

The association was large and cumbersome. It covered three States in which five more or less distinct types of tobacco were grown. (Fig. 221.) Different problems existed in the different areas and in the selling and financing of each type of tobacco. The association was organized rapidly, with policy operations highly centralized and far removed from the growers; and in some localities questionable methods were used to obtain members—all of which added to the complexity and difficulty of management.

Strong, active, and organized opposition was encountered from those who would be eliminated from tobacco marketing if the cooperative should prove successful. Some of the large tobacco manufacturers were unfriendly to the farmers' organization and refused to buy from it. This made it impossible for the association to sell all its tobacco and to make payments to its members, many of whom were entirely dependent upon the returns from their tobacco for a livelihood.

The rate of mortality among farmers' cooperative tobacco marketing associations in the United States has been relatively high. Success in applying the cooperative method to tobacco marketing seems to be slow and difficult, but successful cooperative marketing of tobacco is not impossible. Tobacco cooperatives have been successful elsewhere in the United States. Difficulties to be encountered in the South are perhaps greater than those in other sections, but ably organized and well-operated associations can render to the tobacco growers of the South the benefits of an improved and efficient system of tobacco marketing.

J. J. SCANLAN.

TOBACCO Growth Much Affected by Care and Condition of Seed Bed Though it may seem far-fetched to lay the blame of poor quality in tobacco on neglect of the seed bed, it can not be denied that healthy and stocky seedlings with ample root systems are essential to the production of a good crop of tobacco; a crop that will grow without interruptions caused by inferior root systems or disease. The losses annually resulting from wholly preventable diseases on tobacco seed beds would run into a considerable amount if delayed transplanting, the use of diseased plants, the reduction of acreage, and inferior quality of tobacco are taken into account.

Why do tobacco growers almost invariably sow their seed beds too thickly? Experience does not seem to teach them their mistake, as they persist in it every year. Thick seeding causes crowded plants with undeveloped root systems and a lack of resistance, so that diseases are developed and spread rapidly, especially wildfire, mosaic, root rot, and damping-off fungi. A covered seed bed, being humid and warm, affords an excellent medium for the development and transmittal of such diseases, especially when the young seedlings are crowded, unless precautionary measures are taken.

Sometimes the seedlings, when too thick, are thinned by hand, a very slow and laborious process; then again the excess seedlings are removed by raking the bed, which injures the tender leaves. Probably the best method is to reduce the average amount of seed sown by half, or preferably by two-thirds if it has been recleaned, so that all light, immature individuals are removed. If thoroughly recleaned, 1 ounce of tobacco seed contains approximately 300,000 viable seeds,

so that by seeding at the rate of 1 ounce of seed to 700 square feet of seed bed a stand of three seedlings to the square inch should be obtained, or about 8,000 from 18 square feet. This rate of seeding affords plenty of space for the development of vigorous plants with healthy root systems and does not sacrifice space beyond reason.

Perhaps the most practical and economical method of controlling several of the diseases usually occurring in seed beds, notably root rot and damping-off, consists of a direct application of heat to the soil by means of an inverted pan. Soil sterilization by steam is practiced to some extent in most of the tobacco-producing sections in the country, but its effectiveness is greatly impaired by the short period of



FIGURE 222.—Tobacco seed beds should be steamed more thoroughly. By using four pans, connected in pairs, confining the steam under a pressure of 120 pounds to two of the pans for 30 to 40 minutes, then moving the steam connection to the second pair of pans, leaving the first pair undisturbed while the second pair are being steamed, each section of seed bed covered by the pans will be steamed for one hour and twenty minutes more efficiently and economically than if only one or two pans are used

application and the low steam pressure used. For maximum effectiveness in destroying diseases every section of the seed bed should be steamed for 30 to 40 minutes with a steam pressure of at least 120 pounds.

OTTO OLSON.

TOBACCO Wildfire Is Less Serious Menace Than It Once Seemed

During the season of 1917 the tobacco crop of North Carolina was very generally affected with an apparently new disease which threatened to become a serious menace to tobacco production in the United States. On account of the rate at which the disease spread and of the serious injury to the leaves it came to be known as wildfire. In comparatively few years the same disease was found to occur in all the important tobacco-growing districts of the United States, as well as in several foreign countries. It may probably never be definitely known whether or not this disease was "new," or whether it had existed for