**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 plaughed /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 warm – 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 5x ½ = 2 ½

 Control 5x ½ = 2 ½

 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 ids 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 warm | * 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 anther
* 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 ferrous 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 tussling

 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 e 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 plought to appropriate tilth

 Levelise for uniform planting

 (c) – Make holes 45 x 15cm

 - put in 1 teas spoonful of DAP and cover with soils lightly

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

 (d)pests - Been aphids

 Been brachids

 American ball worm

 Golden ring month

 Hens at flowering stage

 Control – spray using appropriate pesticide e.g diazinol