



A FARMERS' GUIDE TO GROWING WATERMELONS

Be Knowledgeable About Watermelons

This booklet offers you a step by step guide to growing your own watermelons. It looks at things like planting, weeding, pests and diseases, harvesting and storage and value addition.

This book is dedicated to you by Emmanuel Mwesige because you are the reason why it has been written!

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TABLE OF CONTENTS

INTRODUCTION.....	3
About the Watermelon	4
Common Watermelon Growing Areas in Uganda.....	4
Common Watermelon Varieties (cultivars) in Uganda.....	4
Description of the Plant.....	8
WATERMELON CULTIVATION PRACTICES.....	10
STEP 1: SITE SELECTION	10
STEP 2: LAND PREPARATION.....	11
STEP 3: ACQUIRING SEED FOR PLANTING.....	12
STEP 4: SEED PREPARATION FOR PLANTING	12
Seedling Production.....	12
Transplanting Seedlings	13
STEP 5: PLANTING	13
STEP 6: WEED CONTROL.....	16
STEP 7: PEST AND DISEASE CONTROL.....	17
Insect Identification and Control.....	17
Animal Pests	22
Disease Identification and Management.....	25
Physiological Disorders.....	32
Pesticide Application.....	37
STEP 8: IRRIGATION	38
STEP 9: FERTILIZATION.....	39
STEP 10: POLLINATION.....	39
STEP 11: WINDBREAKS AND PLANT SUPPORT.....	40
STEP 12: FRUIT PRUNING	41
STEP 13: HARVESTING	41
KEY NOTE.....	43
STEP 14: POST HARVEST HANDLING AND STORAGE.....	43

STEP 15: PACKING AND SHIPPING FRESH WATERMELONS.....	43
STEP 16: MARKETING.....	44
COST OF PRODUCTION	45
CONSTRAINTS TO WATERMELON PRODUCTION.....	47
Excessive Rain.....	47
Excessive Heat	47
Excessive Cold	47
Drought	47
Hail.....	47
Insects.....	48
UTILIZATION.....	48
Uses.....	48
Nutritional Value.....	48
TRICKS FOR GROWING WATERMELONS SUMMARIZED JUST FOR YOU	49

INTRODUCTION



About the Watermelon

Watermelon (*Citrullus lantatus*) belongs to the family Cucurbitaceae which includes squash, pumpkin and cucumber. It is a popular dessert vegetable, with year round availability.

Watermelons vary in shape; from globular to oblong. External rind colour varies from light to dark green and may be solid, striped or marbled. The pulp colour of most commercial varieties is red.

The fruit is generally eaten raw. Watermelon has very high water content (93ml/100g edible portion). It contains carbohydrates (5mg), calcium (8mg), phosphorous (9 mg), ascorbic acid (8 mg) and vitamins (0.64 g) per 100 g of edible portion.

Watermelons need five things to grow and produce fruit: **sun, water, bees, nutrients, and a lot of space!** They thrive in sandy or sandy loam soil. Give each plant at least 5 feet of space, as their vines spread rapidly. Watermelon can be grown from seed or transplants from a nursery.

Honeybees must pollinate the watermelon blossom for fruit to be produced.

Common Watermelon Growing Areas in Uganda

The fruit is grown in most parts of the Country however it's mostly grown in the following areas.

- Luweero
- Mpigi
- Kayunga
- Bugerere
- Mayuge
- Masaka
- Mubende
- Masindi
- Bushenyi

Common Watermelon Varieties (cultivars) in Uganda

Selecting the best watermelon variety is the most important decision made by a farmer. Planting a variety that is not suited for the available market and the particular production situation leads to lower profits or possibly crop failure. In addition to market acceptability, a variety must have acceptable yield, be adapted to the production area and have the highest level of needed pest resistance available.

Light-green and grey-green watermelons are less subject to sunburn injury than dark-green and striped varieties. Resistance to races of Fusarium wilt and anthracnose disease is an important varietal characteristic to consider. Most varieties have varying levels of resistance to one or more races of Fusarium wilt and/or anthracnose. Resistance to race 2 anthracnose disease, the prevailing race, is not available. None of the watermelon varieties are resistant to all races of Fusarium or

anthracnose, so these diseases can occur even though a variety is usually referred to as being resistant. No varieties are known to have insect or nematode resistance.

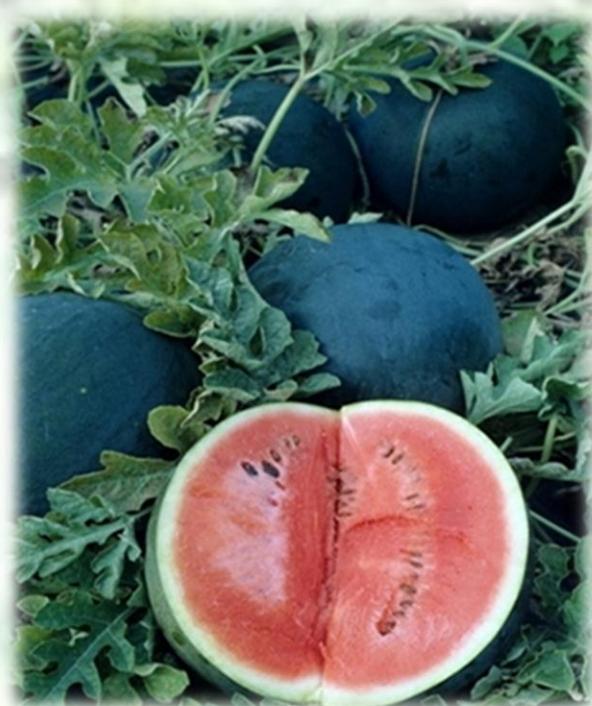
All varieties of watermelon share a distinct mouth-watering, thirst quenching, sugary flesh encased by a solid rind. Some watermelon types have higher sugar content and are sweeter; and some varieties have different colored rind and flesh. Most of us are familiar with the oblong, dark green watermelon with vibrant ruby red pulp, but melons may also be light pink, yellow and even orange.

There are many watermelon varieties all over the world but the major ones in Uganda are:

(a) **Sugar baby**

Features of the sugar baby watermelon variety:

- Round in shape
- Dark green in color;
- The flesh is red;
- Very sweet
- Average weight is 4 to 5kg per fruit
- Maturity time is 75-85 days



(b) **Sukari F1**: Medium to early maturity (90 days) hybrid with good fruit setting ability. Fruits are oblong in shape with an average fruit weight of 7-8 kg - some may grow to up to 12 kg. Rind is light green with dark green stripes. Flesh is deep crimson with good granular texture and high sugar content (12-13%). Has good transport and keeping qualities. Yield up to 20-25 tons/acre.



(c) **Zuri F1**: It takes about 90 days after planting. Round fruits weighing up to 12 kg. Strong rind with an attractive fade resistant dark green colour. Bright red flesh with small seeds. Flesh is crispy, sweet solid and delicious. Has good transport and keeping qualities. Yields up to 25-30 tons/acre.



(d) **Galia F1**: A very popular green-fleshed hybrid which is in great demand in the export market, especially in Europe. Resistant to powdery mildew. The fruit is round with a small cavity and weighs about 1-1.2 kg. The rind is yellow - orange with medium net, the flesh is light green, very sweet, aromatic and excellent taste. Good shelf life.



(e) Charleston Gray



- This variety has an average weight of 9kg.
- It is late maturing (85-110days)
- It is also the best drought resistant variety.

(f) **Early Scarlet F1:** It is early maturing (about 85 days), weighs up to 12 kg and can yield up to 60 tons per acre. It has deep-red flesh and a dark-green striped outer rind.

(g) **Crimson Sweet:**



Description of the Plant

Watermelons are a member of the Cucurbitaceae family, which includes squash, pumpkins, cucumbers, muskmelons and gourds. Individual plants produce both male and female flowers and fruit size varies from 2 to 14 kg, depending on variety. However, seedless varieties will require pollinators.

BOTANY

Watermelon grows as a vine that sends out long runners along the ground.

ROOTS

The watermelon root system formation begins prior to emergence of cotyledons to the soil surface and reaches maximum extension by the time of flowering. Watermelon features a highly branching taproot extending up to 1 m deep into the soil. Some 15, occasionally more, lateral roots branch from the main root.

STEM

The stem is a long, trailing vine reaching, in some seasons, 5 m and more in length, highly branched; forming secondary side shoots which, in turn, branch out. The vines, especially the younger shoots, are covered with long, woolly hairs protecting the plant from overheating.



LEAVES

Watermelon leaves are dark green, with prominent veins. They have three large lobes, each further divided into smaller lobes. Watermelon leaves are heart shaped with three to seven lobes per leaf and are produced on trailing vines.



FLOWERS

Watermelon flowers are yellow, five-petaled flowers about 1 cm in diameter (smaller than some of the other vine fruit). Watermelon vines like squash, pumpkin and cucumber have separate male and female flowers on the same plant. Plants are monoecious with yellow flowers that are approximately 3 cm in diameter.



FRUIT

Fruit shape and appearance are quite varied, ranging from round to cylindrical and a single colour to various striped patterns on the fruit surface.

Watermelon fruit is very large, smooth and oval to round. The skin can be solid green or green striped with yellow. The edible flesh is usually pink with many flat, oval, black seeds throughout. Seedless varieties also exist, as well as types with orange, yellow or white flesh. Small “icebox”

watermelons weigh 3 kg to 4 kg and are produced early. They are well suited for local sale and home gardens.



WATERMELON CULTIVATION PRACTICES

STEP 1: SITE SELECTION

Melons are vining crops that require a lot of space, especially watermelons. For this reason they are not well suited to small gardens and should be grown only in lot-size gardens in urban areas or larger gardens in rural areas. Melons can be grown in small gardens if the vines are trellised and the fruit is supported.



Secondly, the site for watermelon must have enough sunlight. Remove all shade plants; the soil must be fertile with good organic matter content. Melons grow best on a deep, well drained, sandy or sandy loam soil with plenty of organic matter. Heavy soils with a lot of clay often cause small, weak plants that produce fewer melons. Melons prefer soils with a neutral pH, and if the soil is too acidic the plants will drop their blossoms.

Watermelons grow and produce fruits ideally during dry, sunny periods. Excessive rainfall and high humidity reduce productivity by affecting flowering and encouraging the development of leaf diseases. Elevations up to 1,000m normally provide suitable conditions for growth although excessively high temperatures of more than 30°C may be harmful, reducing the degree of fertilization. Stable day-night temperatures promote a rapid growth rate.

STEP 2: LAND PREPARATION



Clear the land of all vegetation covers and plant debris. Spray a systemic herbicide (Glyphosate) to control noxious weeds such as spear grass, etc. Prune trees; remove other shrubs that could impose shade. Plant residue need not be burned as they could be used as mulch material. Conservation tillage is best for watermelon especially when the soil is of sandy loamy texture class. But in cases where the soil texture is clayey, a little ploughing and harrowing may be necessary to facilitate deeper rooting and moisture penetration.

Watermelons grow best on non-saline sandy loam or silt loam soils. Light-textured fields warm up faster in the spring and are therefore favored for early production. Very sandy soils have limited water-holding capacity and must be carefully irrigated and fertilized to allow for high yield potential. Clay soils are generally avoided for watermelon culture, but they can be productive if irrigated with care to prevent prolonged saturation of the root zone (a condition that favors the development of root rot pathogens) and to allow good drainage between irrigations.

If organic matter or manure is added, it should be well composted. Apply manure or compost at 50 to 100 pounds (23kgs to 45kgs) per 1,000 square feet, or about 2 to 4 tons per acre, to build the organic matter content of the soil. Turn the soil over so all organic matter is covered completely.

Since melons require well-drained soils, work the soil into ridges or hills 4 to 8 inches high and 12 to 14 inches wide for planting. Heavier soils require higher ridges.

Place the rows of irrigated watermelons 10 to 12 feet apart, and rows of un-irrigated watermelons 12 to 16 feet apart.

STEP 3: ACQUIRING SEED FOR PLANTING

Selecting the best watermelon variety is the most important decision made by a producer. Planting a variety that is not suited for the available market and the particular production situation leads to lower profits or possibly crop failure.

In addition to market acceptability, a variety must have acceptable yield, be adapted to the production area, and have the highest level of needed pest resistance.

Buy hybrid watermelon seed from the seed store. This guarantees good taste, good fruit sizes, and disease resistance that conform to varietal specification.

Do not use seed from previous watermelon fruit as such will produce crops with low yield, reduced sweetness, and disease susceptibility.

STEP 4: SEED PREPARATION FOR PLANTING

Seedling Production

The seed of triploid watermelons is notoriously sensitive to very specific conditions during germination, as the tiny embryo is contained in a relatively large, hard seed coat. Temperature and moisture control is crucial to success, and too much moisture during germination can kill the seed.

Due to the higher seed cost, and since the outside climate is very difficult to control or predict, it is highly recommended to have seedlings made by a reputable nursery.

A farmer needs about 500gms of watermelon seeds per acre.

Transplanting Seedlings



Seedlings must be transplanted and watered as soon as possible after they have been obtained from the nursery. Planting trays should be kept cool and moist in the shade until used. When transplanting, roots should not be damaged by application of unnecessary pressure around the root module. Soil should be watered into contact with the roots rather than pressed in.

STEP 5: PLANTING

Start the water melon seeds in the ground, right where they are supposed to grow. They do not like transplanting and so not necessary to put the seeds in a nursery bed. Put enough manure to the soil before planting and plough to mix well with the soil. 1 table spoon of DAP (Diammonium phosphate) should be put in every hole and properly mixed with the soil to make sure that the fertilizer does not burn the seed. DAP (Diammonium phosphate) contains phosphorus and helps the crop with root development. Always fertilize the soils after every three to four weeks with CAN (Calcium ammonium nitrate) also known as *nitro-limestone* which helps to fix nitrogen in the soil. Watermelon fruit grow well in soils with alkaline pH. It is therefore wise to add lime to the soil to

maintain an alkaline pH. This should be done at intervals of 3 years. Watermelon germinates in 7 days and the first fruits are seen from day 30.

Spacing

Plant the watermelon seed with a spacing of 2m between rows and 1m between the holes where the seeds are to be planted. If there is not enough rainfall, water regularly to keep the soil moist. It is best to have a watering schedule if using irrigation because the fruit becomes stressed when the pattern changes and this affects the fruit development and the spray program.

Dig holes of 45cm wide, 45cm length and 30cm deep. Mix top soil with 2 spades full of manure and fill the hole leaving a space of 15cm. Sow two seeds per hole. Watermelon vines require considerable space.

Two crops can be planted in a year. Plant the first crop with the first or second rain, which occur mostly around February or early March (at this time moisture is not so much; as the plant establishes, the moisture increases into the growing season). The crop sown at this time will hit the market between May and June.

Plant the second crop in September (at this time, the moisture is reduced as the season is gradually folding out). The crop planted at this time will hit the market around December.

Growing Watermelons in Containers



Watermelon has long taproot and it does not transplant well that is why it is better to sow the seeds directly in a pot. Sow 3-4 seeds directly in a pot once the temperature starts to reach 65°F (19°C) and above in the dry season. The germination takes place within 6 to 10 days. Thin out and leave only one of the strongest seedlings per pot.

Choosing a Pot

Growing watermelon in containers is not much difficult though tricky. You need to understand the basics. As watermelon has long taproot choosing a deep pot is essential. A large pot or bucket that is at least 2 feet deep and half wide is required.

Requirements for growing watermelon in containers

Watermelons should be grown in a sunny position. If you are growing it on a balcony or on a roof garden where space is tight, growing watermelon vertically on a trellis is a solution. Trellis should be minimum 4 feet tall and sturdy enough to carry the weight of melons.

Temperature

Watermelons are warm weather annuals but they can be planted in both tropical and temperate regions easily. It is possible to grow watermelons in temperature around 50-95⁰F (10-35⁰C). The optimum growing temperature is around 65-85⁰F (18-30⁰C).

Soil

Sandy and loamy soil is suitable for growing watermelons. Ideal soil pH is around 6-6.8. Avoid compact, clayey soils. Airy and well-drained substrate promotes the growth of the plant. Also, application of the well-rotted horse, rabbit or cow manure improves the texture of soil and provides nutrients constantly.

Water

Watermelon requires a lot of water. Keep the soil evenly moist but not wet, the water must drain freely from the bottom. When growing watermelon in containers, you'll need to water the plant every day and sometimes twice in a warm day. Once the fruits start to swell up and mature, reduce the watering. In that period, water carefully and moderately. Avoid overwatering and under watering both to get the sweetest melons.

STEP 6: WEED CONTROL



It is important to weed the land to remove weeds that compete for water and nutrients with the plant. It can be done the 2nd or 3rd week after germination using herbicides or hoe.

If not controlled continuously, weeds can reduce watermelon quality and yields. Weeds compete for sunlight and moisture and create conditions favorable for disease and insect growth.

Weed control consists of hand weeding, mechanical cultivation, and the use of herbicides. Increasingly, growers are using black plastic mulch and herbicides as a weed control method. Plastic mulch controls weeds within the rows, while herbicides are used for weed control between the rows.

Apply pre-emergence herbicide prior to or within 12 hours of planting.

Several brands of pre-emergence herbicides are available to control germinating broadleaf weeds and grasses in seeded watermelons if used properly. Herbicides are economical when used appropriately.

The following herbicides are commonly used in Uganda.

Shallow mechanical cultivation or hoe weeding are needed to control weeds before the vines start trailing. Pruning roots and vines with cultivating equipment slows melon development and reduces yield.

Watermelon vines should be mulched to keep down the weeds and conserve moisture, but the mulch should not be applied until the soil is thoroughly warm. In the meantime, keep the area clean with shallow hoeing. Straw, hay or chopped leaves are the best mulching materials to use.

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