HANDLING AND CURING VIRGINIA BRIGHT TOBACCO*

THE following notes dealing briefly with several of the common problems and some of the faults made in flue curing may possibly be of assistance to tobacco growers at the present time.

Many of the difficulties in the curing of tobacco may be directly traced to the field. For instance, such factors as unsuitable soil, fertilisers, field management and adverse climatic conditions all exercise some influence on the standard of curing operations.

Soil.—The use of unsuitable soil is a matter which can, in most instances, be eliminated by a more careful selection of land for the type of tobacco to be produced. The class of soil upon which it is grown largely influences the type of leaf produced ; it is therefore not considered sound practice to plant tobacco on a heavy soil and endeavour to force the resulting leaf to cure a very bright colour. Exceptions to the above rule do occur, especially when virgin land is used. Under these conditions and provided seasonal conditions are favourable, general experience has proved that the first crop tends to produce a fair percentage of bright coloured leaf ; the tobacco planted during the following season, however, usually produces a heavier bodied and darker coloured leaf. Any attempts made by the grower to force the second crop to cure as high a percentage of bright leaf as was secured from the first crop grown on the same land, are almost certain to result in disappointment and financial loss through a reduction in quality. The use of an excessive quantity of moisture for a prolonged period and an extended period during which the leaf is submitted to the heat of the barn are detrimental. Tobacco treated in this manner is generally neither one thing nor the other, and besides being unattractive in appearance, is also dry and brittle.

An experienced grower can usually determine by the appearance of the tobacco in the field whether the bulk of the leaf is naturally inclined to cure bright, medium or dark, and arranges his curing accordingly. Speaking generally, the lower leaves tend to cure bright, the middle leaves produce medium grades and the upper leaves cure into darks ; therefore leaf harvested from different parts of the plant should not be placed in the same barn for curing.

Fertilisers.—The choice of fertiliser must of necessity be governed by the type of land used for the crop. It has been found that a complete fertiliser containing a combination of both organic and inorganic nitrogen-furnishing elements is very suitable for use on the lighter types of sandy soils, the majority

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of which are granitic origin. Sandy loams and clay loams of medium fertility respond favourably to applications of complete tobacco fertilisers containing either a percentage of organic nitrogen or the total percentage of nitrogen derived from an inorganic source. On the heavier textured and more fertile soils, however, a double complete tobacco fertiliser in which all the nitrogen requirements are derived from an inorganic source is generally favoured, or special mixtures similar to the above, only that the percentage of nitrogen may be less.

Organic nitrogen forms an essential part of the fertilisers supplied, especially for dark fire cured tobacco, where the requirements are rather different from those for flue cured tobacco.

Apart from the choice of a suitable fertiliser, there is the application of adequate dressings ; inadequate applications are false economy, whilst, on the other hand, excessive quantities are wasteful. Owing to the varying degrees of inherent fertility of the soil it is not possible to state the quantity of fertiliser which is to be applied. Only actual trial will enable each individual tobacco grower to determine the quantity of artificial fertiliser which will produce optimum results.

The continued application of artificial fertilisers is in itself not sufficient, and, if continued for too lengthy a period without any provision being made to maintain the humus content of the soil, will actually be detrimental.

Field Management.—Thorough preparation of the land in the first instance, followed by proper cultivation and cultural methods, will materially influence the results of the subsequent curing operations. The crop is then more likely to make continuous and more even growth, which will give greater uniformity in the leaf. A plant correctly primed and topped will ripen more uniformly and produce better tobacco than a plant which is unprimed and topped either too high or too low. The time of planting is also important; less difficulty is usually experienced in curing tobacco planted during the earlier part of the season than with the later planted portion of the crop.

Climatic Conditions.—During seasons when climatic conditions are unfavourable it is usual to expect certain difficulties in the curing of the crop. Should a prolonged dry spell occur when the tobacco is reaching maturity, the leaf turns yellow and commences to perish on the plant. This type of leaf when placed in the barn yellows well and retains a good colour until the temperature of the barn is raised approximately to 130° F.; at this stage a change in colour is often observed, the leaf turning green and curing out with a decided greenish tinge. This is due to the leaf being immature ; the yellow coloration in the field is an indication of the plant perishing, though it is often mistaken as a sign of ripening. When false ripening is in evidence the harvesting is best delayed for a short while, say, a week or ten days, as very frequently a shower of rain will arrive in time to prevent the plants from dying off any further. Should the dry weather continue, or the leaves begin to deteriorate rapidly, the only course is to proceed with the reaping. The incidence of heavy or continuous rains after a dry spell will induce second growth, which makes the leaf very difficult to cure, and very often such leaf will fail to cure at all. When attempting to cure tobacco of this nature a

slow rate of curing is essential until the requisite yellow coloration is obtained ; care should also be taken not to rush the temperature up too fast before all the green possible has been eliminated. It is sometimes advisable to yellow the leaf first by hanging the sticks in a wilting shed before placing the tobacco in the barn. During seasons of heavy rainfall the tobacco in the field will sometimes turn yellow prematurely, though in this instance it is generally found that the curing yields more satisfactory results than is the case when drought prevails.

Every effort should be made to eliminate or reduce to a minimum the green tobacco irrespective as to whether the season be favourable or otherwise even though this be only attained through sponging some of the leaf. Sponged tobacco retains a commercial value, whereas green tobacco is practically valueless.

Harvesting and Curing.—Leaf fully ripe and of uniform body and texture should be reaped for each barn ; reasonable care exercised in this respect will materially assist in the curing operations. Damaged and inferior leaf is often harvested and used in place of better leaf which, if left on the plant too long, loses quality. The leaves to each hand should be placed back to back when tied on the stick ; the number of hands should fill the stick without overcrowding. When filling the barn the tobacco sticks should be evenly spaced along each tier and overcrowding the barn avoided. The leaf is more liable to " sponge " in an over-filled barn and during wet weather " pole sweat " will occur. The amount of " sponging " can usually be controlled by opening the ventilators and slightly increasing the temperature ; increased ventilation and temperature, with a reduction in the relative humidity, is also required to control " pole sweat."

Bottom ventilation must be carefully regulated when the outside atmosphere is either saturated or extremely dry ; under these circumstances it is often advisable to keep the lower ventilators closed or only very slightly opened. When little or no bottom ventilation is used, it is necessary to commence ventilating at the top as soon as the temperature in the barn is 100° F. to 105° F., if the leaf shows any signs of sponging. The top vents are at first opened very little and the aperture gradually increased as the curing proceeds. The above method is useful in eliminating a certain amount of the green when a mixed barn is being cured. The timely use of top ventilation to prevent the yellow leaf from " sponging " and a minimum of bottom ventilation prevent the atmosphere of the barn from drying too rapidly, thus leaving the greener tobacco more opportunity for " yellowing."

Under normal conditions the tobacco grower should use his standard methods and formulae which personal experience has proved to yield the most satisfactory results in curing the crop.

The provision of warm air ducts leading into the barn will also enable the grower to cure his leaf to better advantage. This system is recommended in place of the present practice wherein cold air is commonly introduced into the barn.

An excessive quantity of water thrown on to the floor will induce " sponging," particularly in the case of earth floors. It has often been observed that

a thoroughly saturated earthen floor causes difficulty in reducing the relative humidity when the temperature has reached 130° F. approximately. At this temperature a great deal of moisture is driven out of the floor ; hence the increased humidity within the barn, even though the same barn appeared to have the correct degree of relative humidity at, say, 120° F. to 125° F. Brick floors should be provided with a thin coating of cement for preference, as it is then easier to control the humidity, especially if drain plugs are let in through the walls to run off surplus water when it is no longer required in the barn.

As the curing season progresses the rate of curing gradually becomes slower, the leaf takes longer in colouring and fixing the colour. A great deal of damage to the tobacco is incurred through raising the maximum temperature too high during the final stages of curing. A maximum temperature in excess of 160° F. should not be permitted, as higher temperatures will rapidly cause the leaf to deteriorate, rendering it dry and brittle, besides scorching it to some extent.

After the tobacco is cured it is a common practice to bale the leaf immediately after it is removed from the barn and has been " conditioned," the reason usually advanced for this procedure being lack of storage room. Whilst tobacco in bales might possibly require less floor space for storage, the saving in space is not always so great as is imagined ; in fact, the reverse is often the case. The practice of baling before grading is to be deprecated, as this method entails a deal of wastage, besides rendering subsequent grading more difficult owing to the tobacco having been tightly pressed and the leaves in consequence being hard to separate. Another disadvantage is also apparent when the tobacco has been baled too dry to improve in colour and aroma.

When " bulked " the tobacco can be " conditioned " to a correct degree which fulfils the requirements of the type of leaf, and if properly handled the tobacco will improve more rapidly. There is also less cause for wastage and the tobacco is more easily examined in the bulks than when in bales. If the tobacco is roughly graded into brights, mediums, darks and greens prior to being " bulked," much time will be saved in the final grading, and bulks containing only one class of leaf can be handled to better advantage. The bright bulks would naturally be those first chosen for final grading and baling, followed by the mediums, darks and greens in the order stated. When only one class of tobacco at a time is being handled, less difficulty in grading is experienced by unskilled native graders.

Steam, superheated or used in excess, is also liable to reduce the quality and value of the leaf.

In conclusion, it is not suggested that the above notes deal completely with the subject under review, and reference therefore should be made to previous articles on tobacco culture published in the *Rhodesia Agricultural Journal*, from which reprints are available in bulletin form.