THE REPUBLIC OF UGANDA

Groundnut Grower's Guide

Revised Edition

National Agricultural Research Organization (NARO)

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Introduction

Groundnut is the second most widely grown legume in Uganda, after beans. It is well accepted for cultivation and consumption. The use of groundnut as a food and cash crop has increased substantially because of an increased awareness of protein shortages in the country Groundnut is high in protein and oil content and with the costs of animal protein becoming more prohibitive this crop is even more important now.

Despite the high local demand for groundnuts, farmers' yields continue to be low, averaging 560 kg/ha of dry seed. However, yields of over 1,750, kg/ha have been achieved in experimental plots, indicating a good potential to improve farmer's yields. It is, therefore, possible to increase groundnut production if the growers could improve or adopt improved production practices such as proper spacing, use of good quality seed, and control of pests and diseases.

This guide is therefore, intended to provide the farming community especially serious growers with some basic information, with the hope that it will help them improve on their production practices, some of which may have been overlooked or ignored.

Varieties

Commercial varieties grown in the country include: Roxo 531, Red Beauty (81) and IGOLA-I. Roxo matures in 100-110 days with an average yield of 1260 kg dry seed. B I takes 90-100 days and yielding an average of 1100 kg/ha. They are both red seeded. IGOLA-I mature in 120- 130 days and yields 2500-3000 kg of dry seed. A number of new varieties are being developed some of which have shown a high level of resistance to rosette disease and leaf spot.

Seed selection

It is important to plant sound mature disease-free seed and, if possible, of known pedigree, purity and performance. Handle seed carefully while loading or off-loading to prevent damage. Groundnuts intended for planting should be stored in shell until shortly before planting because seeds retain viability longer when stored in the shell. Where possible, treat seed with recommended dressing fungicides (e.g. Fernasan D) to ensure good germination.

Land selection and rotation

Groundnuts are most suitably grown on well-drained sandy soils. Rotations of three years or longer usually reduce disease and weed problems and may reduce the need for pesticide application. Some difficult weeds such as Oxalis in groundnuts can be controlled more easily under rotational cropping. Fewer weeds mean easier harvesting and less foreign material. Cereals such as maize, sorghum and millets are good rotational crops. Cotton may be used in rotation but not immediately ahead of groundnuts.

Other legumes, tobacco, tomatoes and certain other vegetables that may build up nematodes, and other soil- borne diseases, should be avoided in the rotation.

Land preparation

The goal in land preparation is to provide suitable soil conditions for rapid and uniform germination, good root penetration and growth and steady pod development. Managing residue from tt1e previous crop is the first step in seed-bed preparation. For the farmers who can afford tractors, deep turn the soil to bury residue and weeds 3-4 weeks before planting. At planting, seed beds should be smooth enough to provide good soil-to-seed contact. Plant in a moist seedbed to ensure good germination.

Fertilizers and soil fertility

Adequate level of phosphorus, potassium calcium and magnesium are essential for high yields and quality groundnuts. For farmers who can afford artificial fertilizers, application of Single Supper Phosphate (SSP) at a rate of 125 kg/ha or Triple Supper Phosphate (TSP) at 80-90 kg/ha will boost the yield. The fertilizers (SSP, TSP) should be applied during and preparation and worked into the soil before planting.

Planting

Time of planting

The planting date is difficult to standardize under Ugandan conditions. However, growers should plant as soon as they are sure of adequate moisture in the ground to facilitate good germination. They should also be sure of the continuity of the rain to ensure good growth. In general, groundnuts are planted between 15th February and 15th April during the first season and early August for second season.

Spacing.

Research results have shown that a spacing of 45 cm x 10 cm gives better yields that 60 cm x 10 cm. It is therefore, recommended that spacing should be as follows:

Bunch types: 45 cm x 10 cm (B1)
Semi-erect types: 45 cm x 15 cm. (IGOLA-1)

When maintained these spacings will minimize rosette virus attack as wider spacings encourage infestation by aphids, the vector for the virus. Amount of seed needed is 10 kg/ha for bunch types, and 90 kg/ha for semi-erect types.

Moisture

Adequate moisture is impor1ant during all stages in the life cycle of the groundnut plant. There are basically" three growth stages of the plant:

(a) germination through early vegetative growth
(b) flowering, pegging and pod filling; and
(c) maturity stage.

Total water requirements are greater during the second stage. Since Ugandan farmers grow their groundnuts under rainfall conditions, the emphasis here is on the timely planting so that all the three growth stages can benefit from adequate moisture.

Weeding

This is the most commonly used method of weed control by farmers. The number of weedings will depend on the initial condition of the seed-bed and labour availability. But the first weeding must be done before flowering and another one at 'least during pegging. Soiling (or 'Dirting') of groundnut plants can increase diseases (e.g. white mold), inhibit flowering and pod development, and reduces pod yield. Groundnuts need 3-4 weedings before harvesting if a good quality crop is to be achieved. Weeds make harvesting cumbersome and cause a lot of pods to remain behind in the soil.

Chemical Weeding

Some fanners in Uganda are using herbicides in the control of weeds. When properly used, herbicides (together with pesticides and fungicides) are an acceptable part of an Integrated Pest Management (IPM) programme. Some herbicides are being screened by researchers (e.g. at Namulonge) and the recommendations will be disseminated when available.

Crop protection (pest and disease control)

Many pests and diseases can reduce groundnut yield and quality. These pests can be held to tolerable levels if the growers can employ a combination of cultural practices, management techniques and pesticides. This approach is referred to as Integrated Pest Management (IPM). If well employed, IPM is likely to lower costs, keep pests below economically damaging levels and provide growers with greater profit.

The main diseases of groundnuts in Uganda are rosette virus disease and Cercospora leaf spot. Others which deserve mention are bacterial wilt caused by Pseudomonas solanacearum, and rust (Puccinia arachidis). The insect
pests include aphids (Aphids craccivora) which are the, vector of the rosette virus, thrips and termites which cause some damage in some areas.

Control measures include:

(i) The use of resistant varieties to both pests and diseases. These are being developed by researchers and will be disseminated when they are released;
(ii) The use of cultural methods such as rotational cropping to avoid build up of diseases;

(iii) The use of pesticides for the control of aphids and other pests; and
(iv) The use fungicides for the control of cercospora leaf spot and other fungal diseases

The insecticides commonly used include Dimenthoate or Rogor EC 40 at a dosage of 50 ml of the chemical in 20 litres of water. Apply 14 days after emergence and then at 10 days intervals using a total of four sprays.

Fungicides though not so commonly used in Uganda on groundnuts can prevent early shedding of leaves due to leaf spots and thus allowing the crop to reach optimum maturity. Brestan, Benlate or Dithane M45 can be used, mixing 50g of the chemical with 20 litres of water.

Harvesting

Harvesting is one of the most critical operations in groundnuts production. Weeds can make efficient harvesting impossible by interfering with digging or lifting.

Determining when to harvest is important. Groundnut may gain 300-450 kg/ha and 2-3% in grade during the 10-day period before optimum harvest.

Losses greater than 300-450 kg/ha may occur if harvesting; is delayed from optimum maturity.

The best time to harvest is when the crop has the highest percentage of sound mature kernels (SMK). The most dependable guide to determine when to lift is to look for pods with shells turning dark brown inside. Collect a number of pods about three from different plants, break them open, and determine the percentage of pods having shalls turning dark inside. When the sound mature kernels (SMK) have attained 70-72%, the crop has reached the best harvest time.

Drying

Drying, together with harvesting, have the greatest influ4nce on groundnuts quality and marketing. Do not leave harvested groundnuts in windrows for too long especially during wet weather. Remove as much dil1 (soil and trash from pods during drying as soon as possible. Drying must begin immediately after lifting to prevent moulding and spoilage. Special care must 'be taken when drying in bad weather as this encourages pod loss, splitting shell discolouration and attack by moulds and insects:

Storage

Whether groundnuts are kept on the fan11 in the granary or in commercial warehouses e.g. of seed production units, the principles of good storage are the same. Storage requires good sanitation, ventilation and pest control. Groundnuts must be stored in their shell. Farmers with large quantities of groundnuts should avoid using plastic or canvas covers that may cause condensation and lead to moulds.

The importance of quality in groundnuts

Quality is 'put' in groundnut at the farm level. Buyers and handlers can protect that quality, but they can never make up for poor growing, harvesting, drying and storage conditions. In order to produce groundnuts with the highest quality possible, growers should try to attain 70-72% sound mature kernels by allowing the crop to mature properly (see section on harvesting). Also minimize foreign material as this, especially dirt, creates drying and storage problems. Dry the pods adequately.