visibility became less than 2 miles. Worthington, Minnesota, measured one gust of 75 m.p.h. Blowing and drifting snow were common from North Dakota to Michigan Tuesday afternoon. Mild weather continued along the Gulf of Mexico with afternoon temperatures reaching 70's or 80's at most locations. High pressure and fair weather covered mid-America from the Rocky Mountains to the Appalachians at mid-week. Winter continued its grip over the eastern half of the Nation. Warming occurred over the West and Central. Goodland, Kansas, was 9 degrees warmer than Tampa, Florida, Thursday afternoon. The Southwest was hot with temperatures soaring to the 90's most days. Phoenix and Yuma in Arizona, registered 94 degrees Thursday. Cold weather persisted near the Great Lakes Wednesday afternoon. Marquette, Michigan, registered only 12 degrees and Chicago, Illinois, 28 degrees. Slightly warmer temperatures occurred over the northern Great Plains and the Great Lakes region Thursday, but maximums were generally below freezing. Temperatures averaged cooler than normal in the vicinity of the Great Lakes and over States bordering the Atlantic Ocean. Most of the rest of the Nation averaged warmer than normal. Much of the Great Basin, central and southern Rocky Mountains, and central Great Plains averaged more than 10 degrees warmer than normal.

NATIONAL WEATHER SERVICE'S 30-DAY OUTLOOK

MID-MARCH TO MID-APRIL 1972

The National Weather Service's 30-day outlook for mid-March to mid-April is for temperatures to average above seasonal normals west of the Rockies. Below normal averages are expected from the eastern portion of the Great Plains to the Appalachians while near normal temperatures are in prospect in unspecified areas. Precipitation is expected to exceed normal in the South and also over the East Coast States. Subnormal totals are indicated west of the Divide except for near normal totals along the north Pacific coast. Elsewhere near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the National Weather Service. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

For the continuation of the weather of the week and 30-day forecast see page 142.

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