

Improving The Range

Study Shows Value
Of Clearing Brush

By A. C. EVERSON

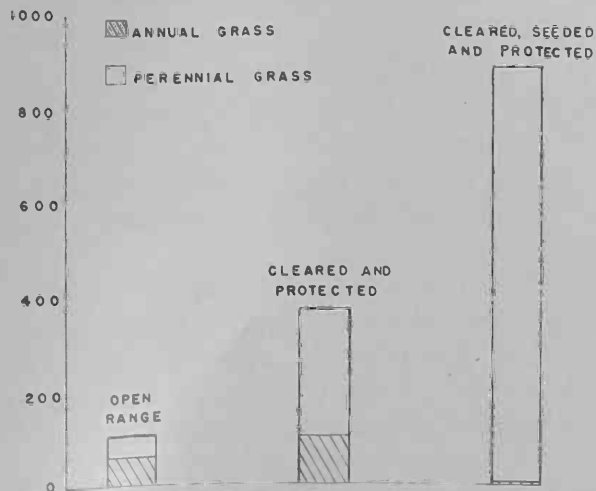
What is to be gained by eradicating noxious plants and reseeding rangelands? No one knows the whole answer, but research is helping to get more information.

One study contributing information on this problem was started on the Santa Rita Experimental Range in 1946. The study is a cooperative project of the Southwestern Forest and Range Experiment Station, the Nursery Division of the Soil Conservation Service, and the Department of Botany and Range Ecology at the University of Arizona.

Five and one-half acres of brush-infested rangeland were cleared of all mesquite, cholla, prickly pear, and burrowed. The area was fenced to exclude cattle, rabbits, and rodents. Kangaroo rats and other rodents inside the fence were poisoned in order to give the area as complete protection as possible from all grazing. Some small rodents came back later, but the area has been protected from grazing by rabbits.

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Air-Dry Yield of Grass in Pounds per Acre.



▲ Above: This open, untreated range yielded only 111.6 pounds of grass per acre. Sixweeks three-awn and sixweeks gramma are about the only grasses.



▲ Above: This cleared and protected area yielded 371.2 pounds of native grass per acre. Principal grasses are poverty three-awn, Santa Rita three-awn, Rothrock's grama, and black grama.

▼ Below: This area, which was cleared of brush, seeded, and protected, yielded 878.5 pounds of grass per acre. Lehmann lovegrass and Rothrock's grama are the principal grasses.



out in such a manner as to work towards the most heavily infected portion rather than through, then away from the infestation.

Weeds Harbor Viruses

In addition to seed-initiated centers of infection, numerous weeds are suspected of harboring the viruses causing melon mosaics. Weeds also serve as breeding areas for the insects which spread mosaics. The eradication of weeds along fencerows and irrigation ditches as well as from within the crop itself, is an important part in the attempt to exclude these viruses from melon plantings.

Just as harmful as weeds is the encouragement to aphid breeding on suitable crops such as sugar-beets, carrots and alfalfa. Wherever possible and practical, these crops should be maintained apart from areas devoted to melons. During the 1950 season, several instances of the effects of nearby plantings of alfalfa, beets and carrots on the numbers of mosaic-diseased cantaloupe and honeydew plants, were noted. Two such instances, showing the average percentages of infected plants in their relative positions in the plantings, are diagrammed in Figures 6 and 7.

Plant Disease-Free Seed

Comparatively disease-free seed is available in the market and should be

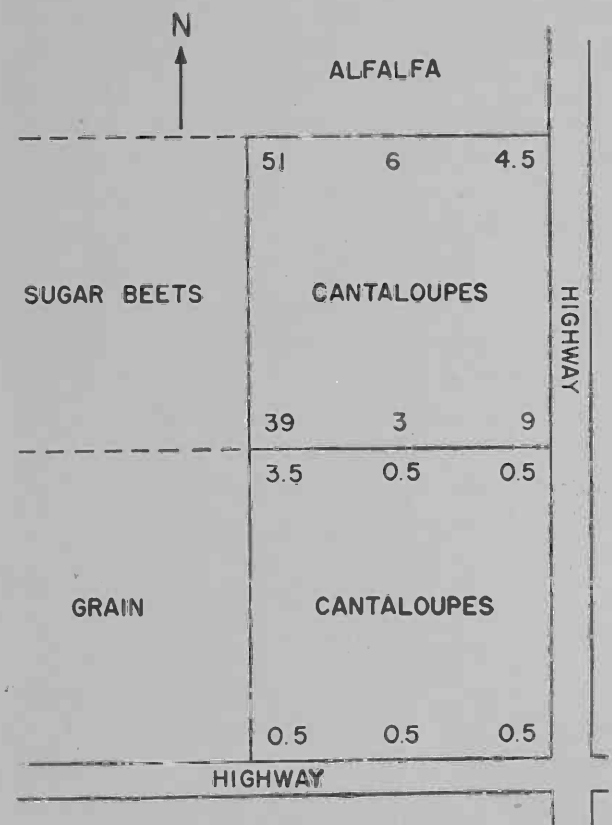


Fig. 6. Average percentages of mosaic-infected Imp. 45 cantaloupe plants in relative positions in two 40-acre stands. The proximity of sugar-beet and alfalfa plantings has had an effect on the amount of disease, as these crops serve as breeding grounds for the aphids which spread mosaic. Average percentages based on counts of 400 plants (200, two weeks before harvest; 200, after the first two pickings).

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After the area was cleared and fenced, one-half acre was seeded to a mixture of Lehmann lovegrass and Arizona cottongrass and one-half acre was seeded to Lehmann lovegrass and slender grama. These three grasses were used to determine their compatibility when used as mixtures for range reseeding.

The remaining four and one-half acres inside the fence were allowed to come back to native vegetation in order to study the effect of clearing and protection alone on the yield of grass. A plot outside the fence was used as a check and was open to grazing of all kinds.

Grass Increased

In order to determine the effect of the three different treatments in

used. Periodically, seed stocks are examined at the Experiment Station for their mosaic content. Direct control of the insect carriers has been shown to be impractical. A few insects capable of causing spreads will escape any insecticides applied to a planting.

—Paul D. Keener is Assistant Plant Pathologist.

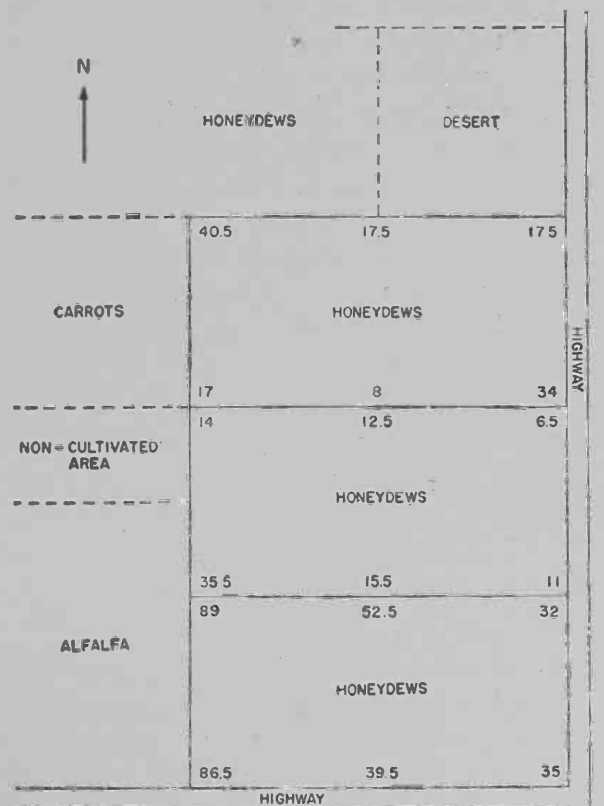


Fig. 7. Average percentages of mosaic-infected Honeydew melon plants in relative positions in three stands. The nearness of fields of alfalfa and carrots has had some effect on the prevalence of mosaic, as these crops serve as breeding areas for some of the mosaic-carrying insects. Average percentages based on counts of 400 plants (200, two weeks before harvest; 200, after the first two pickings).

New Bulletins

New bulletins and circulars are listed below. Ask your County Agricultural Agent for a copy.

Experiment Station

Gen. Bul. 229—Arizona Range Resources and Their Utilization: II, Yavapai County.

Extension Service

Cir. 122 (Revised)—Prevent and Control Poultry Diseases and Parasites.

Cir. 161—Packed Lunches That Please.

Cir. 162—Salads From Arizona-Grown Foods.

Cir. 163—Frozen Desserts.

terms of the number of pounds of grass produced per acre, sample plots were clipped in the respective areas in September, 1949. The most noticeable effect of the treatments was the increased yield of grass following brush removal, reseeding, and protection.

The area that was so treated produced eight times more grass than the open range. (See chart and pictures on page 7.) The area that was cleared of brush and not grazed for four years yielded more than three times as much grass as the untreated range.

Annual grasses accounted for less than 1 percent of the yield in the cleared, seeded, and protected area and about 27 percent in the cleared and protected area. Almost 57 percent of the grass yield of the open range was annual grasses. Although annual grasses are a source of forage when green and do provide some soil protection, they are not so dependable as perennial grasses from year to year.

Of course, the yield of grass that will be obtained as a result of removing noxious plants, seeding, and protection depends upon several factors. Among these factors are the amounts and kinds of noxious plants, the quality and quantity of native grasses left on the range, weather conditions, and the productivity of the site. The cost of clearing brush-infested ranges and reseeding must be considered, too.

Are Other Benefits

Increased yield of grass is only one of the benefits received by eradicating noxious plants from the ranges. The more perennial grass there is, the longer the grazing season will be and the more pounds of beef will be produced. Water is conserved and soil erosion is prevented. The habitat is improved for game birds and wildlife.

Yes, brush control, reseeding, and protection will improve the condition of the brush-infested ranges of Arizona.

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