agriculture
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Department:
Agriculture
& Environmental Affairs
PROVINCE OF KWAZULU-NATAL

BANANAS IN KWAZULU-NATAL

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Importance and nutrition

Throughout the tropics and subtropics bananas and plantains are of importance as a dietary source of energy. Unlike in Southern Africa where maize is generally the staple diet, in other parts of Africa, bananas and plantains are a staple food, with average per capita consumption exceeding 100 kg/year in certain areas.

The energy source in bananas is predominantly starch and sugars. During the ripening process the starch levels fall from ± 20% to ± 1% and the sugars rise from ± 1% to ± 20%. This high sugar concentration is unusual in a fresh fruit and the banana supplies double the energy per unit mass of the pear or apple. It also has a low fat content and is therefore suitable in low fat diets. Although the overall protein content is low (± 1%), it contains the essential amino acid "lysine", which is absent in maize, and it therefore complements a maize diet. The banana is rich in minerals and vitamins and, with a particularly high potassium and low sodium content, is a good dietary component for those suffering from high blood pressure.

Climatic requirements and potential

Bananas are tropical plants that are grown under sub-optimal, subtropical conditions in South Africa. Production is therefore severely limited by climate, as ideal conditions do not exist anywhere in the country.

Although bananas are a fairly adaptable crop, insight into their production limitations in the subtropics is important. Where water and nutrients are not limiting, the rate of banana growth and development is determined by temperature. The optimum mean temperature ((max + min) ÷ 2) range for leaf development and bunch initiation and growth is between 22° C and 31° C. Growth ceases at a mean daily temperature of 14° C and leaf chlorophyll destruction takes place at an actual temperature of 6° C, with leaf die back at 0° C. These thresholds form a basis of estimating production potential and establishing limiting factors to banana production in different climatic regions.

Although the area between Port Shepstone and Port Edward accounts for the bulk of banana production in KwaZulu-Natal, the warmer but equally humid coastal strip from Durban northwards and particularly north of Mtubatuba/St. Lucia is climatically regarded as the area

with the best production potential in South Africa. There is consequently justification in promoting banana production in the humid low lying coastal belt in north-eastern KwaZulu-Natal for both the small-scale farmer, as well as the commercial farmer. The limitations of planting without adequate irrigation, particularly on sandy soils, should be borne in mind. A further limitation in high-lying areas, or areas subject to temperature inversion, are cold winter temperatures that result in a virtual shut-down of growth and consequent choke-throat of winter-emerging bunches (so-called "November dump" bunches). These bunches are initiated (at ground level) during the cold winter period and are often deformed as a result of excessive cold during their initiation.

A fine developing bunch with a large number of well-spaced hands

Cultivation and population density

Recent trials have indicated that choice of cultivar depends on the local climatic conditions. In the cool subtropics such as Eshowe, the recommended cultivar is "Williams". Density should not exceed 2 100 plants/ha and the long term optimum would be 1 800 - 2 000 plants/ha. This may be established by spacings of 3 x 1.75 m or 2.8 x 1.9 m. As plants grow very tall in the cooler areas, it is inadvisable to reduce the interrow to less than 2.8 m. Short cultivars such as the traditionally grown "Dwarf Cavendish" should not be grown in cool areas, due to their susceptibility to choke throat.

In the warmer subtropics (Nkwaleni and Mposa) "Grand Nain" is a recommended cultivar, which should be established at a density of 2 200 plants/ha, spaced at 3 x 1.5 m or 2.7 x 1.7 m. Due to the severity of coastal winds, the shorter "Chinese Cavendish" which is less prone to lodging is also recommended and may be established at up to 2 500 plants/ha at 2.5 x 1.6 m, if management conditions are good.

Cultural Practices

1. Plant material

The most successful conventional plant material is the sword sucker (a sucker with narrow leaves and still totally dependant on the mother plant for nutrients and water), which should be at least 2 kg in weight after being removed from the mother plant. This will provide uniform growth within a plantation. It is recommended that the sword sucker be cut back to ± 75 mm above the point of root attachment (previously ground level) and the outer-most leaf sheath and roots cut away to expose the white rhizome material. This is done to detect any damage due to banana weevil infestation, by burrowing nematode or infection by Panama disease. Any sucker showing evidence of discolouration should be discarded.

An example of severe "choke throat"

Tissue cultured plants are recommended due to their absence of disease, their uniformity and potential to outyield conventional plant material. Any large scale planting (more than 0.5 ha) should make use of tissue culture plants, which cost approximately R3.50 each.

2. Land preparation

Based on soil analysis, if lime, P or K are required these should be incorporated by ploughing. The use of organic matter is very advantageous, especially for tissue culture plants, and, if available, 15-20 t/ha kraal manure should be incorporated. The soil should then be cross-ripped as deeply as possible immediately prior to planting.

A uniform stand with well-developed bunches (notice the double-propping)

3. Fertilization

Apply 40 g LAN (28) per plant every month from September to April and 200 g KCI per plant in September, November and February. This should be sufficient for a 40 t/ha crop. Fertilizer must be applied evenly and not concentrated in a band around the plant. Lower rates would be used for lower yield expectations.

4. Irrigation

An evenly distributed rainfall of 100 mm per month is the minimum requirement for bananas. Most production areas in S.A. would fall short of this requirement in at least 7 months of the year and it is therefore not surprising that irrigated bananas in KwaZulu-Natal outyielded dryland plantations by 50%. It is therefore important to plan for irrigation if the water and financial resources are available.

5. Desuckering and sucker selection

It is recommended that surplus suckers be removed regularly to prevent them from competing directly with the follower sucker, thereby extending the cycle time and reducing overall yield. In order to retain the optimum plant population decided upon at establishment, it is important to retain only one follower sucker which in turn will produce it's own sucker. At any one time a "mat" will consist of a maximum of three plants of different generations.