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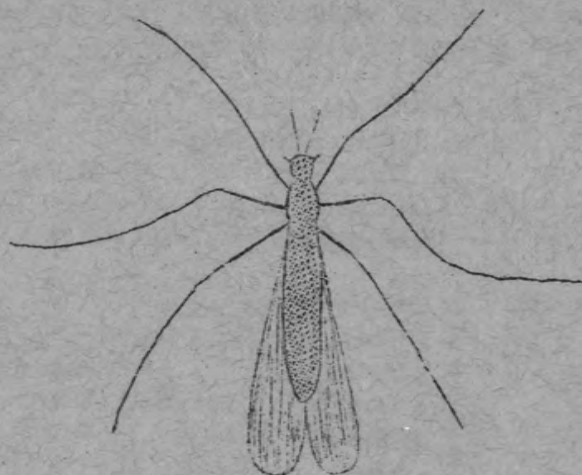
AG/HW 1684

RANGE GRASS DESTRUCTION

BY

RANGE CRANE FLY LARVAE

IN SANTA CLARA COUNTY



(Male)

File No. 10.127
3.222

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This leaflet contains:

1. The life cycle of the range crane fly
2. Damage to range forage
3. Control

- A. Watch for larvae (maggots) in December
- B. Treat immediately
- C. Reseed with 5 pounds Annual Rye per acre where damage to area is large

or mix - 60% Annual Rye
20% Perennial Rye
10% Harding
5% Rose Clover
5% Sub Clover

} Per acre

or mix - 3 pounds Annual Rye
1 pound Perennial Rye
 $\frac{1}{2}$ pound Harding
 $\frac{1}{4}$ pound Rose Clover
 $\frac{1}{4}$ pound Sub Clover

} Per acre

5 pounds

- D. Larvae may be found in alfalfa, grain, and irrigated pasture.

NOTES

References

- Essig - Insects of Western North America, Page 530
Packard - Range Crane Flies in California, USDA, 1929
Sisson & Swift - Pest Control Review, January, 1956

RANGE GRASS DESTRUCTION BY RANGE CRANE FLY
LARVAE IN SANTA CLARA COUNTY

Larvae of the range crane fly (*Tipula Simplex* Doane) have destroyed many hundreds of acres of range feed in Santa Clara County over the past years. A wet rainy season during December, 1955 and January, 1956 hatched the eggs of the crane fly. Larvae are causing extensive losses this year. One ranch for example, has lost 300 to 500 acres of range feed on the south and southwest slopes. To date no damage is observed on the north slopes although larvae are found under cattle droppings.

Local History

As long as forty years ago ranchers of Santa Clara County experienced losses to grain and range forage from range crane flies. They recall the damage to grain and range grasses in the following years: 1910, 1913, 1914, 1915, 1920, 1921, 1922, 1931, 1932, 1940, 1941, 1951, and 1952. Control in the past has been limited to harrowing and replanting their grain in the late spring.

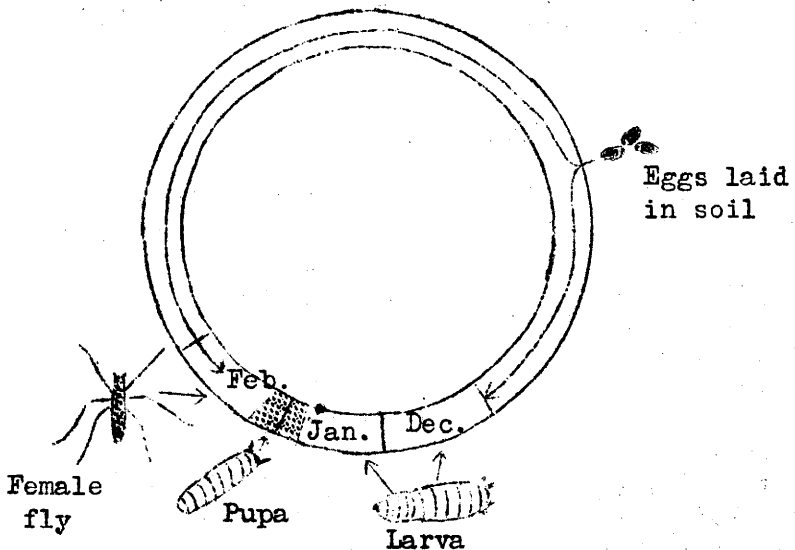
Life Cycle

The life cycle of the crane fly starts with the female wingless fly laying approximately 100 eggs in the soil during the early spring months. The eggs are dull brown when dry and black when wet, ellipsoid in shape, about one thirty-second of an inch in length by one sixty-fourth of an inch in diameter, and the surface of the shell is slightly roughened.

The adult female has a dull brown slender body about $1/2$ to $5/8$ inches long with three legs on each side of the body. She does not have wings. The male has the same dull brown body with a wing spread of $7/8$ inch and three legs on each side of the body.

During wet rainy weather the eggs hatch into minute larvae which soon appear as a muddy brown color and are 1/2 to one inch long and 1/8 inch in diameter. Generally the greatest damage to range is done in January and February. The larvae have a small, shiny black head that has a pair of antennae or feelers and the mouth parts are fitted for biting or chewing. They remain in the ground during the day and come out at night to feed upon the vegetation. They also will come out on dull rainy days to feed. Observations show that filaree and bur clover was eaten before the grasses, wild oats and rye. As many as three larvae were found on the roots of wild oats.

Counts made on the number of larvae per square foot vary from 20 to over 800 depending on the area checked. The average was 300 to 350. Turning over cattle droppings showed high counts of larvae on the south slopes, and three to five on the north slopes.



The larvae grow and increase their appetites until the badly infested areas are completely bare of vegetation. The latter part of January, the larvae change into the pupa stage where they lie dormant till the first part of February or later when they change into the fly stage, thus completing the cycle.

Control

On the range the poison bran bait seems to be the most practical and economical. As the larvae emerge and feed at night they will take the bran bait. Field tests showed that a 50% to 75% kill was obtained using 1 pound of Paris green or arsenic trioxide to 25 pounds of bran or millrun per acre and about 2 gallons of water per 25 pounds of mixture.

Fluosilicate and bran (1 to 25) did not kill the larvae over night although they showed signs of distress (15 to square foot). Twenty-five and 50 pounds of 5% DDT to the acre caused distress (20 to 30 larvae per square foot) but did not kill in an 18-hour period. Thirty-hundredth of an inch of rain fell over night on this test.

The baits can be applied by means of a hand seeder, barley-grain seeder, or a low flying airplane. Field tests using 1 pound of Malathion to the acre (dust and emulsion), or 1/2 pound Parathion (dust) to the acre, or 1 pound Methoxychlor are being tested.

The adult fly emerged around February 10, 1956. Spraying the fly with DDT or Malathion will kill the insect, however three reasons for not recommending this method are:

1. The female fly on emerging, mates and immediately hunts for a dark protected spot to lay her eggs. It would be difficult to spray her before she lays her eggs.

2. She emerges over long period of time (weeks).
3. The flies move to cloddy areas or heavy grass making it difficult to spray them.

Usually after two or three days of heavy frost, damage from this insect stops as the larvae go into the pupa stage.

Guide to Control

Following is a guide to controlling larvae with bait:

- a. Watch for bare spots on your range in December (particularly following two inches or more of rain).
- b. Check soil for larvae (1/2 to one inch beneath the soil).
- c. If larvae are found, bait immediately with arsenic (Paris green if available), DDT or grasshopper bait at the rate of one pound of available poison to 25 pounds of bran or millrun to the acre. Do not allow clumps of the material to lodge over the area for livestock to feed. Hold livestock off 14 days or until after a good rain.

NOTE: Blackbirds, Robins, and Crows have been observed feeding on the larvae.

Livestock Management

Reference from the USDA Circular 172, "Range Crane Flies in California", 1929, states: "Precautions should be taken not to allow the poisoned bait to fall in lumps when spreading it in the fields, and to avoid leaving quantities of it in places where children or animals can have access to it. This bait has been spread many times where cattle and sheep were grazing, with absolutely no injury to the stock."

Reseeding bare areas with five pounds of annual rye per acre or a mixture will help restore some spring feed.