



TOBACCO RESEARCH BOARD
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Dear Grower

RE: SPONGE AND SLATE IN FLUE CURED TOBACCO

One of the worst, and yet least understood problems encountered in the curing of flue-cured tobacco is that of Sponge and Slate. All too often these two curing disorders are interchanged, confused or incorrectly diagnosed. One thing is certain though; they can drastically reduce the value of one's cured leaf. This short communication will attempt to differentiate and demystify these curing disorders and hopefully, improve the quality of marketed tobacco.

Slate

Slatey tobacco is typically immature and grey colored with a slick, close grained texture. The leaf surface is smooth and papery, lacking the characteristic rich oily texture of cured tobacco. Slatey tobacco has little or no elasticity. Such tobaccos lack richness of color and aroma and have a flat, undesirable taste. It commonly occurs in middle reappings of a crop grown without adequate nitrogen or in tobacco crops that may have

experienced excessive leaching during the growing season especially if fertilizer adjustments were not done. Another source of slate is from close spacing in the field or topping too high, causing shading and greater competition for nutrition, water and sunlight. Such physiological stress results in yellowing of the leaf before ripening and ultimately, harvesting of immature leaf. Some varieties are more prone to slate than others with fast maturing varieties tending to develop the condition more often than late maturing varieties possibly due to better fertilizer use efficiency in the latter type. It, therefore, follows that a fast maturing and ripening variety grown under fast growing conditions, especially under dryland conditions, may more easily develop slate. The collage below demonstrates the appearance of slate in tobacco.



Sponge

Sponge appears as a brown/grey mottled discoloration on the leaf and is often confused with slate tobacco. However an important diagnostic difference is the appearance of small moisture spots on sponge tobacco. Sponge tobacco leaf will generally be softer textured than slate tobacco. The causes of sponge are also more diverse than those of slate. As a rule of thumb, high moisture and high temperature at the same time will most likely increase sponge incidents during curing. Sponge can be caused by any of four conditions during the curing process:

1. Excess humidity in sections of the barn, especially at temperatures above 50°C. This may be caused by inadequate ventilation, over packing or temperature fluctuations in the barn.
2. Drying rate too slow. This is common in poorly designed barn systems that may take too long to accumulate the required heat for curing.
3. In-forced air barn systems. Continuous barn systems like the "chongololo" barn that force air into densely packed leaves may promote sponge disorders, primarily in the first units in the continuous systems, where high volumes of recycled air with high moisture content interact with packed leaf.
4. Drought-stressed tobacco. Droughted tobacco loses moisture more slowly than a turgid leaf. As a result, temperature increments will tend to occur faster than the rate of leaf dehydration, ultimately leading to both high moisture and high temperature conditions occurring at the same time in the barn.

Below are illustrations of sponge on tobacco



Another important consideration during curing is the type of leaf being cured. Heavy bodied varieties will inherently sponge easier if care is not taken during the drying stage since they contain more leaf moisture than thin bodied leaf types.

Effect of sponge and slate on grade and price

When presented for sale, both sponge and slate attract low prices. According to the Tobacco Industry and Marketing Board official tobacco classification code, slate tobacco

is graded with a "U" symbol to indicate its slick and close grained nature; U grade tobacco invariably will fetch low prices on the market. Sponge tobacco is "K" graded and also attracts price penalties.

Comparison of Slate and Sponge tobacco



Slate (left) and Sponge (right) on cured tobacco leaf

Conclusion

Both slate and sponge negatively affect quality. It is important to identify which of the two conditions a farmer is experiencing in order to effect suitable corrective measure. This requires an analysis of the on farm curing practices bearing in mind that in excessively wet seasons, adequate ventilation is essential during the drying process to avoid sponge. Also, leaf reaped on very wet or rainy days should not be stacked too high for too long before being loaded into the barn as this may promote the lower stacking to sponge. Consideration should always be given to barn types paying special

attention to barn designs such as tunnel systems and “chongololo” continuous systems that have a higher tendency of inducing sponge in tobacco.

For more information, contact Kutsaga Research Station’s Plant Breeding Division on telephone # (04) 575 289-94 or toll-free, 0800 4511 or Email: tobres@kutsaga.co.zw or visit Kutsaga Research Station on Airport ring Road, Harare.

A handwritten signature in black ink, appearing to read 'Munyaradzi Shamudzarira', is centered within a light gray rectangular box.

Munyaradzi Shamudzarira

Plant Breeder