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23 January 2023

To: All Tobacco Growers
Contractors
Merchants
Agrochemical Companies

Dear Grower

TIMEOUS SOIL SAMPLING AND EARLY LAND PREPARATION: THE KEY TO SUCCESSFUL TOBACCO PRODUCTION

This note serves to remind growers to conduct early land preparation and to ensure soil samples for lime and fertilizer recommendations are collected and send out for analysis. Timeous and effective land preparation and soil testing are essential components, among several others, for profitable tobacco production.

Figure 1: Timeous land preparation

Figure 2: Good soil tilth

Soil sampling

Before the lands are prepared, it is necessary to have the soil for individual lands tested around March to May to establish concentrations of available nutrients and determine fertilizer requirements for optimal crop growth. Soil testing also gives an indication of the level of acidity or alkalinity of the soil (pH).

For the correct amounts of fertilizers and liming agents to be determined it is important that soil sampling is done correctly and that a sample representative of field conditions is submitted for testing. An improperly collected sample will give biased result, and the corresponding recommendations will be poorly suited for the actual soil conditions. Soil samples should be taken at the end of the season soon after the crop harvest using the Z-sampling method (Consult the TRB or its publications for in-depth guidance). The method involves sampling at 10 points in a 'Z' pattern in each field (Fig. 4).

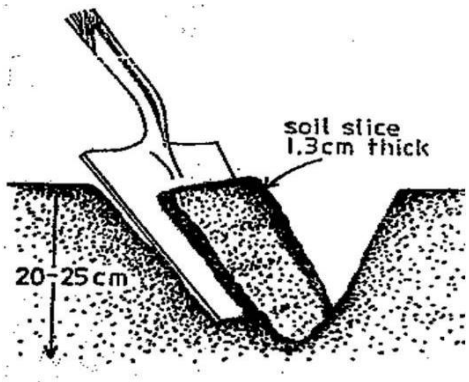

Figure 3a. Soil sampling using a spade

Figure 3b. Soil sampling using an auger

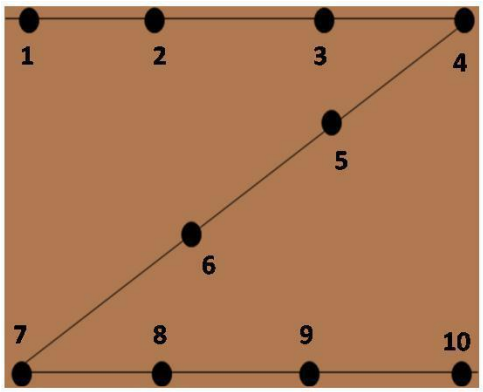

Figure 4. The "Z" sampling scheme

Figure 5. Quartering technique

Sampling can be done using a spade or an auger (Fig. 3a & 3b). The sub-samples are then mixed thoroughly, divided into four parts using the 'quartering technique' (Fig. 5), and small portions are taken from each quarter until there is one representative composite sample of 1 kg. When sampling, growers should avoid anthills or where fertilisers are normally off-loaded. Once soil sampling has been done, fields are then ploughed in preparation for the following season's crop.

Land preparation

The timeous preparation of land ensures optimum soil conditions that enhance the successful establishment of transplants. When done late growers may face problems such as build-up of insects and weed seed bank, poor stand establishment and nutritional deficiencies leading to high costs of production. Ploughing from January to March/April may be considered as early-ploughing and from July onwards as late ploughing. With early-ploughing, the grass is normally disced in before the end of January or February and the field then ploughed in March or April, that is before the end of the rains when the soil is still moist depending on the extent of the rainy season. Ploughing depth should not be less than 23 cm.

Early ploughing is usually ideal before the end of the rains when the soil is still moist in slow growing regions (Norton, Bromley, Marondera and Headlands), medium growing regions (areas like Darwendale, Bindura, and Chegutu) or infertile sand. This allows early and uniform decomposition of organic matter and promotes mineralization of nitrogen that is then utilized at the time of planting. Research done at Kutsaga has shown that deep early ploughing can release the equivalent of 90 kg/ha of ammonium nitrate. Early ploughing while the soil is still moist also allows for adequate soil moisture conservation and subsequently less water is used at planting.

Another benefit of early ploughing is that a uniform good tilth is more easily obtained and soil moisture conditions are favourable thereby minimising ploughing and discing costs. Consequently, implements wear and tear is reduced. For small-scale growers who use draft power, early ploughing soon after the rains also ensures that cattle for draught are in good

condition to pull the plough unlike later in the season when they may have inadequate strength to pull the plough.

Figure 6: Tobacco growing well under an early ploughed land

However, late ploughing may be recommended for fast growing regions (areas like Chinhoyi, Banket, Mvurwi and Karoi) or heavy textured, fertile soils as temperatures and the rate of nitrogen mineralization are usually high during this period (from July onwards). This means that plant residues in the soil are able to fully decompose and mineralise before the planting season commences.

Conclusion

It is highly recommended that growers practise early ploughing and ensure soil testing is done timeously. It is this attention to detail that enables growers to derive maximum economic value from tobacco production by reducing production costs and yet attaining increased tobacco yields and quality.

For more information, contact Kutsaga Research Station's Crop Production and Molecular Technologies Division on telephone # 0868 800 2604 or email: tobres@kutsaga.co.zw or visit Kutsaga Research Station on Airport Ring Road, Harare.

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