

THE QUARTERLY BULLETIN OF THE (STATE) PLANT BOARD OF MISSISSIPPI

VOL. 6

JULY, 1926

No. 2

CONTENTS

	Page
The Cotton Hopper	1
Cotton Rust and Its Control	5
The Tarnished Plant-bug on Cotton.....	7
Leaf-blisters of Oak.....	10
Sweet Potato Storage House Disinfection.....	13
Scouting for Citrus Canker.....	14
Cicadas Injure Cotton.....	15
Nursery Inspection Report.....	16
Quarantine Inspection Report.....	17
Apiary Inspection Report.....	18

PUBLISHED BY
STATE PLANT BOARD OF MISSISSIPPI
A. & M. COLLEGE, MISSISSIPPI

Entered as second-class matter July 9, 1921, at the post office at
A. & M. College, Mississippi, under the Act of June 6, 1900.

in cotton fields in large numbers, the same treatment as used for the cotton hopper has given good results. Therefore, the best known recommendation at this time for the tarnished plant-bug on cotton is dusting with superfine sulphur at the rate of ten pounds per acre for each application. Two applications should show beneficial results, but more may be necessary. It is probable that dusting with sulphur may be found applicable to many other crops on which the plant-bug feeds. The serious injury attributed to this pest during the present season will probably result in a more extensive investigation of its habits with a view to perfecting better control measures.

LEAF BLISTER OF OAK

By H. H. Wedgworth

The occurrence of the leaf-blister disease of oak during the spring of 1926 in a severe form resulted in many complaints to the Department of Plant Pathology from owners of valuable oak shade trees. This disease attacks practically all species of oaks; however, some species are much more susceptible than others. The water oak (*Quercus nigra*), and the red oak (*Q. rubra*), for examples, are very susceptible. The willow oak (*Q. phellos*), on the other hand, has shown marked resistance to leaf-blister during the spring of 1926. Several individuals of this species have been observed to be free of this disease on the Mississippi A. & M. College campus, while adjacent water oaks have from 50 to 95 per cent of the leaves affected.

Leaf-blister is found throughout the United States and Europe. Although it occurs commonly throughout this country, it does no particular damage except in the southern states, where it is very destructive in favorable seasons and defoliation results. The growth of the tree may be seriously impaired and individuals are sometimes killed by repeated defoliation.

The disease is sometimes called leaf-curl, leaf-spot, etc., but leaf-blister seems to be more widely used and more descriptive of its morphological symptoms. The blisters make their appearance on the young leaves as small grayish or bluish spots on the under surface and yellowish above. A bulging of the leaf is soon apparent,

the convex side of the spot usually being on the upper side of the leaf (Fig. 4). The blisters vary from a quarter to a half inch or more in diameter and often become confluent, causing a part or all of the leaf to curl.

The leaf-blisters fungus does not enter the tissues of the leaf. It simply penetrates the cuticle of the epidermis of the leaf, usually the lower, and lies in contact with the

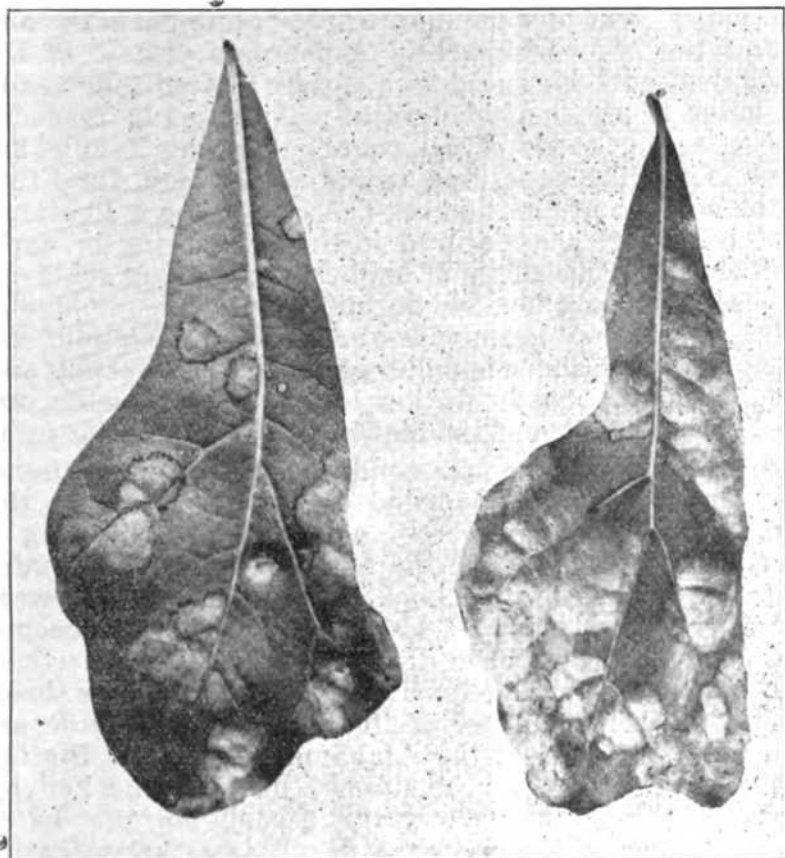


FIG. 4—Leaf-blisters of oak.

outer walls of the epidermal cells. The fungus secretes an enzyme which diffuses into the leaf and causes a marked reaction on the part of the leaf tissues. The cells of the leaf in the infected area increase in number and in size, causing the leaf to become much thicker at this point. The expansion of the affected area laterally, due to the increase in number and size of cells, causes it to

bulge, and thus the blister is formed. The cells of the pathogene just under the cuticle, increase in size to form its reproductive bodies and rupture the cuticle of the leaf, thus permitting an excessive evaporation of water, which in turn, causes a browning and death of the infected area.

The leaf-blister disease of oak is caused by the fungus *Taphrina coerulescens*, a member of the family Exoascaceae. All the members of this family are pathogenic and cause leaf-blisters, leaf-curls, plum-pockets, and other types of overgrowths. A common disease of the peach, leaf-curl, is caused by a closely related fungus and is similar to the leaf-blisters of oak in many respects. The spores or seeds of all members of this family are borne in sac-like structures, called asci, which stand free on the surface of the blister. These spores are liberated as soon as they are matured in the late spring or early summer, and some of them lodge upon the bud scales of the oak, where they lie dormant until the following spring, when they germinate and produce infection. So far as is known, there is only one period of infection and no subsequent spread to other leaves of the tree occurs.

The prevalence of the leaf-blister of oak seems to be closely related to weather conditions. No observations, however, have been recorded in this regard. In the case of peach leaf-curl, cool wet weather following a warm period, at the time the buds are bursting, is very favorable for infection to take place. The cool wet weather during the spring of 1926 may, therefore, account for the prevalence of the disease this year.

Apparently no extensive experiments have been conducted on the control of this disease. A simple experiment conducted at the Alabama Experiment Station in 1902 indicates that the disease may be checked by spraying with Bordeaux mixture in early spring. Later experiments have shown that peach leaf-curl is easily controlled by a single thorough application of any good fungicide during the dormant season. Concentrated lime-sulphur 1-8 is very effective for the control of the peach leaf-curl fungus and is, also, effective for the control of scale insects. This method of control should be tried for leaf-blister of oak.

As previously pointed out, the willow oak shows considerable resistance to the leaf-blister disease in this locality and should be used in preference to the more susceptible kinds.