

# How to use Artificial Fertilizers



**AT UGANDA LIMITED**  
**SOILS BROCHURE SERIES No. 02**

## Introduction

One way of enriching and replenishing the soil is by addition of artificial fertilizers. These fertilizers, which are simple chemical compounds, add one or more nutrients to the soil. They are either industrially manufactured or mined from the earth. Most of the artificial fertilizers are either in granular e.g DAP or dust form e.g PREPAC. Normally the fertilizers are dry, although some of them are sprayed on plants in solution form. Artificial fertilizers are applied to the soil in order to replenish the soil with the required nutrients. It is however advisable to analyze the soil in order to know which element is lacking. This service is provided for a fee at the Makerere University Soil Science Department at the Faculty of Agriculture or at the soils programme in Kawanda Agricultural Research Institute.

## Major Types of Artificial Fertilizers

### 1. Single Nutrient Fertilizers:

These supply one major nutrient. They include:

- Phosphorus fertilizers e.g. Triple Super Phosphate (TSP), Single Super Phosphate (SSP), Rock Phosphate (PREPAC).
- Nitrogen fertilizers e.g. Urea, Ammonium Nitrate, Calcium Ammonium Nitrate (CAN).
- Potassium fertilizers e.g. Murate of Potash.
- Calcium fertilizers which release calcium e.g. CAN



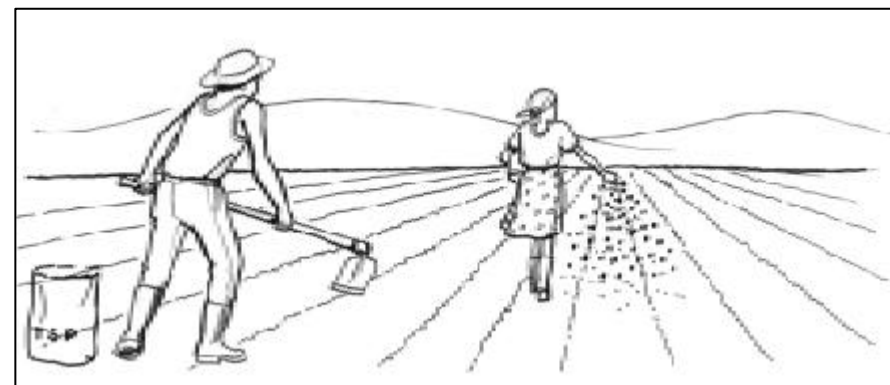
### 2. Compound/blended Fertilizers:

These supply two or more major nutrients e.g. NPK supplies Nitrogen (N), Phosphorus (P) and Potassium (K), Di-Ammonium Phosphate (DAP) which supplies N and P; and Calcium Ammonium Nitrate which supplies Calcium and Nitrogen.

## Methods of Fertilizer application

### a) *Broadcasting:*

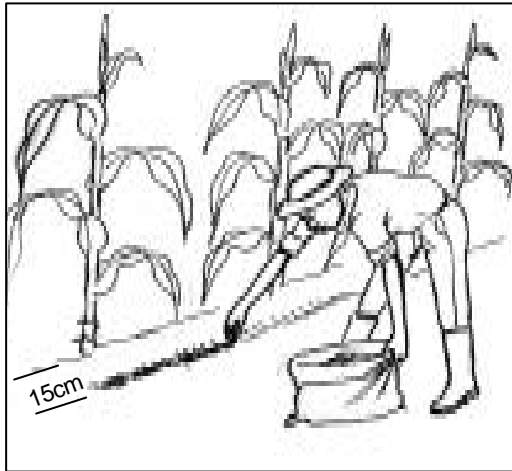
Here fertilizer is spread on the surface of the prepared area intended for planting and may be incorporated in the soil or not. Example is a starter fertilizer like TSP. It is important to make sure that the whole area is uniformly sprinkled. Divide the fertilizer into four equal parts. Divide the area also into four parts. Use one part (1/4) on one quarter of the farm, making sure the corners get the same amount as the other parts. Repeat this process in the remaining parts. Generally this method is used on farms where the planting is not done in rows. However it is wasteful and the yields are not as good as they should be.



*Fertilizers spread on the surface of prepared area for planting*

**b) Band application:**

Fertilizer is placed in a furrow close to the root zone (at a depth of 10cm to 15cm) and covered with soil, hence increasing the chance of its being taken up. This method is suitable for crops that are planted in rows; and is good when you have limited quantities of less soluble fertilizer eg. phosphorus. However, it is laborious.



*Fertilizers placed in furrows close to the root zone*

**c) Applying fertilizer in circular form:**

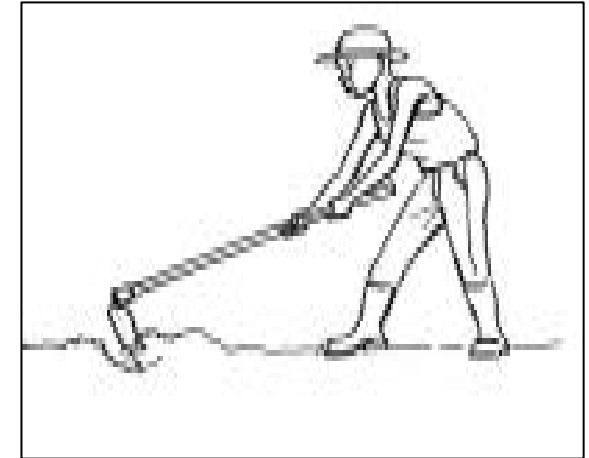
Here fertilizer like CAN and UREA is incorporated in a circular furrow made a short distance from the plant using a stick or some other implement. Normally the distance should not be less than fifteen centimeters depending on how far the roots spread.



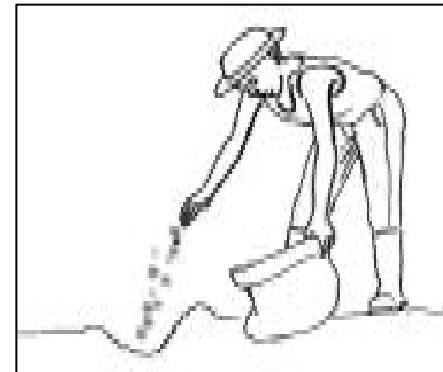
*Fertilizers placed around the stem 15cm away*

**d) Spot application:**

Here fertilizer is placed at each planting hole. For example, a bottle topful of DAP is poured in the hole, a little soil (5cm thick) added to cover the fertilizer, then the seed/seedling is



*Step 1: Dig hole*



*Step 2: Apply fertilizer and cover with soil*



*Step 3: Plant seed and cover with soil*

planted. This is done so in order to avoid burning of the seed by the fertilizer. This method is more suitable since the roots reach the fertilizer more easily.

### e) Foliar Sprays:

Here Ammonium based fertilizers like UREA are applied through spraying on leaves, after dissolving in water. This method is especially suited to cotton, sugarcane, high value crops. and congested plants that are not planted in rows, for example, animal feed (grass) and vegetables. At the time of applying, ensure that dew has evaporated from the leaves to prevent scorching.



*Fertilizer is sprayed using a knapsack*

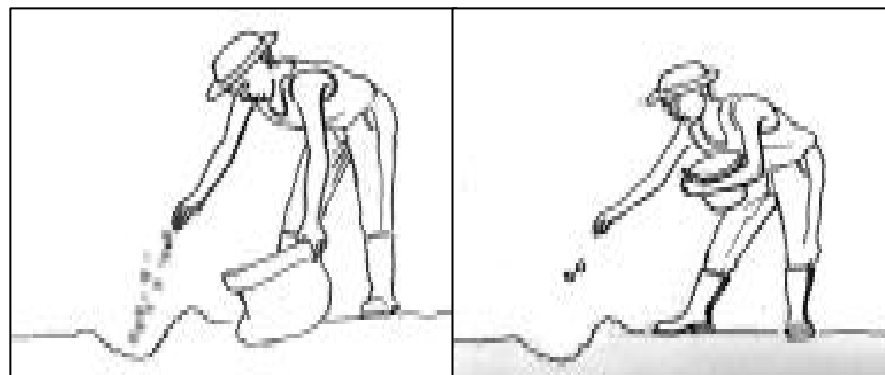
### f) Fertigation:

Here fertilizers are applied with irrigation water.

## When to apply fertilizers

### (i) Basal/starter fertilizer application:

This is when the fertilizer is applied just before or at planting, and it is usually incorporated in the soil at a depth of 10 -15 centimeters where the nutrients are better utilized than when left on the surface. This mainly applies to Phosphate and Potassium fertilizers (TSP, DAP, SSP, NPK).



*Starter fertilizers are applied at planting*

### (ii) Side or Top Dressing

This mainly applies to Nitrogen fertilizer which is applied a few weeks after the crop has germinated. For example in maize, top dressing is



*First application of fertilizers is done at Knee high level.*

done at Knee high, which is usually after the first weeding. At this time the maize is approximately 2 feet high.

### **(iii) Split application:**

Split application may be used during top dressing. It refers to the application of small amounts of a nitrogen fertilizer more than once during a growing season, rather than one massive application (i.e. at knee high and at tussling. This especially reduces Nitrogen losses and improves fertilizer efficiency.



**a) At knee high**

**b) At tussling**

**Application of fertilizers done at different stages of plant growth**

**Note: The use of artificial fertilizers will not in itself raise the yields. Other modern agricultural practices also need to be applied. These include planting modern types of seeds which are high yielding and resistant to diseases and pests, good field preparation, recommended spacing, early planting, pests and weed control and availability of adequate rains or water for irrigation.**

**For further information you may contact:**

AT Uganda Ltd.  
Plot 1 Muwafu Road, Ntinda  
P. O. Box 8830 Kampala  
Tel. 041-285803, Fax: 041-285564  
Email: rojok@imul.com