

Honey Bees Increase Alfalfa Seed Yields

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Production of commercial alfalfa seed crops requires bees for tripping and cross-pollinating the flowers.

Surveys in Arizona over several years have shown that native bees are not abundant enough to adequately set commercial alfalfa seed crops. The Arizona grower must depend upon the honey bee for this service. The value of providing adequate honey bee populations in seed production areas was clearly shown in observations near Yuma in 1955.

Test on Yuma Mesa

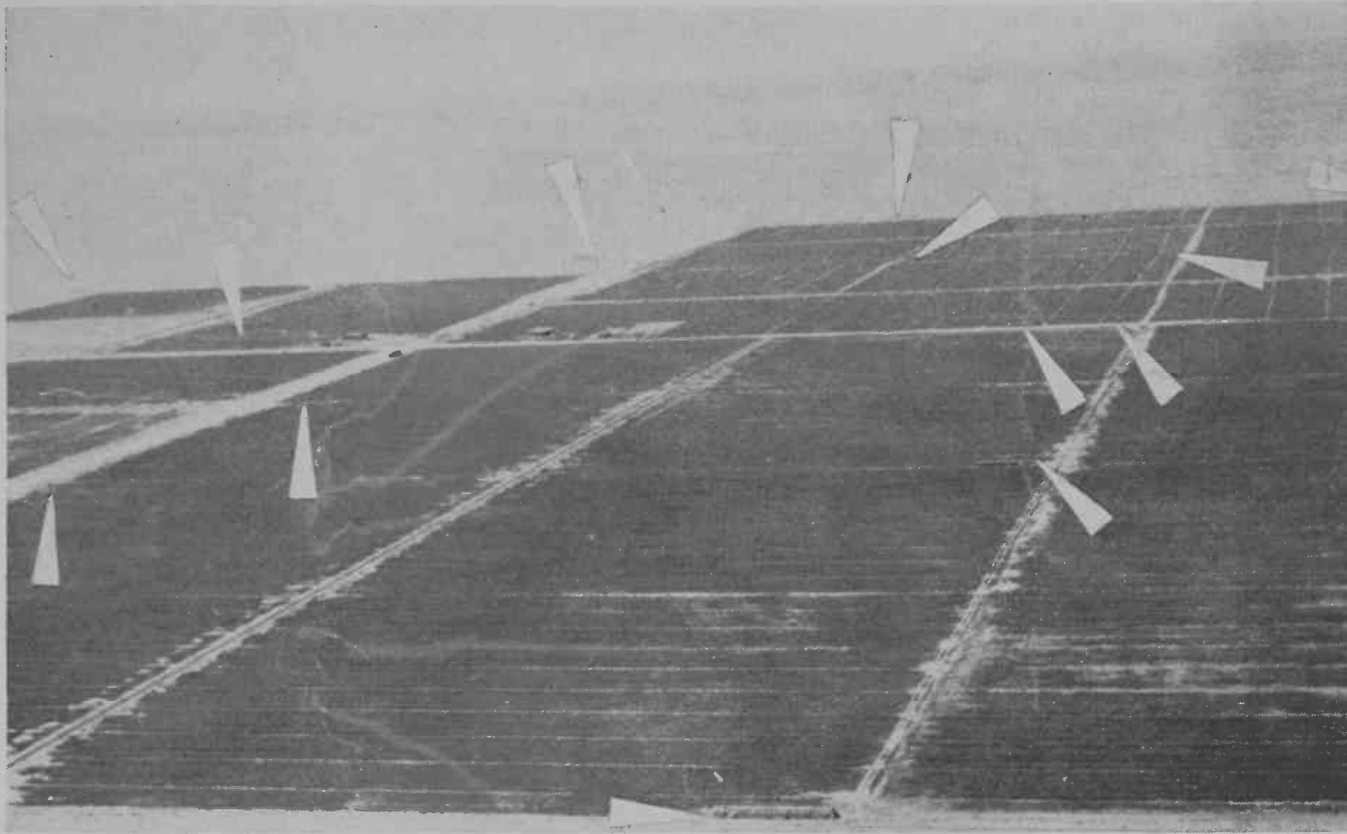
The relation of honey bees to alfalfa pollination was studied in an area of about 600 acres on the Yuma Mesa. The area adjoined and was bordered on two sides by desert. The alfalfa was of the African variety in its second year of growth planted in a solid stand on virgin land. In some fields within the area the plants were not fully developed and the stand was sparse. The seed crops started during May, following winter pasturing and one or two spring hay crops. The cultural methods were those commonly practiced.

Contracts for bees were signed between the individual alfalfa growers and the beekeeper. The beekeeper agreed to supply three colonies of bees per acre during the seed-setting period while the growers agreed to use only certain "safe" insecticides applied to the field with ground equipment. At harvest the beekeeper received one-third of the yield of alfalfa seed above 300 pounds per acre.

"Harmless" insecticides

Several kinds of injurious insects appeared in alfalfa seed fields under observation. These insects were all controlled with a dust mixture of toxaphene, DDT and sulfur (15-5-40) applied with a ground duster at night at the rate of 20 pounds per acre. These treatments had little or no effect upon honey bees.

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On this aerial photo of the test acres on Yuma Mesa, arrows have been placed to show more clearly where the colonies of honey bees were placed. There were 60 to 100 colonies under each shelter. The experimental area was bordered on two sides by desert.

High yield thru bees

The gross yields of the 1955 first crop of alfalfa seed in the test area were between 425 and 450 pounds per acre, with parts of some fields yielding as high as 700 pounds per acre.

Fields bordering the study area also produced good seed yields although they were not supplied with bee colonies.

Fields located a mile from any concentration of honey bee colonies yielded about 250 pounds of seed per acre while fields two or more miles away yielded 150 pounds or less of seed per acre.

Where few or no bees were present for pollination, low yields or complete seed crop failures resulted. During 1955 there were several such fields on the Yuma Mesa and in the Yuma Valley.

SUGGESTIONS FOR ALFALFA POLLINATION IN ARIZONA

Suggested uses of bees:

1. Move colonies into alfalfa seed fields 7 to 10 days after the first flowers appear.
2. On small fields, up to 40 acres, colonies should be located on all four edges. In larger fields, colonies should be scattered on the edges of each 40-acre unit. Better results are obtained where large areas, rather than isolated individual fields, are provided with bees.

3. Provide two to three colonies of bees per acre.

4. Place colonies where they will interfere as little as possible with irrigators, cultural operations or the public.

5. Colonies may be removed about two weeks before seed harvest.

Suggested uses of insecticides:

1. Apply insecticides only if necessary and at recommended times and dosages.

2. Apply insecticides before bees are moved into fields, if possible.

3. When insecticides are required during an alfalfa flowering period, apply them in the early morning, late evening or during the night while bees are inactive. Ground applications after dark are preferred and care should be exercised to avoid drift of insecticides into bee colonies.

4. A dust mixture containing toxaphene, DDT and sulfur applied at the recommended time and dosage rates causes the least damage to bees of any of the commonly used insecticides. Aramite and ovotran may also be used to control mites on seed alfalfa.

5. DO NOT apply arsenicals, EPN, chlordane, BHC, lindane, parathion, malathion or dieldrin at any time to alfalfa fields in bloom or near honey bee colonies.

6. Notify beekeepers two days before spraying or dusting alfalfa seed fields.