

CROP PRODUCTION VI
FIELD PRACTICES FOR MAIZE, MILLET, SORGHUM, BEANS AND
RICE: HARVESTING OF COTTON PYRETHRUM, SUGAR CANE COFFE
AND TEA

This topic entails the following:

- Description of management practices of the food crops from planting to harvesting and marketing.
- Economic value of food crops and industrial crops

The following relevant questions and their answers in this topic will greatly motivate and help the user to comprehend and understand the required concepts and practices:

1. List **four** management practices carried out in maize field at 45cm high
2. Why is it not recommended to use sisal bags in handling cotton
3. Describe the production of rice under the following sub-headings:-
 - (a) Land preparation
 - (b) Water control
 - (c) Fertilizer application
 - (d) Weed control
 - (ii) Describe the environmental conditions that may lead to low crop yields
4. Describe the production of maize for dry grain production under the following sub-headings:-
 - (a) Seedbed preparation
 - (b) Planting
 - (c) Weed control
 - (d) Pest control
 - (e) Disease control
 - (f) Harvesting
5. Two precautions taken when harvesting cotton
6. Describe production of maize under the following sub-headings ;
 - (a) Varieties
 - (b) planting

- (c) pest and pest control
- (d) harvesting and storage
- 7. Describe the field production of maize under the following sub headings
 - a) Ecological requirement
 - b) Varieties
 - c) Seedbed preparation
 - d) Pests and diseases
 - e) Harvesting
- 8.
 - a) Discuss harvesting of cotton
 - b) Explain the roles of Agricultural co-operatives in Kenya
- 9. Describe the production of maize under the following sub-headings:
 - (a) Ecological requirements
 - (b) Land preparation
 - (c) Planting and field management
 - (d) Pests and disease control
 - (e) Harvesting and marketing
- 10. Give **two** precautions measures a farmer should put into consideration when harvesting cotton
- 11. Describe the production of beans under the following sub headings:
 - (a) Ecological requirements
 - (b) Seedbed preparation
 - (c) Planting
 - (d) Pest and pest control

CROP PRODUCTION VI
FIELD PRACTICES FOR MAIZE, MILLET, SORGHUM, BEANS AND
RICE: HARVESTING OF COTTON PYRETHRUM, SUGAR CANE COFFE
AND TEA

- 1. four management practices carried out in maize field at 45cm high
 - Weed control
 - Thinning
 - Farthing up

- Top dressing
 - Pest and disease control
 - Rouging (1/2x4=2mks)
2. To prevent contamination of the cotton by the sisal strings
3. (i) (a) Land preparation
- Land is ploughed /dug
 - Ploughs/jembes used for primary cultivation
 - The land is leveled
 - Bunds are constructed around the plots to control water
 - The land is flooded up to a depth of 5cm
 - The soil-water mixture should be worked on until a fine mud is produced
- (b) Water control
- Bunds are constructed around the plots to control the water level
 - The land is flooded with water to a depth of 5cm before transplanting
 - The level of water is gradually increased to a height of 15cm by the time the rice crop is fully grown
 - Water should be allowed to flow slowly through the field
 - Old water should be drained and fresh one added where the flow of water is not possible
 - Old water should be drained every 2-3weeks
 - The field should be drained off 3weeks before harvesting (1mk x any 4pts = 4mks)
- (c) Fertilizer application
- Sulphate of Ammonia is applied in the nursery before sowing
- Sulphate of Ammonia s applied at the rate of 25kg for each nursery unit of 18.5m x 18.5m
 - Sulphate of Ammonia is applied in two splits before transplanting and 40days after transplanting
 - Sulphate of ammonia is applied at the rate of 125kg/ha before transplanting and 125kg/ha about 40days after transplanting
 - Double super phosphate is broadcasted in the field before transplanting
 - DSP is applied at the rate of 120kg/ha (1mk x any3pts = 3mks)
- (d) Weed control
- Flooding
 - Uprooting
 - Use of herbicides such as propanil against aquatic weeds (1 x any 3pts = 3mks)
- (ii) The environmental conditions that may lead to low crop yields
- Poor soil fertility /infertile soil
 - Damage by hailstorms

- Less rainfall/unreliable/drought
- Poor soil type resulting into leaching or water logging
- Inappropriate soil PH
- Inappropriate temperature (too low or high)
- Excessive wind leading to increase in water loss from the soil
- Extreme relative humidity
- Extreme of light intensity
- Topography / some attitudes e.g. very high may limit crop growth (1mk x any 7pts = 7mks)

Seedbed preparation

- Prepare land in dry period/ early/ before onset of rains
- Clear the land
- Remove stumps/ perennial weeds
- Plough/ primary cultivation
- Harrow/ carry out secondary cultivation
(1x5=5 mks)

Planting - Early planting/ plant at onset of rains

- Select suitable variety/ certified seed
- Depth of planting 2.5 cm-10 cm
- Plant with 1-2 seeds per hole
- Plant with DAP/ SSP/ DSP at rate of 120kg/ ha DAP/100-150kg/ha/DSP
- Plant 1-2 seeds per hole
- Spacing 75-90cmx23-30 cm

Weeding- Uproot weeds

- Tillage
- Use herbicides

Pest control

- Use chemicals/ pesticides
- Early planting
- Planting certify seeds
- Rogueing/ field hygiene

Disease control- Uprooting and burning affected crop/rogueing

- Use appropriate chemicals
- Crop rotation
- Field hygiene

Harvesting –Harvested after 4-6 months depending on variety and ecological time

- Harvested when dry 14-20 % moisture content
- Stalk, are cut and stoked in the field
- Cabs are removed by hand

4. Two precautions taken when harvesting cotton

- Avoid mixing with foreign materials
 - Harvesting during the dry weather
 - During harvesting separate grade A and B
Don't put in gunny/sisal bags
5. a) - Maize varieties
- Different varieties are developed for different ecological zones
 - Example: Hybrids and composites available
 - Kitale hybrids e.g. 612, 622 for high and medium altitudes
 - Embu hybrids 511, 513 e.t.c. for medium altitudes
 - Composites for lower altitudes like katumani composite, coast composite e.t.c. (1x5=5 mks)
- b) Planting
- Plant early at the onset of rains
 - Dry planting is encouraged in low rainfall areas
 - Depth of planting 3 – 10 cm
 - One – two (1-2) seeds per hole
 - Spacing vary with variety (i.e. 20-30cm x 75-90cm)
 - Plant either manually or use planters
(1x5=5 mks)
- c) Pest and pest control
- Maize stalk borer – early planting, rogueing, destroy crop remains, apply appropriate pesticides (placed in cone)
 - Army worm – use of recommended pesticides
 - Aphid – spray with appropriate pesticides
 - Maize weevil – proper drying and dusting with pesticides
 - Red flour beetle – good storage
 - Rats – use rat proof stores, cats, traps or poison
- Pests $5 \times \frac{1}{2} = 2 \frac{1}{2}$
Control $5 \times \frac{1}{2} = 2 \frac{1}{2}$
- d) - Harvesting and storage
- Storing in cool areas can be practiced
 - Carry out direct delusking in other warm areas
 - Store in bulk (grains)
 - Stored on cobs
Can be stored in bags
6. a) Ecological requirement (3mks)
- i) Altitude 0-2200m above sea level
 - ii) SOU- fertile alluvial or loam soil well drained
 - iii) temperature-moderate
 - iv) rainfall-moderate
 - v) PH-neutral or alkaline
- b) Varieties (3mks)
- Kenya flat complex
 - Double comb variety
 - Kitale hybrids
 - Embu hybrids
 - Coast composites

- Katumani composite
- c) Seedbed preparation (5mks)

- early land preparation to allow rotting of vegetation
- clearing of land using appropriate tools
- Ploughing done using appropriate implementing e.g. disc or mould board plough
- harrowing is done where the seedbed is rough to a medium tilth
- does not require a very fine tilth
- eradicate perennial weeds

d) Pests and diseases (3mks)

PEST	CONTROL
Maize stalk borer	• Early planting • rogueing • Burning infected maize crops • Use of pesticides
Army worm	• Dusting with appropriate chemicals
aphids	• Spraying using suitable insecticides
birds	• Scared away
Maize weevil	• Dusting maize comb or shelled maize with appropriate chemical

	• Proper storage hygiene
rats	• Use of rat proof stores, cats, traps • Bush clearing around stores
(1x4=4mks)	
DISEASES	CONTROL
White leaf blight	• Planting resistant variety
Maize streak	• Early planting • Use of resistant varieties • rogueing
rust	Planting resistant variety
smut	Crop rotation
(2x1=2mks)	

e) Harvesting

- Period varies from one variety to another
- In some cases stalks are cut and stocked in the field to allow combs to dry Properly followed by removal of the combs which are stoked in the store
- De-husking directly in the field
- Use of the combined harvesters

7. a) Harvesting of cotton

- Harvesting is the picking of the cotton lint
- Harvesting is done 4 – 5 months after planting
- Cotton picking is done at weekly interval
- Picked lint is placed clean containers/ never use sisal bags whose fibres may mix with the lint
- Never pick wet lint

- Grade lint as it is picked in the field
- Place clean lint AR (safi) in one container and BR(fifi) in another container
- Pick lint which is exposed/ fully opened and the lint dry
- Harvesting is done in dry season
- Avoid picking lint with contamination such as twigs, dry leaves or soil

b) The role of Agricultural Co-operatives in Kenya

- Co-operators pool their resources together to buy expensive machinery e.g. tractor for use by the members
- Provide education/ technical information to members
- Provide loans to members in form of inputs and cash
- Negotiate for higher prices for members
- Reduce overhead costs e.g. transportation, storage and use of machinery
- Bargain with supplier to give discount on seed, fertilizers and other farm inputs/ provide inputs at lower prices
- Provide employment for their members
- Benefit members from lower taxes charged
- Provide strong bargaining power for members on policy issues
- Market farmers produce
- Invest and pay out returns to members in form of dividends
- Help to negotiate for loans for members without security
- Some provide banking services to members

8. Field production of maize under the following sub-headings

a) Ecological requirements

- Altitude (0 – 2200) m above sea level
- Temperatures 23 – 27c
- Rainfall 750mm-1250mm
- Soils, fertile, well drained PH 7 -8

b) Field preparations

- Done during the dry season
- Disc, mold board ploughing to a depth of 20cm
- Disk harrowing to break the soil clods to a medium tilth
- Ridging done at spacing of 75cm apart

c) Planting and field management

- Seeds placed in the furrows at a spacing of 30cm and covered with soil mixed

with DAP

- Gapping, thinning done depending on germination percentage
- Clean weeding done after every 4 weeks interval.
- Top dressing done at interval i.e. 1st done with CAN when the crop is knee

high, 2nd when the

crop is tasseling

d) Pests and disease control

- Spraying the crop with fungicides (head smut control)
- Uprooting fully infected crops and burning them

- Spraying the crop with insecticides and dusty the base of the leaves (control stalk borer)

- Field hygiene

e) Harvesting and marketing

- Hand harvested by plucking the cobs/ or machine harvested

- Shelled, dusted for storage pests and packed

- Delivered to millers consumers

- Delivered to national cereals and produce board

9. Give two precautions measures a farmer should put into consideration when harvesting *RCH*

- Lint should not be mixed with foreign matter

- Use different containers for different cotton grades

- Avoid picking during wet weather

Avoid using gunning bags

10. (a) - Rainfall that is well distributed

Well drained fertile soils

Neutral soils

Warm temperatures

(b) Clear the land/vegetation plough to appropriate tilth

Levelise for uniform planting

(c) – Make holes 45 x 15cm

- put in 1 teaspoonful of DAP and cover with soils lightly

- Put 1 seed per hole and cover with soil when soils are moist

(d)pests - Been aphids

Been brachids

American ball worm

Golden ring moth

Hens at flowering stage

Control – spray using appropriate pesticide e.g diazinol