

LEACHING ADJUSTMENT IN TOBACCO

DEAR GROWER



FERTILISER LEACHING ADJUSTMENTS IN TOBACCO

The country is currently experiencing a very wet spell that can lead to leaching of nutrients, in particular nitrogen and potassium. These two nutrients are critical for growth and development of tobacco plants and have a strong effect on yield and quality of the crop.

Insufficient nitrogen results in pale and yellowed leaves, which, though immature, appear visually ripe (false ripening) (Fig 1) and lack the desired physical and chemical properties. In the case of potassium leaching, the leaves are small as leaf expansion is limited and potassium firing develops

(Fig 2) which results in loss of yield and quality of the affected leaf. Thus, these conditions result in reduced yields translating to low returns on investment.



Fig 1 : Pale leaves in a nitrogen deficient tobacco crop



Fig 2: Mild (top) and Severe Potassium deficiency symptoms

Fertilizer Adjustments

Where leaching symptoms have been observed such as yellowing of leaves of the entire plant, growers are advised to replace the leached nitrogen with an additional side-dressing promptly. It is often difficult to be precise about the amount of nitrogen to be applied as the amount of leaching in soil depends on the soil texture, the amount of moisture in the soil, permeability of the soil, slope of the land, ridge orientation and the amount of nitrogen or potassium initially applied.

General Guideline

However, as a general guideline, 75 kg of ammonium nitrate/ha (cup No. 5/plant) or 150 kg calcium nitrate/ha (cup No. 8/plant) should be sufficient. Note that deep coarse-grained soils may require more. For December plantings, as much as 300 kg/ha ammonium nitrate can be added in four applications of 75 kg/ha (cup No. 5/plant) at weekly intervals; or 600 kg/ha calcium nitrate in four applications of 150 kg/ha (cup No. 8/plant) at weekly intervals. Nevertheless, ammonium nitrate is more persistent in the soil than calcium nitrate which is more prone to leaching. Thus, calcium nitrate will be more suitable at later stages of plant growth, that is after topping.

Nitrogen Foliar Sprays

Nitrogen can also be applied as a foliar spray to avoid leaching losses. However, growers need to be careful as high concentrations can result in leaf burn. Research at Kutsaga has shown that ammonium nitrate, potassium nitrate and calcium nitrate may be applied at 0.5% concentration or less without leaf burn. In this case, 2 or 3 applications must be made at weekly intervals to achieve sufficient amounts of nitrogen in the leaf.

Potassium

In the case of potassium (K), deficiency is more often directly related to weather/environmental conditions than to the available K in the soil profile. Excessive soil moisture slows down the diffusion of K to the roots resulting in deficiency symptoms. In many cases, if soil moisture conditions can be improved, deficiencies are self-correcting without any additional K being applied. Additional applications of K fertiliser are only recommended in extreme cases where leaching has occurred and deficiency symptoms are severe (Figure 1c).

If there is a need to apply extra K, growers are advised to apply 100 kg/ha of sulphate of potash (Cup No. 5/plant). It is not advisable to apply muriate of potash (potassium chloride) because it also supplies chlorine which reduces the quality of the cured leaf. Where potassium sulphate is in short supply on the market, growers can substitute ammonium nitrate with potassium nitrate.

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

GENERAL ADVISORY

1. Preventative Disease Management

Anticipate the occurrence of leaf diseases such as wildfire (*Pseudomonas syringae* pv *tabaci* tox+), and angular leaf spot (*Ps. syringae* pv *tabaci* tox-) that usually flourish under continually wet conditions. To manage this, ensure that routine sprays of protective pesticides such as Bion or Agrigold are applied.

For the prevention of wildfire and angular leaf spot, with Bion see spray program in the Flu-cured Tobacco Handbook.

2. Additional Resources

In the face of incessant rains plants will generally ripen faster. The number of leaves reaped per cycle increases, necessitating a requirement for additional resources to enable curing of the crop in a shorter space of time.

These include (i) additional barn space over and above that for the hectareage planted (ii) more reaping clips and additional labour for the reaping of the 'flushing' crop.