MINT GROWER'S MANUAL

Scientific name: *Mentha spp*



Photo by: Edita Medeina/ Shutterstock.com

1.Introduction

Mint is a perennial plant that belongs to the *Lamiaceae* family and is known for its refreshing flavor and fragrance.

1.1 Uses

Mint has various uses, including culinary, medicinal, and cosmetic purposes. In the culinary industry, mint is a popular herb used to add flavor to dishes such as tea, salads, sauces, and meat. In the medicinal industry, mint is used to treat various ailments such as indigestion, respiratory disorders, and headaches. Mint is also used in cosmetic products such as toothpaste, mouthwash, and skincare products due to its refreshing scent and anti-inflammatory properties.

1.2 Varieties in Kenya

There are several mint varieties that are suitable for cultivation in Kenya, each with its unique properties and uses. Some of the common mint varieties available in Kenya are as shown below:

Varieties	**Crop description**	**Photo**
Peppermint (*Mentha piperita*)	The plant has dark green leaves with a purple tinge and produces small pink or purple flowers.	 Photo: Skyprayer2005/Shutterstock.com

Spearmint *(Mentha spicata)*	The plant has bright green leaves with a slightly serrated edge and produces pink or white flowers.	 Photo: M. Schuppich/Shutterstock.com
Pennyroyal *(Mentha pulegium)*	This variety has small, round leaves with a greenish-gray color and produces pale pink or white flowers	 Photo: Pixiversal/ Shutterstock.com
Corsican Mint *(Mentha requienii)*	Corsican mint is a small mint variety that is suitable for growing in pots and containers. It has small, round leaves with a bright green color and produces pink or lilac flowers.	 Photo: Guadalupe Polito/ Shutterstock.com
Spearmint *(Mentha spicata)*	The plant has bright green leaves with a slightly serrated edge and produces pink or white flowers	 Photo: M. Schuppich/ Shutterstock.com

The choice of variety will be guided by the market survey.

1.3 Counties where grown

In Kenya, the major production counties are; Kiambu, Murang'a, Nyeri, Nakuru, Baringo, Narok, Machakos, Kitui, Makueni, Kakamega, Bungoma, and Vihiga counties.

1.4 Ecological condition

Mint grow best in the cool humid highlands and hot climates under the following conditions;

Altitude- 600-1200m above sea level
Temperature- 15℃-25℃
Rainfall-450-500mm annually
Soil pH- 6.0-6.8

2.0 Good Agricultural Practices (GAPs)

Horticulture industry in Kenya is guided by a code of practice KS1758 which is a standard for flowers, vegetable, fruits, herbs and spices for both local and export market. The standard aims at ensuring food safety, environmental sustainability and social accountability by following good agricultural practices from production, processing, transportation and marketing of fresh produce.

The manual seeks to adopt climate smart technologies aimed at increasing production and productivity, enhancing resilience and reducing GHG emissions.

2.1 Crop establishment

Before crop establishment, there is need to develop a cropping calendar as guided by market survey findings.

2.1.1 Land preparation

Land preparation should involve, ploughing and harrowing the soil sufficiently to achieve a fine tilth, debris and clog free soil. Incorporate 8 tons of farm yard manure in one acre of land.

2.1.2 Soil and water testing:

Soil testing is recommended before planting to guide on fertilizer and manure application and irrigation water suitability.

2.1.3 Propagation

Mint propagation can be done through seeds or cuttings, with cuttings being the preferred method due to their higher success rate.

If planting seeds, sow them directly into the soil at a depth of 1cm to 1.2 cm, spacing them 20cm x 20cm apart. Cover the seeds with soil, water thoroughly, and keep the soil moist but not waterlogged.

If planting cuttings, the 7cm stem cuttings should be obtained from healthy plants Remove the lower leaves, leaving only 2 to 3 leaves at the top. Dip the cut end in rooting hormone powder. Plant the cuttings in well-prepared beds or in pots filled with rich soil burying the lower (1/3) of the stem. Water thoroughly and keep the soil moist until the cutting roots. Alternatively, sourcing of planting materials should be from certified sources or registered stockists.

2.1.4 Spacing

The plants should be planted in a 1meter bed and spaced at least 20cm apart to allow for proper growth and prevent overcrowding.

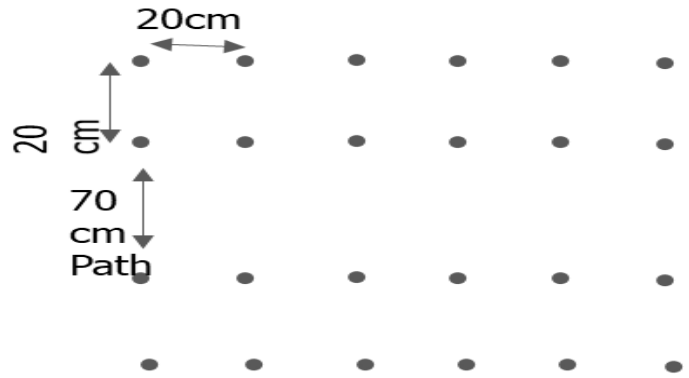

Fig1: Illustration of spacing for Mint

2.2 Crop Management

2.2.1 Crop water requirement

This is determined by the stage of the crop, soil type and prevailing climatic conditions. Water requirement of between 450mm and 500mm per growing season is optimum. Otherwise irrigation is necessary during the growing season.

2.2.2 Crop Nutrition

The crop nutrition is summarized in the table below.

Input Type	Applications	When to apply	Amount to apply
Manure	First application	Farrow preparation	8 Tons per acre
CAN	Second application	Planting	50kg per acre
TSP	Third application	During growing season	50kg per acre

2.2.3 Weeding and Mulching

Mint require shallow cultivation to avoid damaging plant root system. This is done when the weeds are small to prevent the weeds from competing with the target crop for growth factors.

The land should be mulched with organic material such as hay or straw to conserve soil moisture and suppress weed growth.

2.2.4 Pest and Disease Management

Integrated crop management (ICM) is the best option for food safety. These practices include scouting of pests, field hygiene, proper spacing, physical methods, biological methods like use of pheromone traps and others that will only give option of using Pest Protection Products as last option The products must be registered for use on the crop in Kenya. (www.pcpb.go.ke/list-of-registered-products/)

Major pests and diseases

Pest/diseases	Symptoms	Control
Mint caterpillar *(Pyrausta aurata)*  Photo: Clemson University	Young growth at the shoot tips is often damaged, leaves may be curled over, small amounts of fine webbing and tiny black pellets of caterpillar excrement will be present.	Hand pick if few if many spray B.T.
Mint borer (*Fumibotys fumalis)*  Photo: Kristi water worth	Yellowing of leaves, smaller leaves and reduced shoot growth, and yield. Damage ranges from just a few feeding sites to complete root destruction.	Ploughing and double disking or strip tillage both provide adequate control of mint root borer.
Spider mites (*Tetranychidae)*  Photo: Getty Images	Defoliation. Stippling or discolored spotting on leaves. Extensive webbing Visible presence of pests Flecking, discoloration (bronzing), and scorching of leaves.	A blast of water can wash off the mites. Use organic treatments like garlic, water and hydrogen peroxide. Apply potassium salts to your plants. Beneficial insects that prey on spider mites, such as ladybugs can be introduced. Wipe the plants down with rubbing alcohol. Use stickers.

Aphids (*aphisgossypiimyuzus persic)*  Photo: Getty Images.	suck plant sap, which can reduce plant growth; they also secrete honeydew, on which sooty moulds growth. Sooty mould reduces their market value.	Hand pick them and remove the infected portions of the plant. Propagate new mint plant from healthy cuttings. Spray with insecticidal soap or essential oils.
Mint rust *(puccinia methae)*  Photo: cesarcalderon Bugwood.org	Seen as Pale and distorted shoots, dusty orange pustules on the stems and leaves, pustule may change to dusty yellow or black in color in later stage or large areas of leaf tissue die.	Plant resistant varieties. Remove diseased plant parts. Sterilize contaminated equipment.
Powdery mild dew (*Moton Aboretum)*  Photo:The Spruce/Almar creative	Powdery white patches are developed on the upper and lower surfaces of the leaves and stems. Under favorable conditions, the disease causes severe losses and also reduces oil.	Pluck off infected (yellow, wilted) mint leaves. Swap out the top layer of soil. Use fungicides including potassium bicarbonate, neem oil, sulfur, or copper.

Anthracnose (*Colletotrichum* species)  Photo: DavidB.Langston, University of Georgia, Bugwood	Small, sunken brown spots to appear on the lower leaves and stems. These spots enlarge to form oval lesions with light gray centers and reddish-brown borders. It causes defoliation and cankers, which may lead to splitting of the stem.	Preventative measures such as crop rotation and proper sanitation to minimize their occurrence as well as mancozeb and copper sprays after every 2 weeks.
Verticilium wilt (*verticiliumdahli*)  Photo: Howard F. Schwartz, Colorado State University	Leaves wilting, curling and turning yellow or red. Leaves turning brown and dropping off. Stems and branches dying back.	Remove and dispose off the plant. Prune the affected branches and dispose off immediately.

2.3 Harvesting

2.3.1 Maturity indices

Mint takes about 3 months to mature. Wait until just before the plant blooms, when the flavor is most intense, then cut the whole plant to just above the first or second set of leaves. In the process, you will remove the yellowing lower leaves and promote bushier growth.

2.3.2 Harvesting method

Mint is harvested by cutting the leaves 2-3 cm above the ground using a sharp knife or scissors. The harvested plants should be washed and packed in perforated plastic bags to maintain freshness. Mint can be sold fresh or dried in local and international markets.

2.3.3 Expected yield

An average yield of 7 tons per acre is achievable per year with good crop management. However, it can vary depending on the farming practices employed, type of variety grown, soil conditions and climate.

2.4 Post harvest activities.

2.4.1 Cooling

After harvesting, post-harvest cooling to remove excessive field-heat aids greatly in maintaining quality and substantially lengthens the shelf-life of the produce.

2.4.2 Sorting

Remove the diseased, deformed and poor-quality shoots.

2.4.3 Grading and bunching

Grading is done according to the various sizes. The harvested mint is sized in 10 to 22 cm length as per customer requirement and bunched into 100 grams /

2.4.4 Packaging

The bunches are put in a polythene bag and packed into 1kg boxes for fresh mint. Any other type of packaging depends on the market specification.

2.4.5 Drying

Older shoots can also be harvested for solar drying and packed in air tight containers, or according to market requirements.

2.4.6 Transportation

The packed produce should be transported in closed trucks as per the crops (Horticultural crops) Regulation 2020.

3.0 Gross Margin Analysis(1Acre) as at 2024

Item	**Unit**	**Quantity**	**cost/unit**	**Total Amount in (Kes)**	
				Season 1	**Season 2**
Gross income	Ksh	7,000	300	**2,100,000**	**2,100,000**
Production cost					
Soil analysis	Sample	1	2,500	2,500	-
Water analysis	Sample	1	1,000	1,000	-
Ploughing	Acre	1	4,000	4,000	-
Harrowing	Acre	1	4,000	4,000	-
Manure	Tons	8	1000	8,000	8,000
Bed making	Mds	10	500	5,000	-
Drip lines	Rolls	5	10,000	50,000	-
Tank plat form	pc	1	30,000	30,000	-
Tank	Pc	1	25,000	25,000	-
Plumbing works/fittings	Ksh	1	35,000	35,000	-
Pump/Solar power	pcs	1	100,000	100,000	-
Planting materials	pcs	5000	6	30,000	-
Planting labour	Mds	10	500	5,000	-
Fertilizer	kg	50	100	5,000	5,000
Foliar	Lts	5	1,000	5,000	5,000
Pesticides	Lts	3	1,000	3,000	3,000
Fungicides	gms	300	10	3,000	3,000
Traps	pcs	20	200	4,000	4,000
(Labour weeding, pruning, harvesting, spraying, hosing, cleaning)	Mds	50	500	25,000	25,000
Crates	Pcs	20	500	10,000	-
Packaging materials	Pcs	400	50	20,000	20,000
Charcoal cooler	Pcs	1	100,000	100,000	-
Total Production cost				**474,500**	**73,000**
Gross margins (Gross Income-Total production cost)				**1,625,000**	**2,027,000**

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