



SEVERE TIP BURN lesion on inner leaf of lettuce head. This type of injury may extend through the entire head.



less. Slime bacteria develop readily in affected tissue increasing losses in shipment and storage. No known measures can be applied to control the disease.

Breeding for Resistance

Recognizing the serious nature of tip burn, University of Arizona horticulturists six years ago began a program to develop lettuce strains resistant to the disease. Breeding stocks of good horticultural type were checked and individual plants were selected.

At one stage in the program over 400 different lines were evaluated by examining all heads in the fields, leaf by leaf. If tip burn was found, the entire plant was discarded. If heads were free of the trouble, stumps of those plants were allowed to grow for seed production. Progress was slow.

At present five strains have been developed which show good resistance to tip burn. Further selection while increasing seed will make these varieties valuable for spring lettuce production in Arizona.

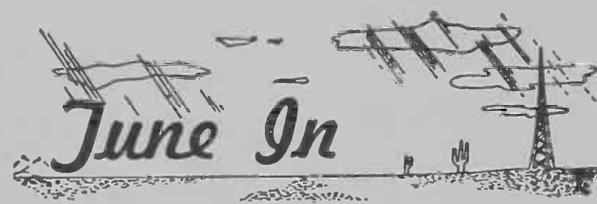
U.S.D.A. Helps

Patient search by U.S.D.A. plant breeders* for downy mildew resistance revealed a character for apparent immunity to mildew in the southwest. After preliminary work, several strains of non-heading lettuces were furnished to the University of Arizona for breeding stock.

An extensive program is now in progress to transfer the downy mildew resistance to heading varieties. The tip burn-resistant lines are being crossed with mildew-resistant strains to get acceptable varieties adaptable to Arizona conditions and resistant to both these diseases.

Breeding is done by hand and under magnifying glasses in the greenhouse. As an aid to this work the new hormone, gibberellin, is used to make lettuce flower

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Yavapai County

Mon., Wed., and Fri.,
6:10 p.m.—KYCA, Prescott
Mon., Tues., and Fri.,
12:15 p.m.—KNOT, Prescott

Yuma County

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El Programa Mexicana

A weekly farm and home program broadcast in Spanish by Stations KEVT, Tucson; KVOY, Yuma; XEXW, Nogales; and XEFH at Agua Prieta.

quickly. This permits more generations of crossing than otherwise possible. Testing of new resistant types will be done in cooperation with the university's Plant Pathology Department.

Rib Discoloration Resistance

Rib discoloration, another disease, is receiving attention in a program similar to the one for tip burn. Some resistance has been found, but new strains are not perfected enough to be of commercial importance.

Resistance to lettuce virus diseases has not been found. However, for the new Arizona strains and other desired varieties of lettuce, plans have been developed in the breeding program to produce seed with very low virus content for effective mosaic control.

BELOW, Downy Mildew of lettuce leaf. Spores of the fungus can be seen.



Disease Resistance In Lettuce Sought By Plant Breeders

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The vegetable breeding program directed by the Horticulture Department of the University of Arizona may provide the answer to several lettuce disease problems. Resistance to common lettuce maladies is considered an important part of vegetable breeding work conducted for the benefit of Arizona growers.

Spring lettuce in Arizona is plagued with very serious diseases. Two of these are of different types but both severely affect market quality and in many cases prematurely terminate harvesting of fields.

Downy mildew is a disease caused by the fungus, *Bremia lactucae* Regel. It is similar in many respects to mildews found on onions and cabbage. Downy mildew infections on lettuce cause pale yellow to brown spots on leaves, thereby reducing market value.

Difficult to Treat

This disease may be controlled by applying zineb or copper. However, it is very difficult to apply these materials thoroughly and frequently enough to get complete control and the program is expensive. Downy mildew could be found in nearly every field of spring lettuce in Arizona this year.

Tip burn is a disease for which no definite cause is known. The disease appears as a browning of the margins of head leaves.

It may occur on any leaves within the head, making the crop practically worth-