

does not mean that it will be necessary for farmers to aim at *low* yields. The very highest quality of burley tobacco can be grown on land broken out of sod, with yields of around 1,800 pounds per acre. Fertility can be kept at a good level on the sodland by proper use of grasses and legumes, fertilizers, and ground limestone. In plots at the Kentucky Agricultural Experiment Station where these practices have been followed, it is not unusual to produce burley all of which is of good smoking grade, and moderate in nicotine. Such tobacco, while not highest in yield, returns more profit per acre than any other grown at the Experiment Station. Farmers can do the same.

#### **Each grower must decide**

If individual growers, in large numbers, will take it upon themselves to go after the kind of quality manufacturers want, and to change as soon as they can

from continuous tobacco fields to a system of breaking their tobacco land out of sod each year or at least every other year, without piling on more fertilizer than the crop needs, the result will be a gradual building up of burley stocks of better smoking quality and lower nicotine content. Such stocks of burley will permit manufacturers who now are loaded up with burley of undesirable quality to mix in the undesirable stocks gradually and work them off. It will also allow the manufacturers to gradually use the stocks held by the pools without great injury to cigarette quality such as will occur if manufacturers must use the objectionable tobacco in too large quantities at any one time.

It will take time to save the situation and regain the good reputation and demand for burley tobacco—but if the industry is to be saved this is the only way out that now seems practical.

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## **QUICK NICOTINE TESTS aid burley breeding program**

By R. B. Griffith, Agronomy Department

What the burley tobacco industry needs today, in the opinion of many people, is a quick and simple test for nicotine that would be practical for testing crops of individual farmers on the market floor. Only with such a test could buyers be sure they were bidding on the kind of tobacco they want. If they could be sure of this, their wants would probably be reflected in the prices they would pay. Farmers, in turn, would have an immediate incentive to produce the kind of burley wanted by the manufacturers.

A "quick nicotine test" developed at the Kentucky Station during the past year is not yet rapid enough and simple enough to be practical for testing individual crops on a wide scale on the market floors—but it is a vast improvement over previously used cumbersome methods of analyzing tobacco for nicotine, and has been very useful in the tobacco variety breeding program.

So far, the new method has been used chiefly in finding lines or strains of tobacco within the existing burley varieties which have the characteristic of changing part of their nicotine to "nornicotine" during the curing process. This search was made in the hope that a milder burley could be developed, as it was already

known that very little of the nornicotine but much of the nicotine in tobacco is carried in the smoke.

The new method uses a "paper chromatography" technique for separating the nicotine from other, closely related compounds. In the procedure, small drops of sample extract are placed on treated filter paper and through suitable manipulation of the paper the different substances in the sample extract are separated from each other. The different substances become visible and appear as colored spots on the paper. In a carefully made test, the spot of color for the nicotine appears in one position on the paper, while the spot for nornicotine, a closely related compound, appears in another. The size of the spot in each case depends upon the amount of nicotine or nornicotine in the sample. By comparing samples of the same tobacco plants before and after curing, it is easy to see which plants have the characteristic of changing nicotine to nornicotine during the curing process.

During the past year a great many such analyses were made. The plants showing the change of nicotine to nornicotine during curing were classified as "conversion plants." In the breeding program, crosses