

MARYA daughter

INTERNATIONAL CERTIFICATE AGRICULTURAL PRACTICAL

DIAGRAMS

BY

WITS NG'OMBA

CALL +2658529886

2008

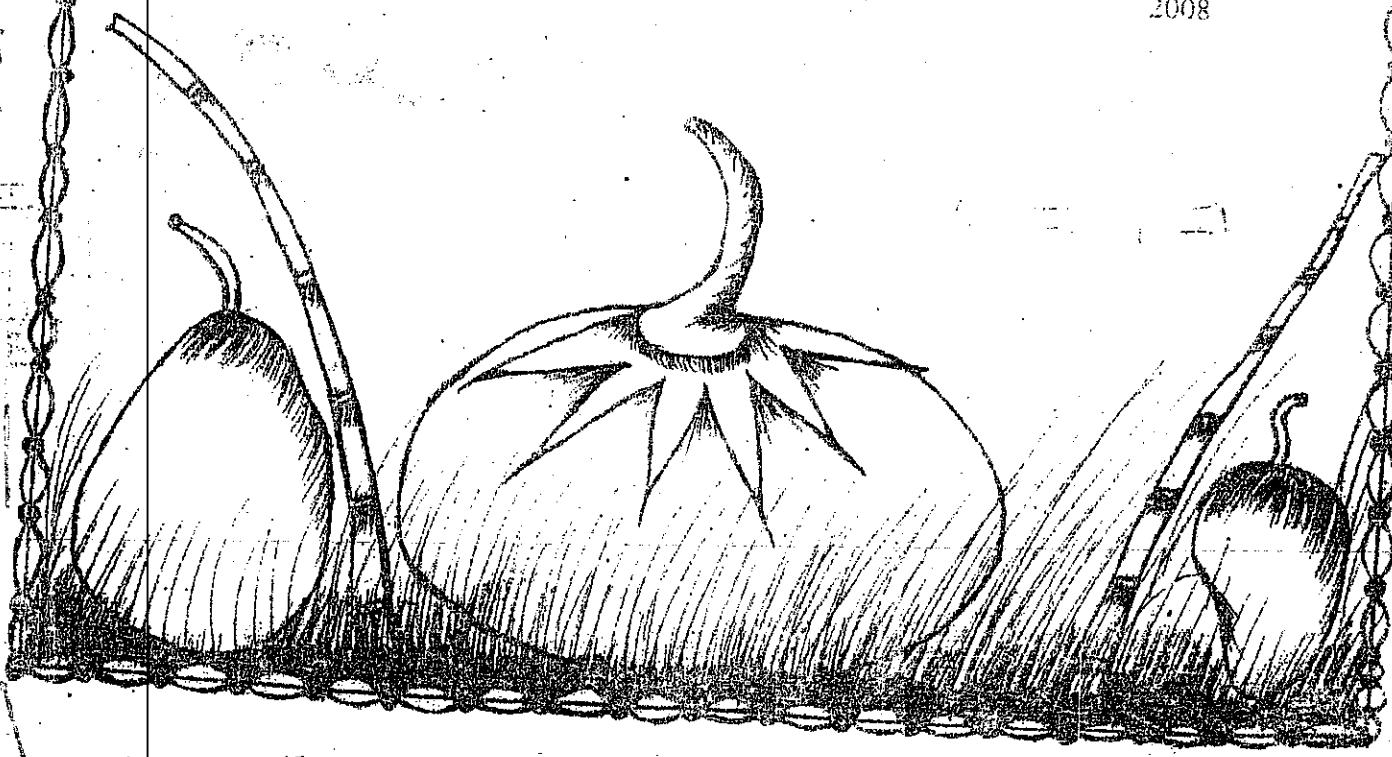


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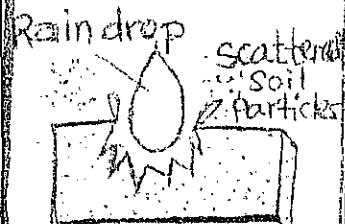
TOPIC

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PARTS AND FUNCTIONS: BEANS, TOMATO, ROOTS
(FROM PAGE 21 ONWARDS)

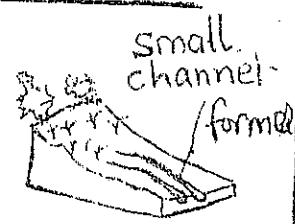
THE FOUR TYPES OF SOIL EROSION

SPLASH



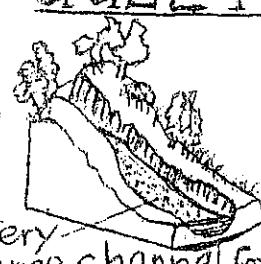
ON BARE LAND

RILL



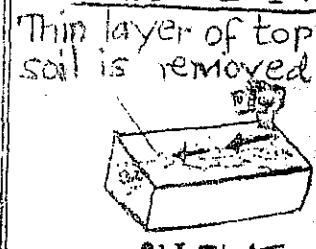
ON GENTLE SLOPE

GULLY

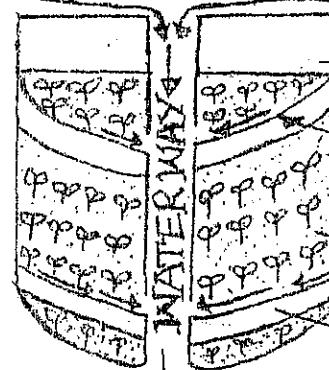


ON VERY STEEP LAND

SHEET



ON FLAT LAND



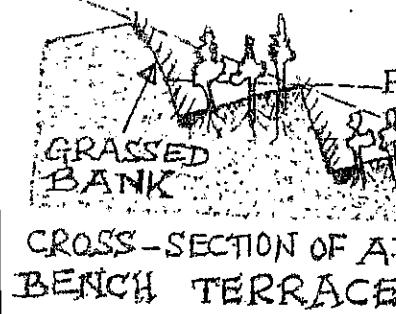
STORM DRAIN: Divert run-off water to water way.
GRADED:

BUND: Divert run-off water safely off the farm land to a water way.

CROP FIELD GRADED BUND

PHYSICAL MEASURES TO CONTROL SOIL EROSION (OTHERS): Box-ridging, Dams

WATER WAY: Carry water off a catchment area safely into a lake (water body).



FLAT

FLAT
ORIGINAL
SLOPE

TERRACE
SLOPES
BACKWARDS

PHYSICAL MEASURE

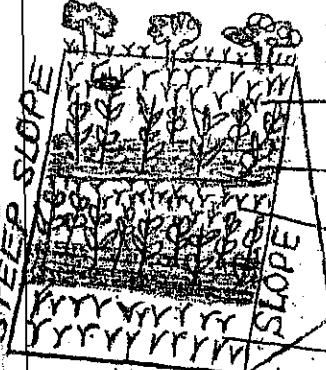
Terraces reduce run-off speed. (increase infiltration)

CONTOUR RIDGES

STRIP
CROPPING

Normal vegetation bars floods on the hill

STRIP CROPPING BIOLOGICAL METHOD



GRASS STRIP

CROP STRIP

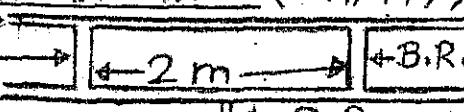
GRASS STRIP

CROP STRIP
GRASS STRIP

GRASS STRIPS REDUCE RUN-OFF SPEED * LOW EROSION IN CROP STRIPS

BOX OR TIE-RIDGES (B.R./T.R.)

Main ridge →



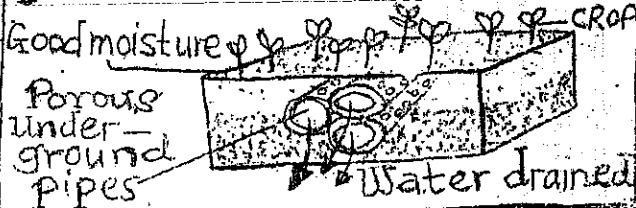
1. SURFACE DRAINAGE METHODS RAISED BED

DRY SOIL

WATER LEVEL

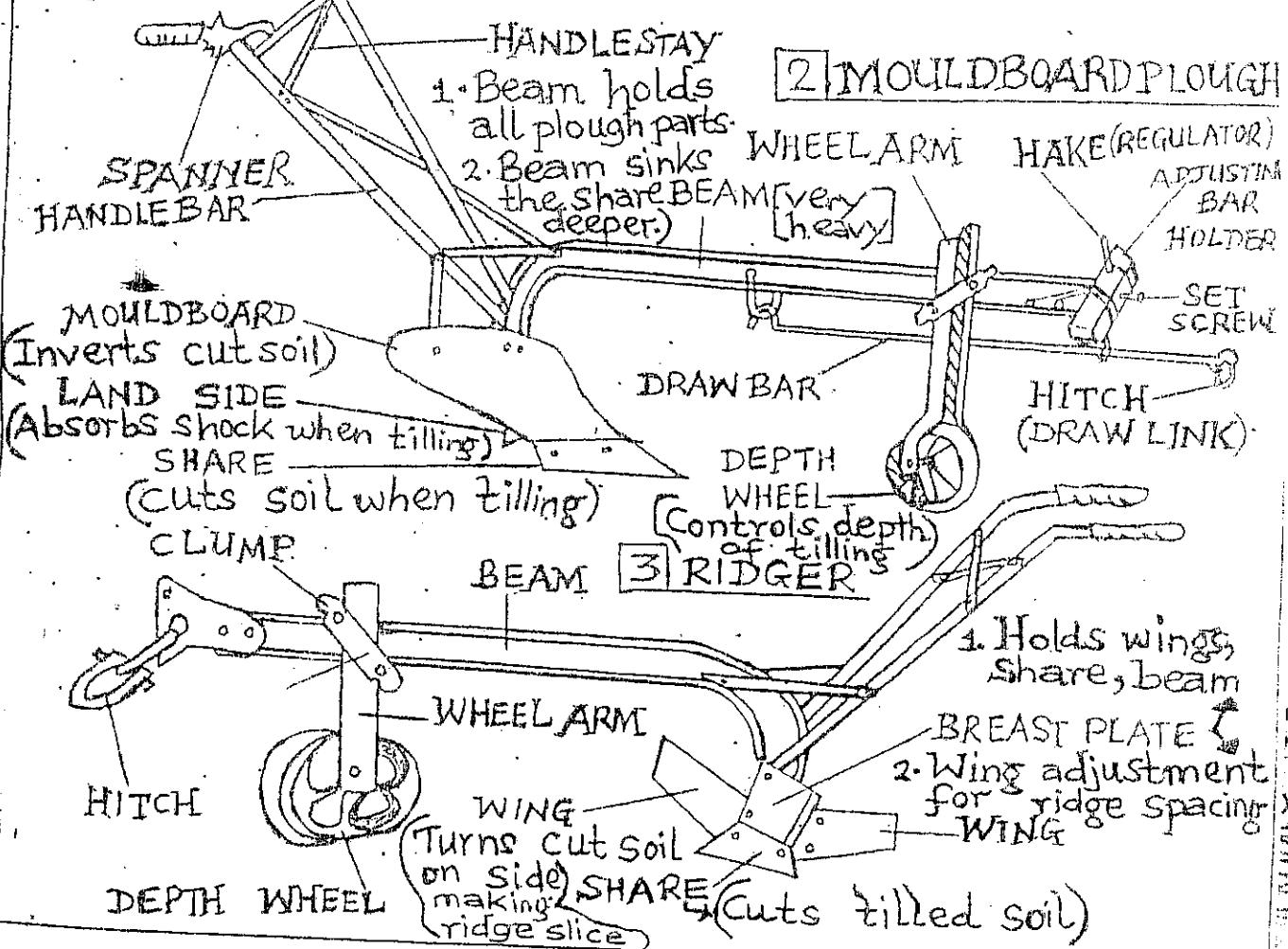
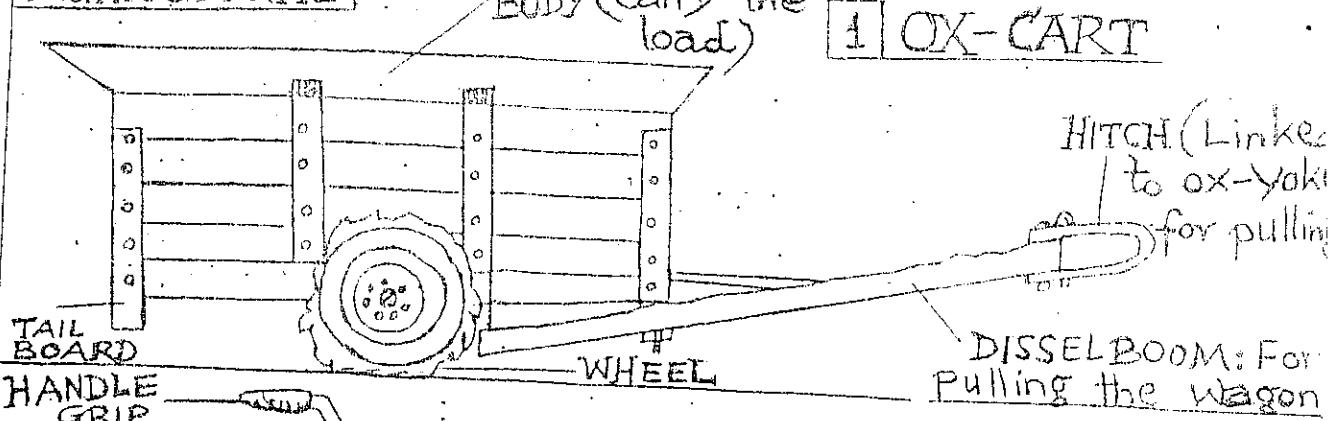
WATER-LOGGED SOIL

b. SUB-SURFACE DRAINAGE

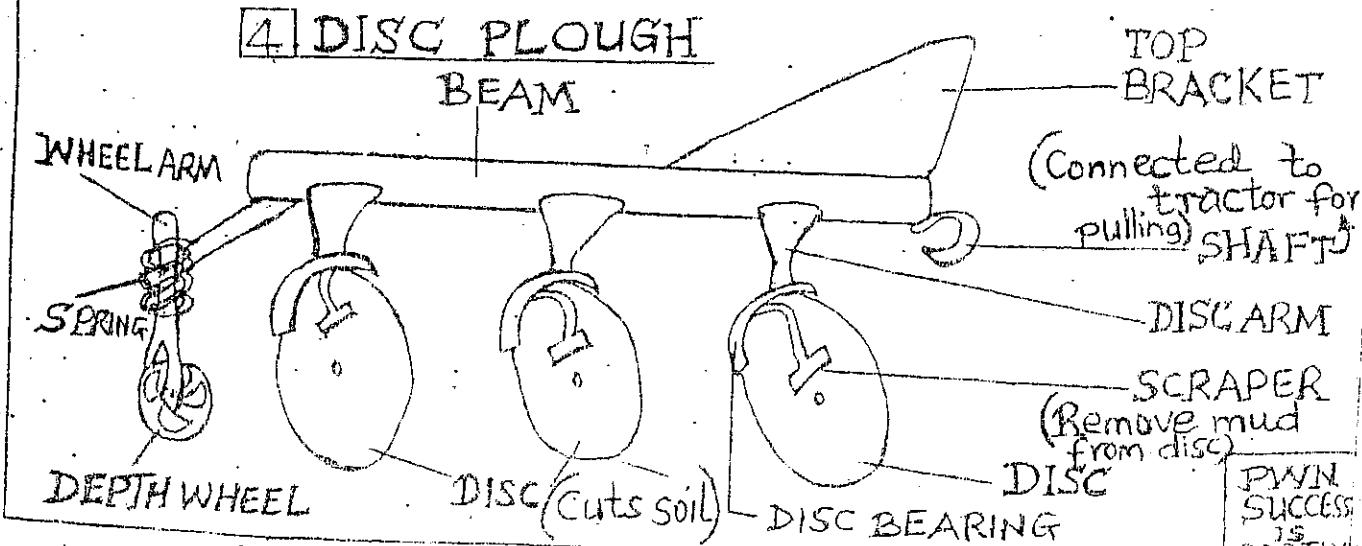


FARM MACHINES OR IMPLEMENTS OR EQUIPMENT

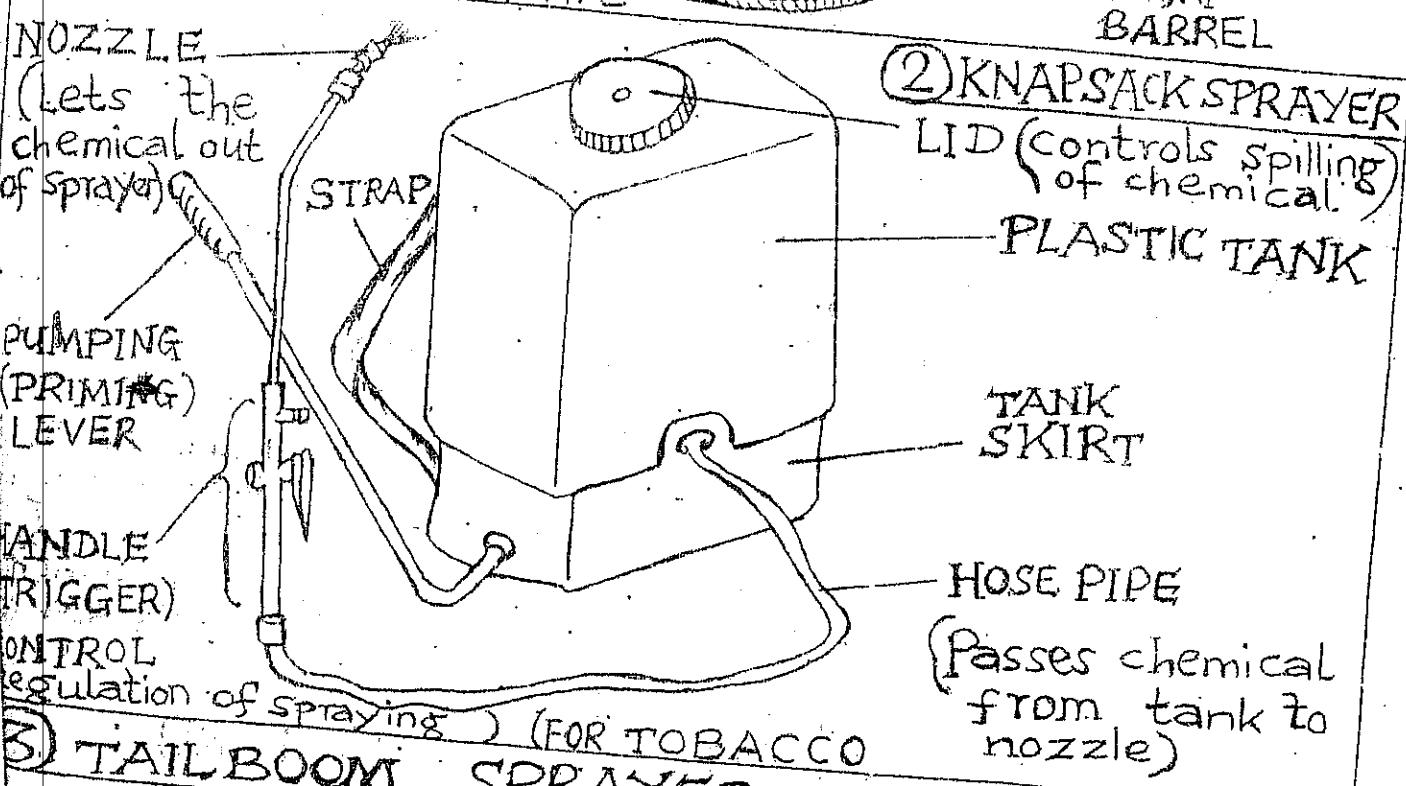
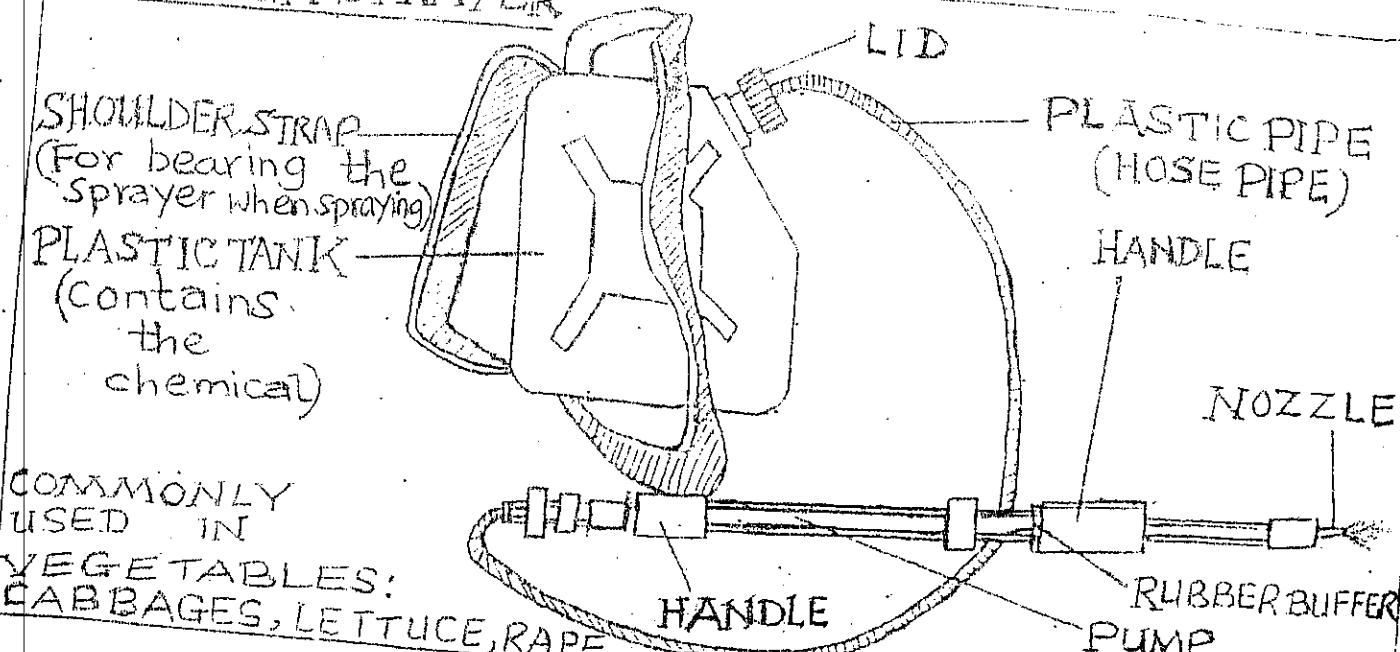
AGRICULTURE



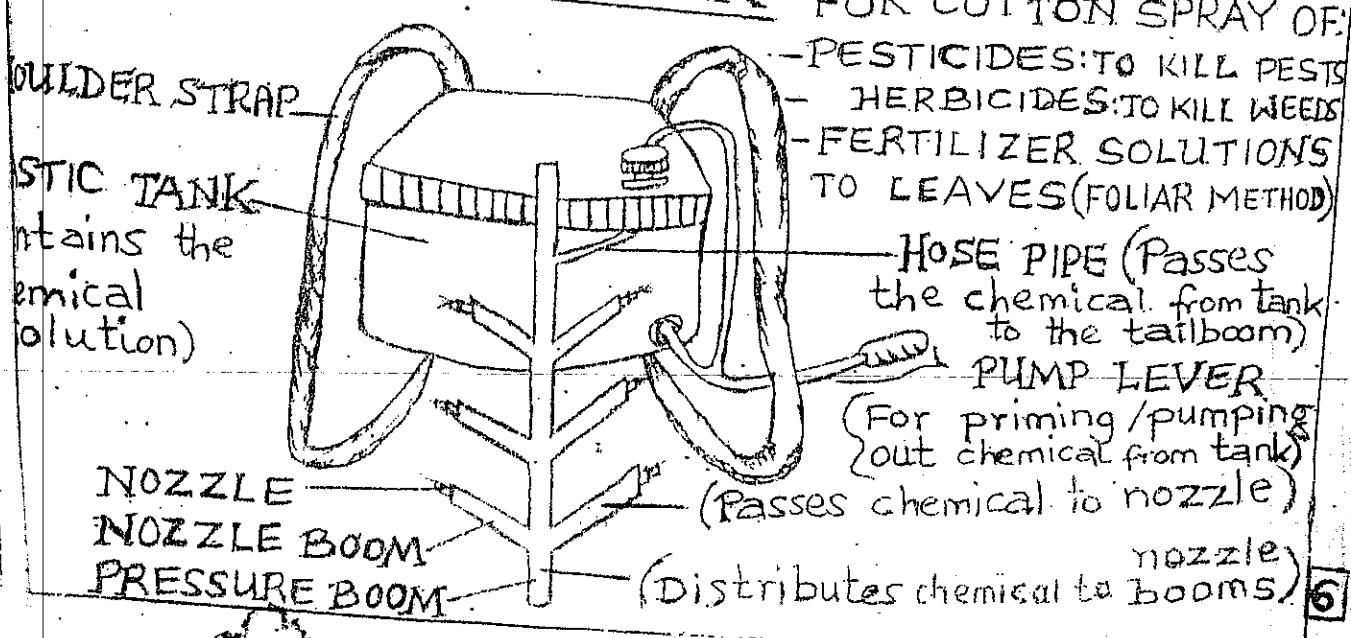
4. DISC PLOUGH

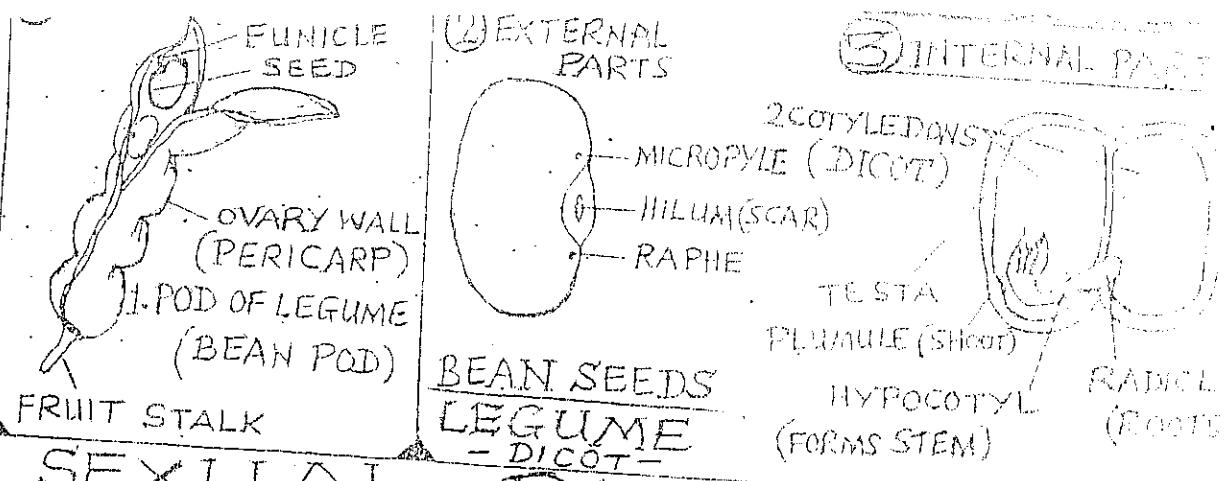


1 GARDEN SPRAYER

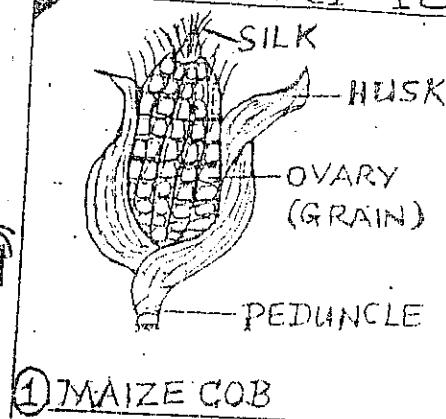


3 TAIL BOOM SPRAYER (FOR TOBACCO)





SEXUAL PROPAGATION



2. EXTERNAL PARTS

SILK SCAR
POINT ATTACHED TO COB CORE

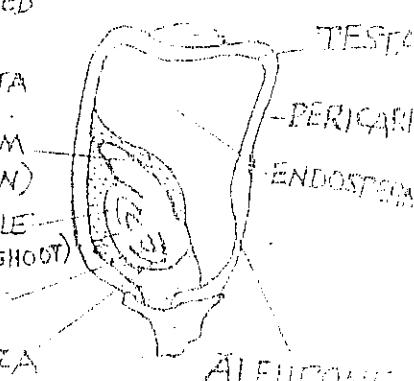
FUSED PERICARP/TESTA

EMBRYO POSITION SCUTELLUM (COTYLEDON)

COLEOPTILE PLUMULE (SHOOT)

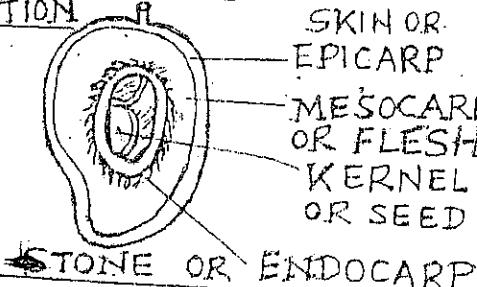
RADICLE (ROOT)
COLEORHIZA

3. INTERNAL PARTS

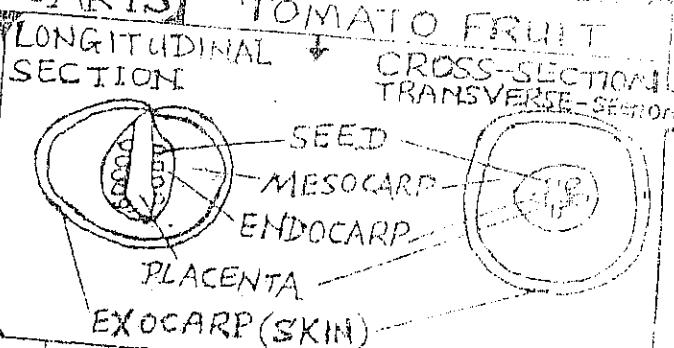


MANGO FRUIT LONGITUDINAL SECTION

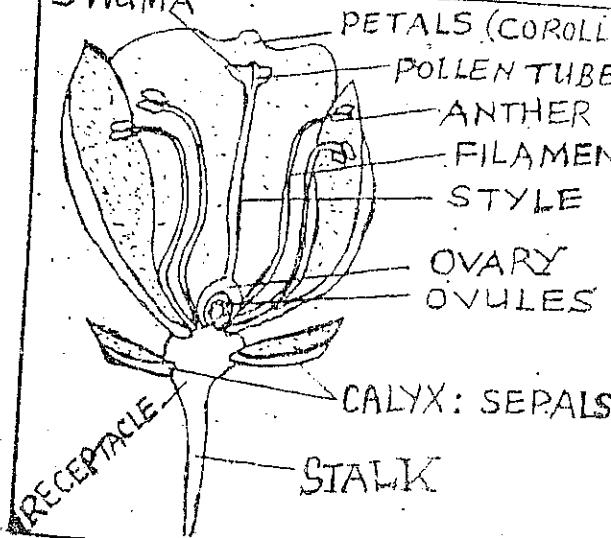
INTERNAL PARTS



TOMATO FRUIT CROSS-SECTIONAL TRANSVERSE SECTION

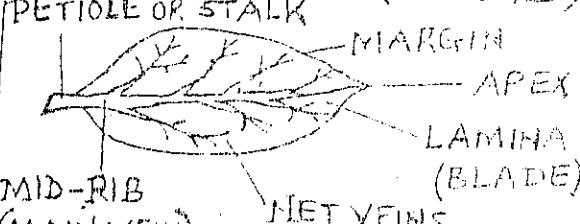


INTERNAL PARTS OF A FLOWER

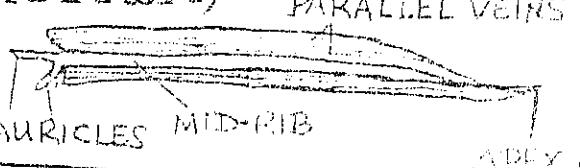


LEAF SHAPES

1. LEGUME LEAF (BROAD)



2. CEREAL (GRASS) LEAF (NARROW)

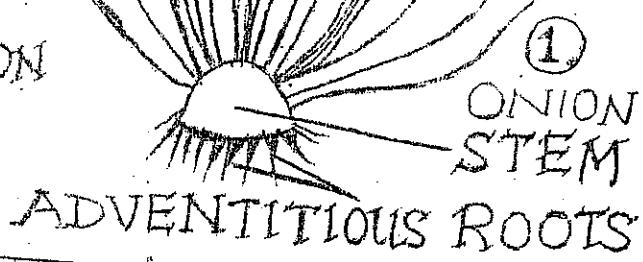


INTRODUCTION

FOOD STORAGE
ORGAN IS BULB
OF ONION
INTERNAL
8
EXTERNAL
PARTS

REMAIN OF PREVIOUS
AERIAL GROWTH

ASEXUAL
PROPAGATION

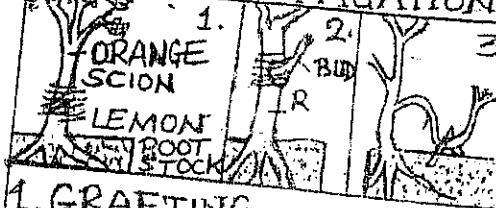


SCALE LEAVES
(Protect inner parts)

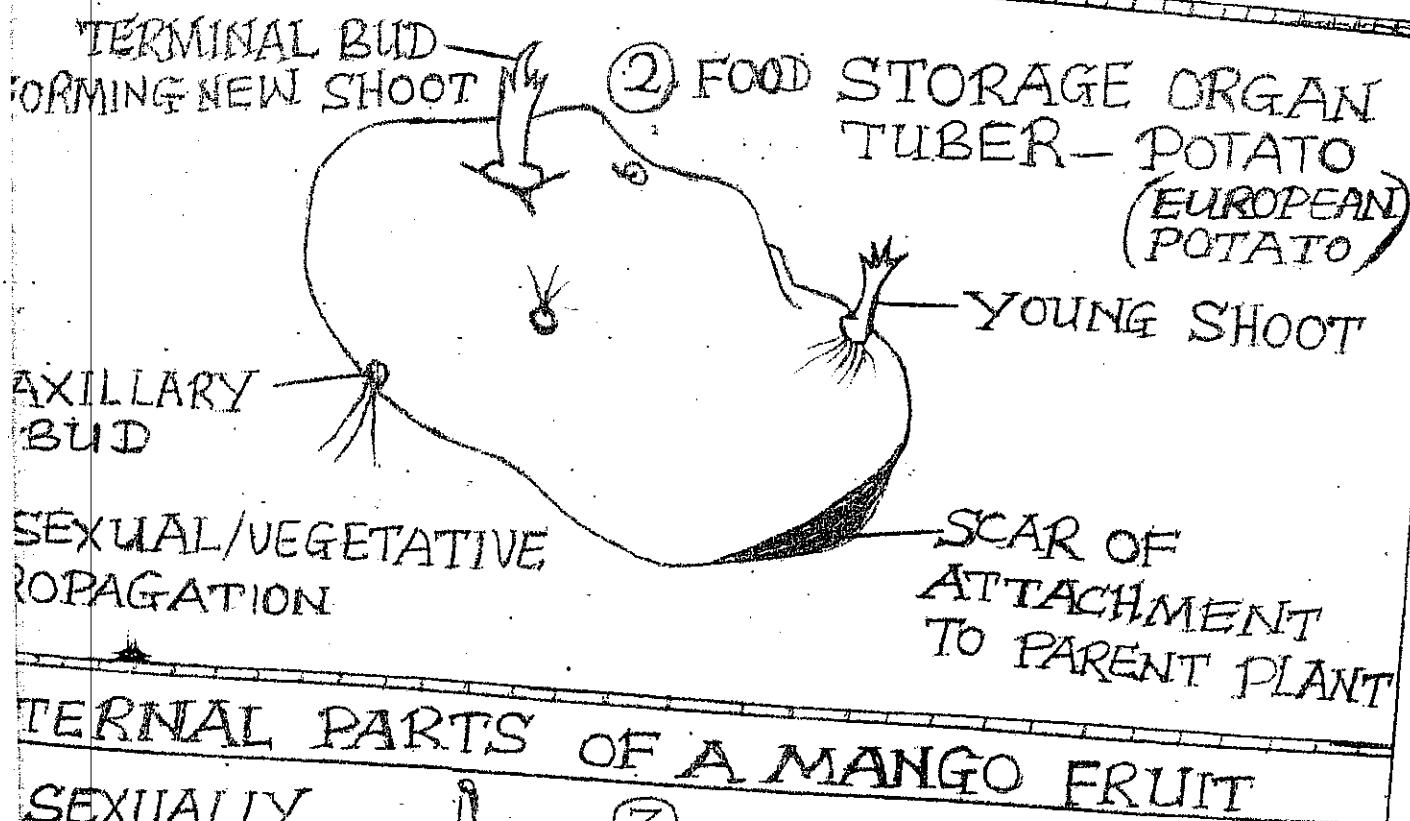
FLESHY LEAVES
(store food)

LATERAL BUD
(Form young shoot)

ASEXUAL PROPAGATION



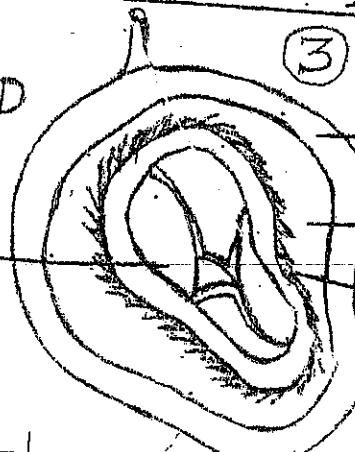
1. GRAFTING
2. BUDDING
3. LAYERING



INTERNAL PARTS OF A MANGO FRUIT

SEXUALLY
PROPAGATED

KERNEL
(ED)

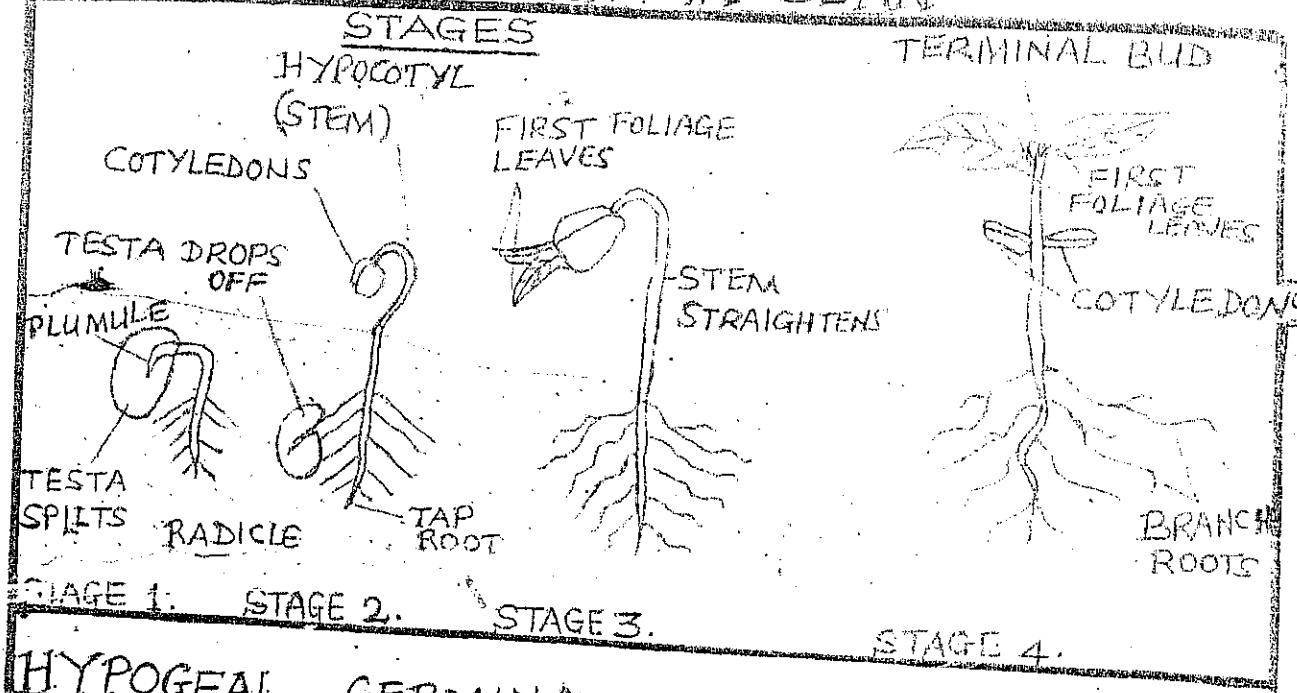


EPICARP (SKIN)

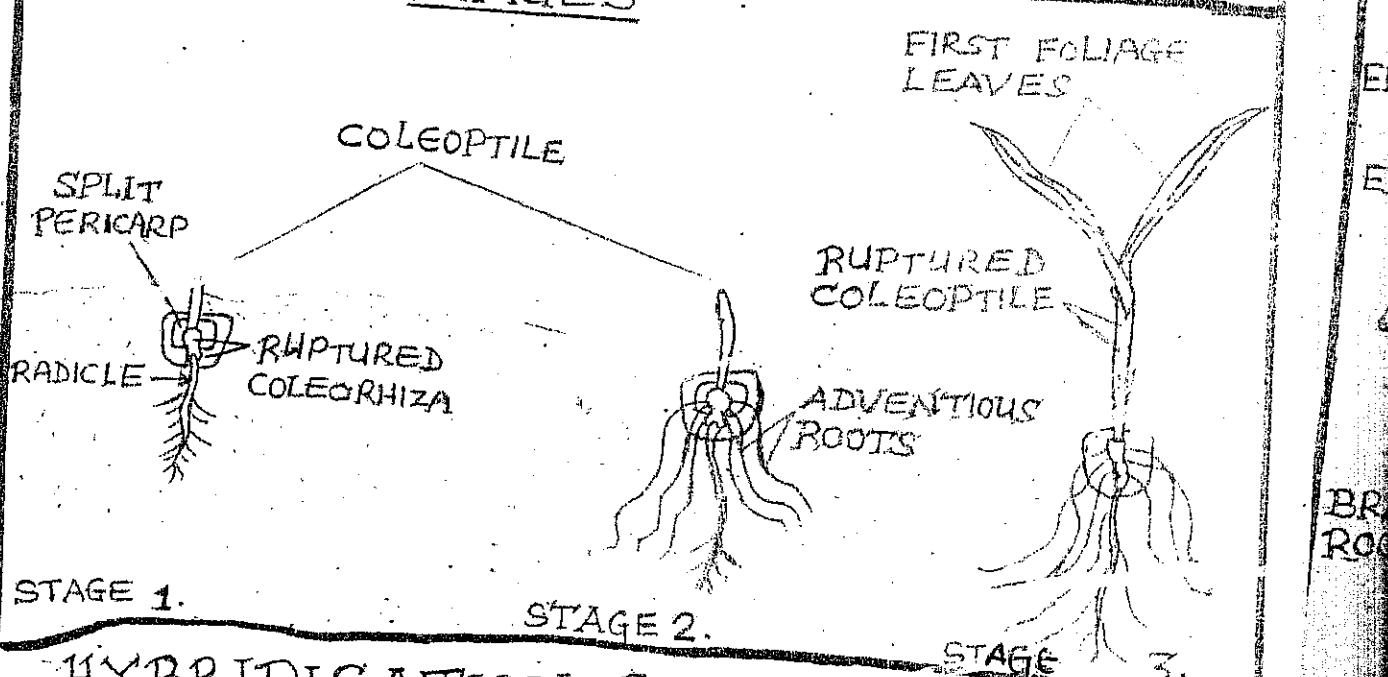
MESOCARP (FLESH)

ENDOCARP (STONE)
(STONE)

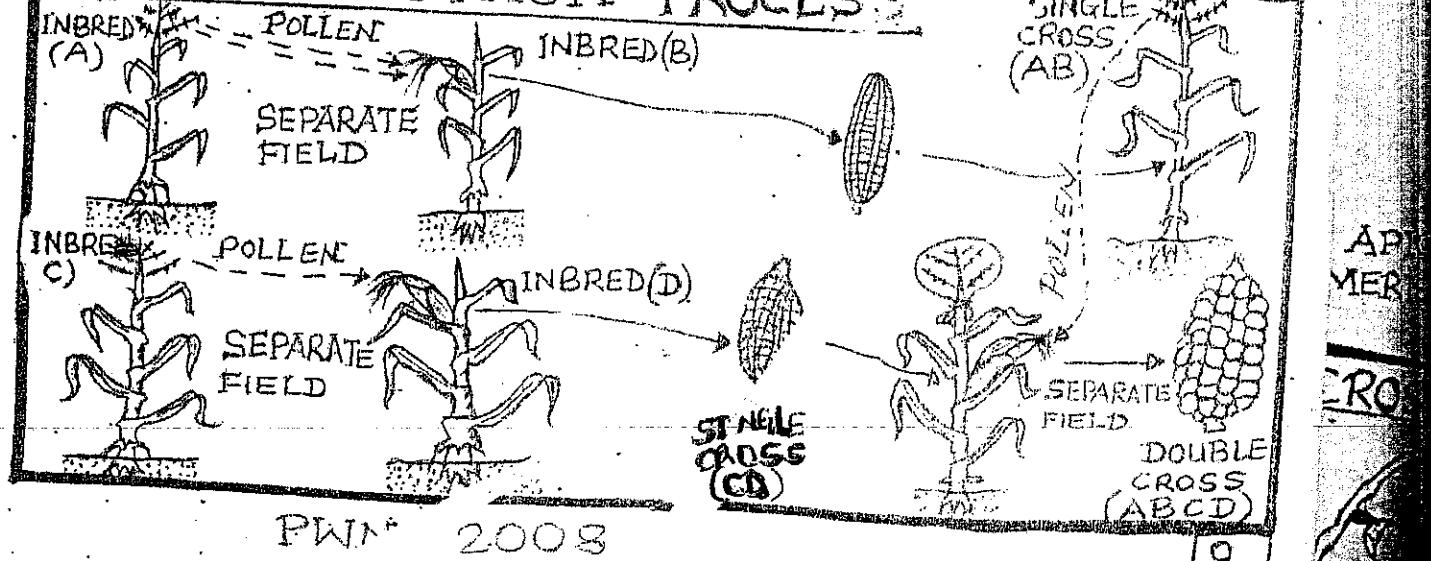
EPIGEAL GERMINATION IN BEAN



HYPOGEAL GERMINATION IN MAIZE

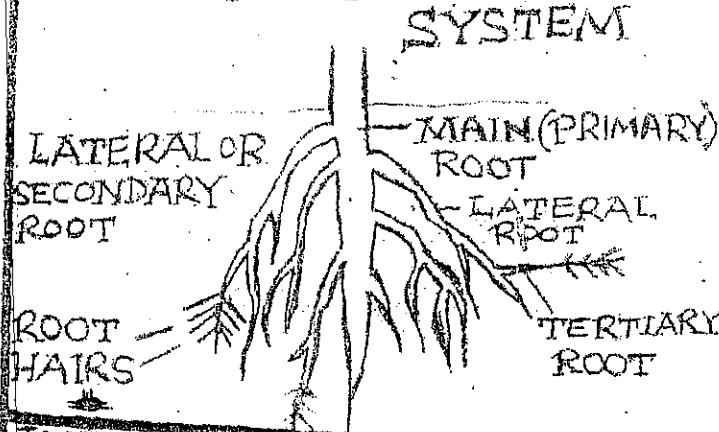


HYBRIDISATION PROCESS



AGRO-DIAGRAMS

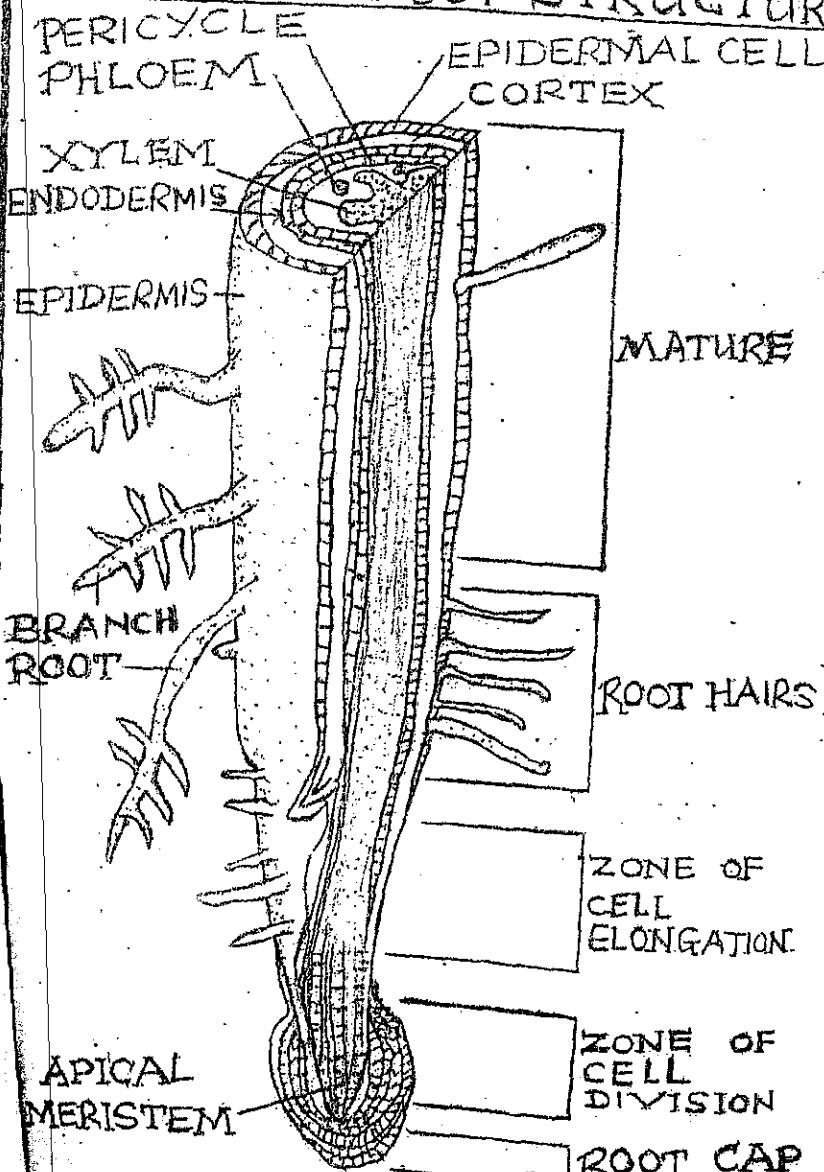
A TAP ROOT SYSTEM



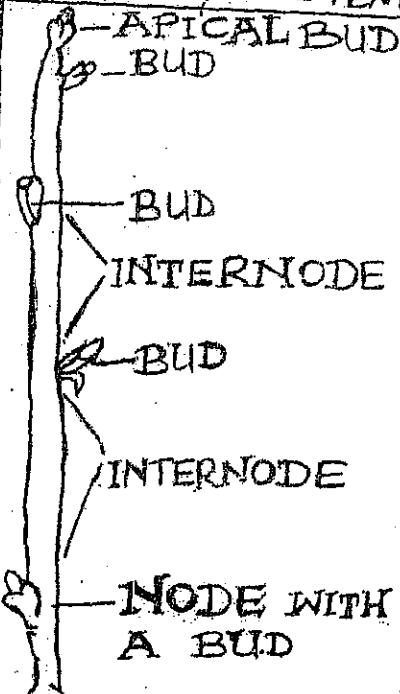
FIBROUS ROOT SYSTEM



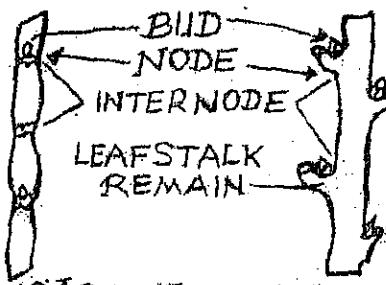
INTERNAL ROOT STRUCTURE



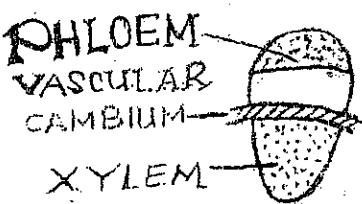
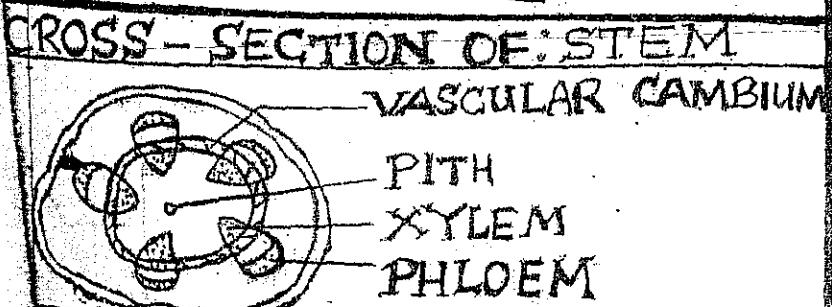
EXTERNAL PARTS OF LEGUME STEM



STEM CUTTINGS OR SETTS

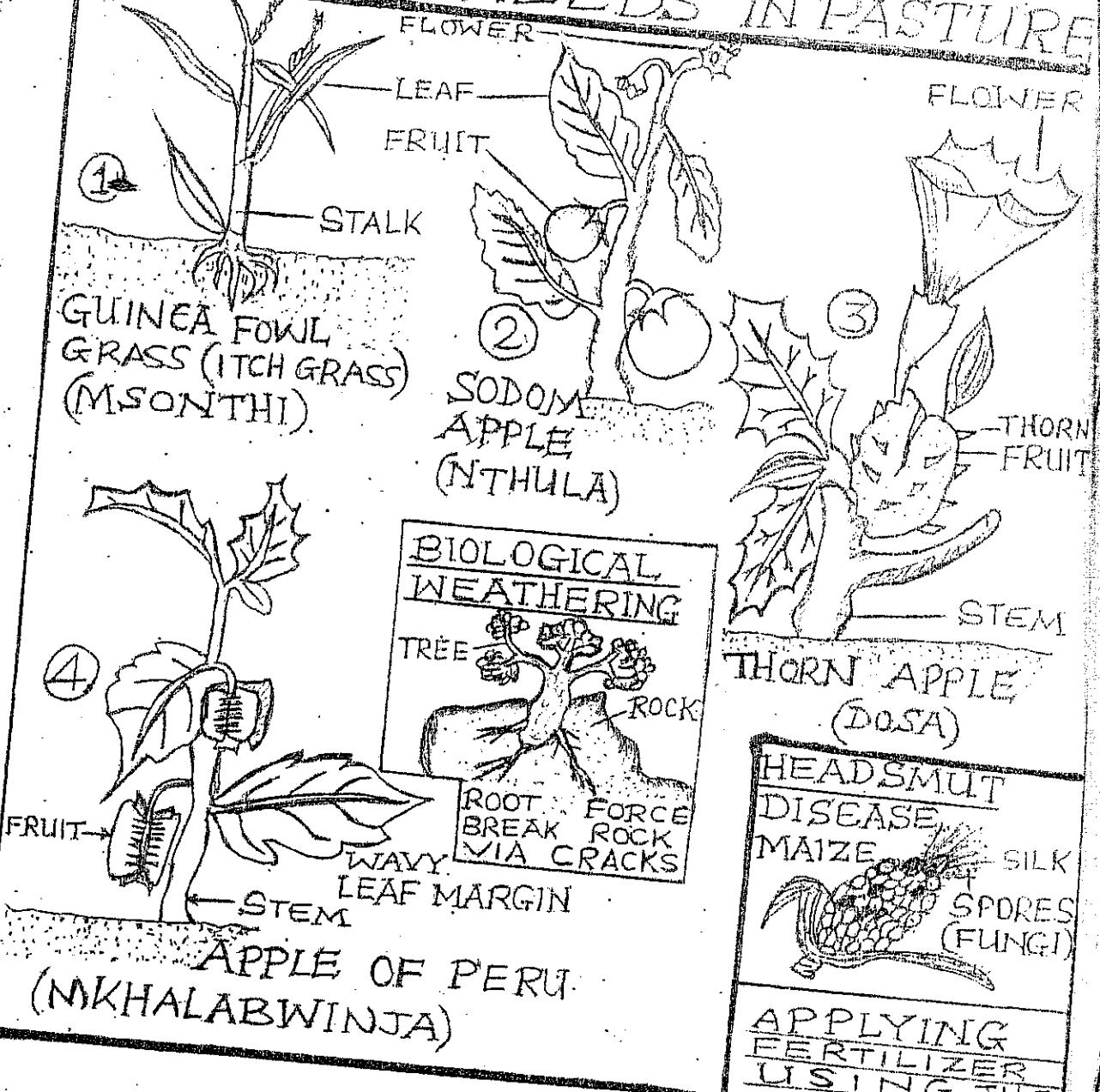


SUGARCANE CASSAVA VASCULAR BUNDLE



Agriculture Made Simple

4 MAJOR WEEDS IN PASTURE

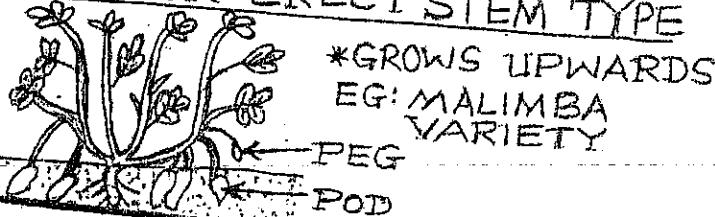


TWO GROWTH HABITS OF GROUNDNUT STEMS

1. LATERAL RUNNER STEM

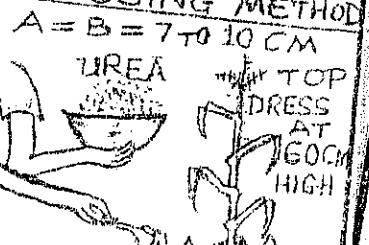


2. BUNCH OR ERECT STEM TYPE



PWN: 2008

APPLYING FERTILIZER USING THE DOLLOP OR SIDE DRESSING METHOD

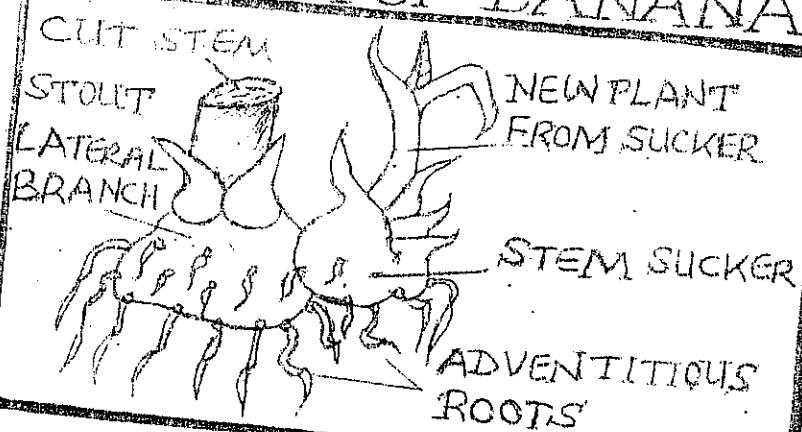


LEAF SPOT ON G/NUT LEAVES

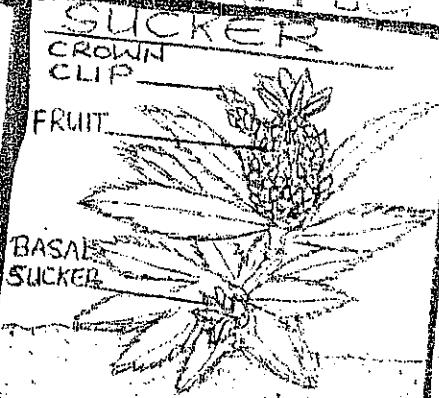


AGRICULTURE MADE SIMPLE

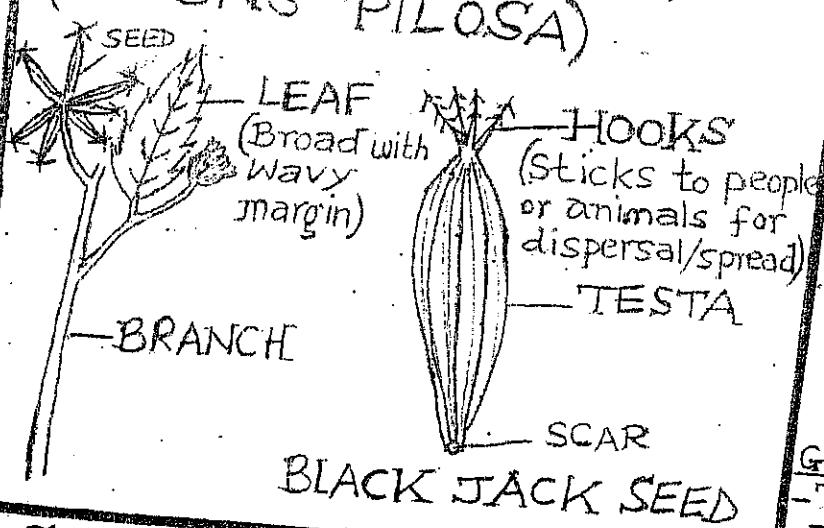
SUCKER OF BANANA



PINE-APPLE SUCKER

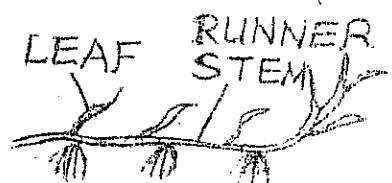


BLACK JACK WEED (BIDENS PILOSA)



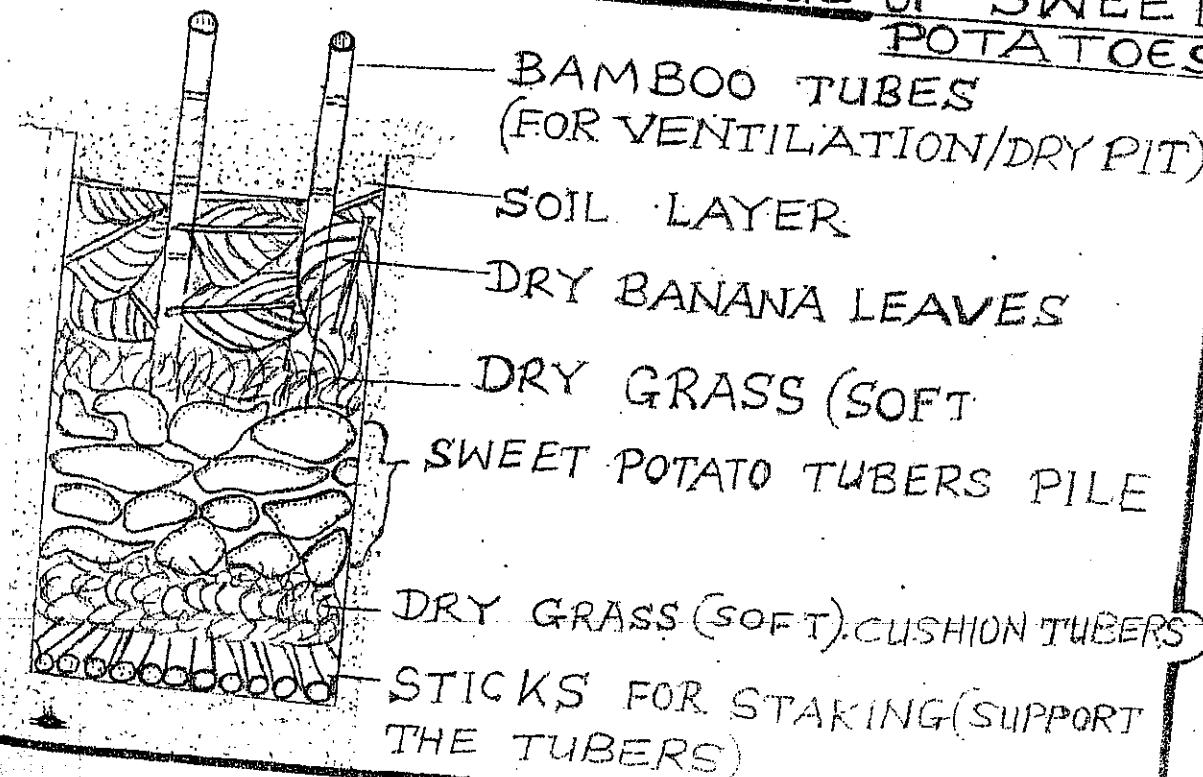
STAR GRASS WEED OR PASTURE

ASEXUALLY PROPAGATED (SETTS)



GOOD QUALITIES:
- To have node for rooting
- To have bud for shooting

SILO (PIT) FOR STORAGE OF SWEET POTATOES



2008 AGRICULTURE MADE SIMPLE

EXAMPLES OF SURFACE IRRIGATION(ABC)

1. FURROW IRRIGATION

Water flows in furrows between ridges

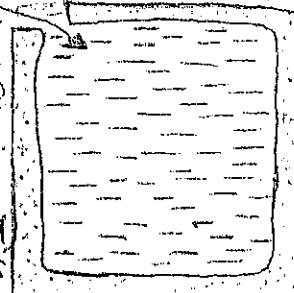


CROP RIDGE FURROW

1B. FLOODING

A large plot is submerged

WATER



RICE PLOT

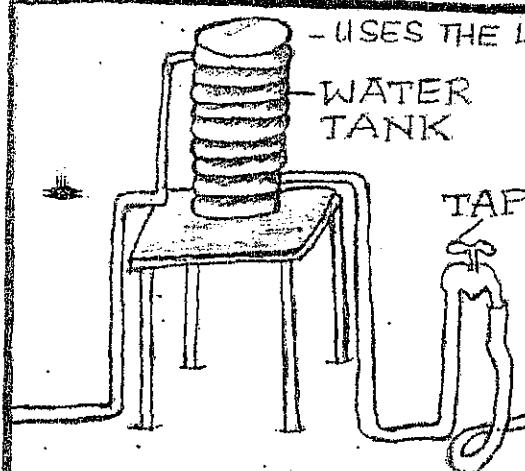
REQUIRE:

- GENTLE SLOPE FOR FREE FLOW OF WATER
- HEAVY OR CLAY SOIL
- A LOT OF WATER.

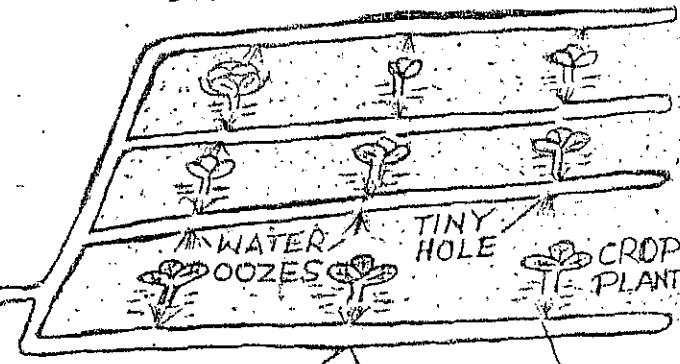
*CAUSES: SOIL EROSION
SILTING AND SALTNES

2 DRIP OR TRICKLE IRRIGATION

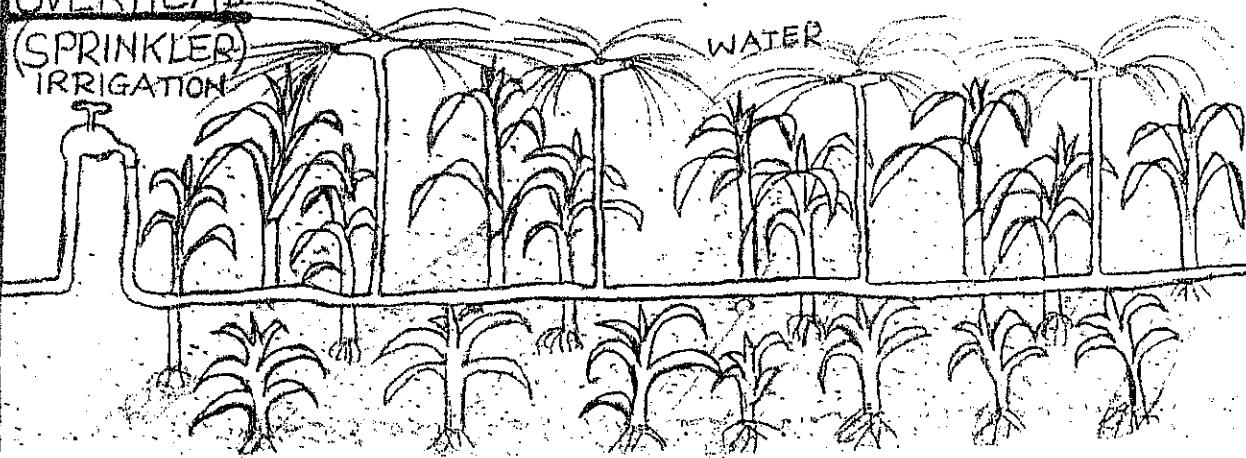
- USES THE LEAST WATER.



VEGETABLE GARDEN

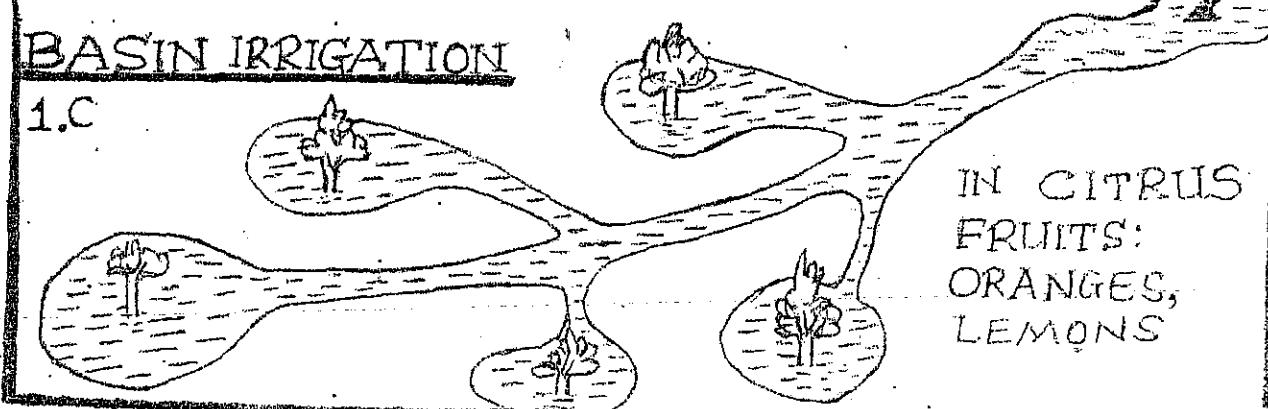


3 OVERHEAD (SPRINKLER) IRRIGATION



BASIN IRRIGATION

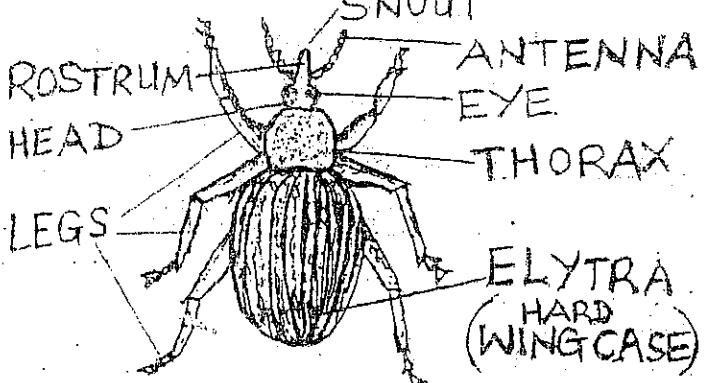
1.C



IN CITRUS FRUITS:
ORANGES,
LEMONS

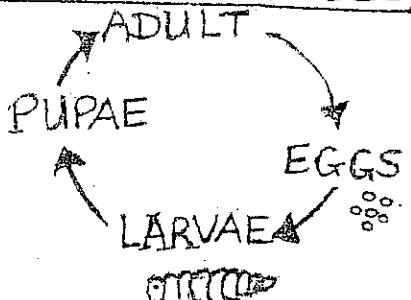
CROP PESTS AND THEIR LIFE-CYCLES

MAIZE WEEVIL (ADULT)



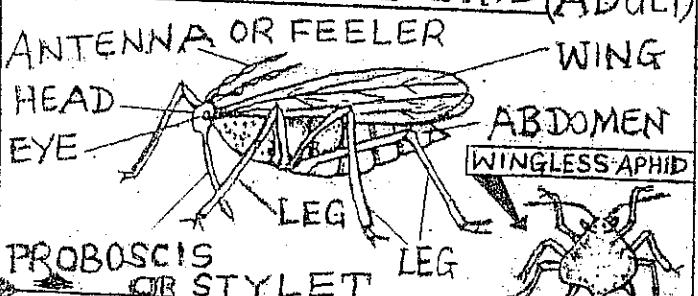
BOTH A STORAGE AND FIELD PEST

WEEVIL LIFE-CYCLE

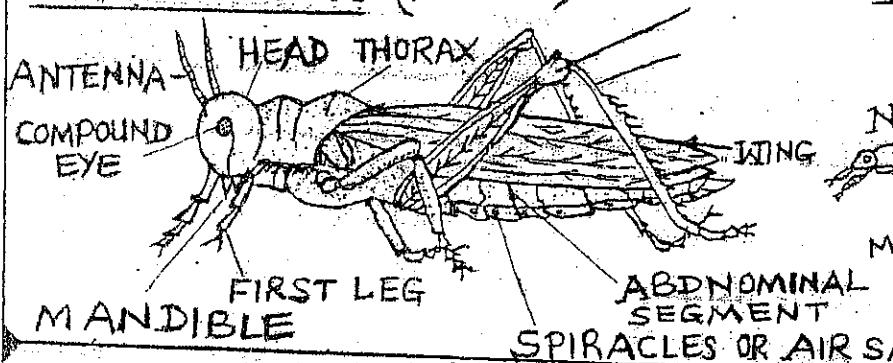


- * HAS BORING (DRILLING) MOUTH PARTS
- * BREED/MULTIPLY IN HOT AND HUMID CONDITIONS

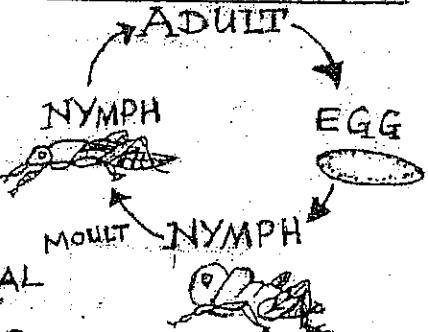
GROUND NUT APHID (ADULT)



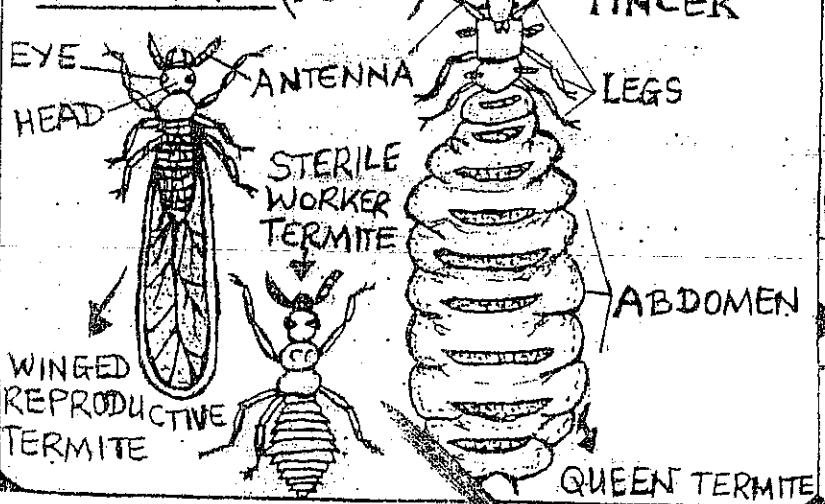
GRASSHOPPER (ADULT)



LIFE CYCLE



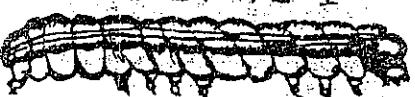
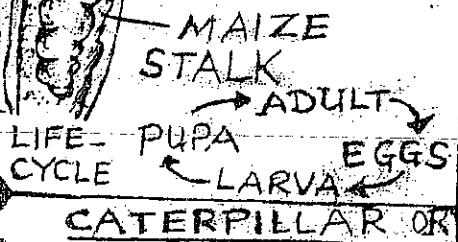
TERMITE (ADULT)

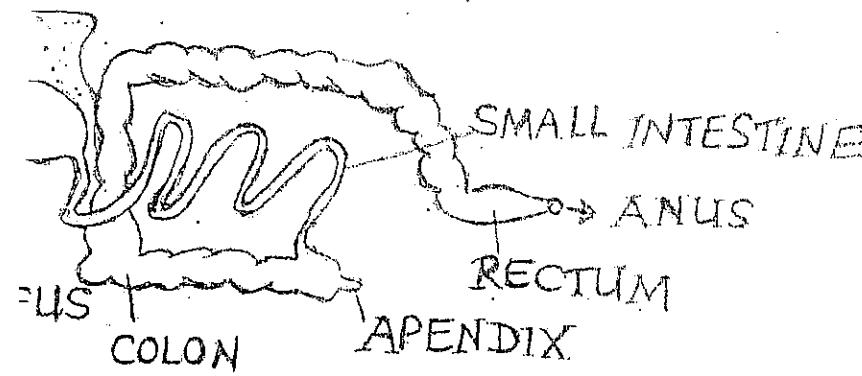


WINGED REPRODUCTIVE TERMITE



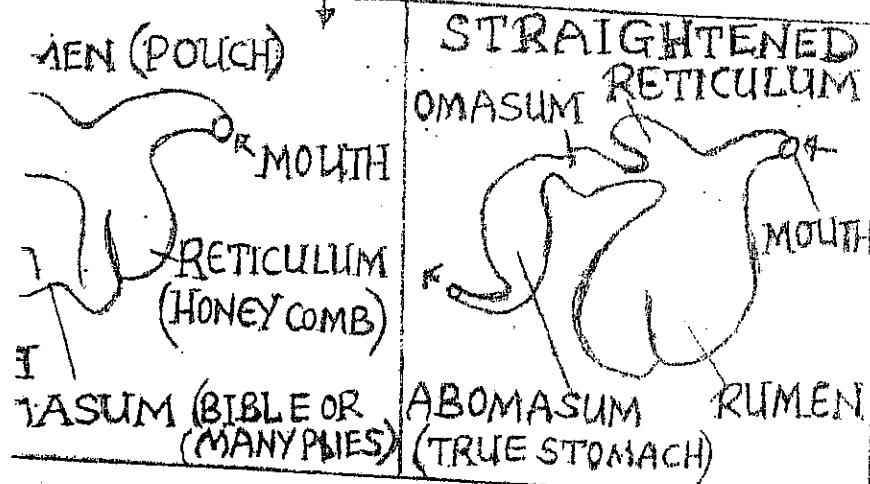
MAIZE STALKBORER





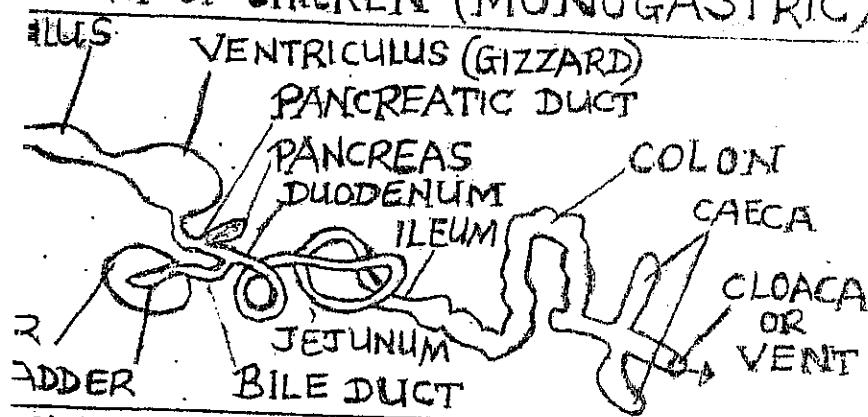
MONOGASTRIC DIGESTIVE SYSTEM

MUS (STOMACHS) IN POLYGASTRICS

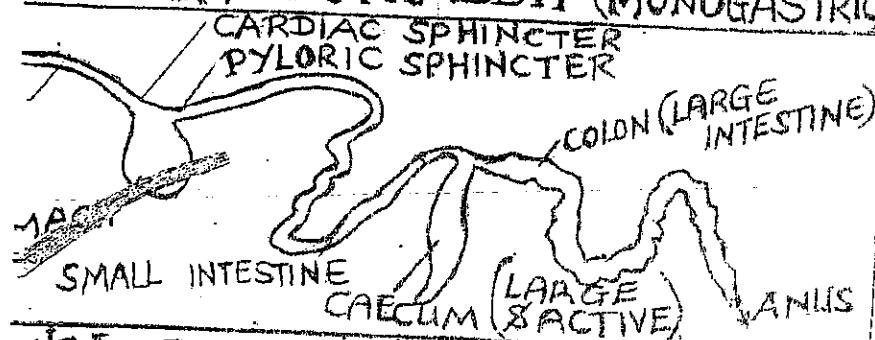


NANTES: Cattle, Goat, Sheep

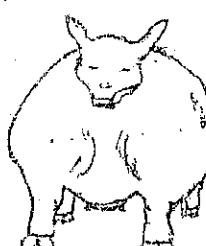
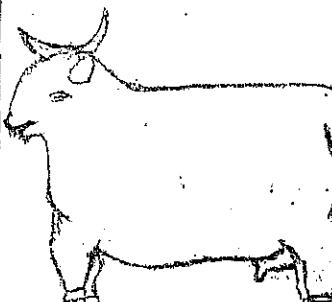
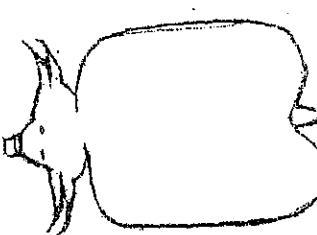
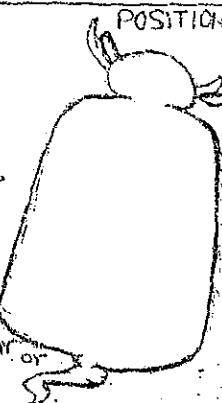
SYSTEM OF CHICKEN (MONOGASTRIC)



SYSTEM OF A RABBIT (MONOGASTRIC)



VIEWING BEEF(MEAT) CATTLE(COW)

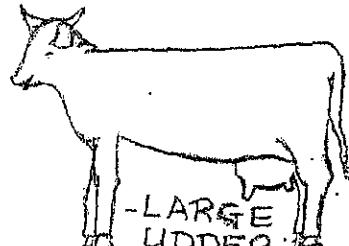
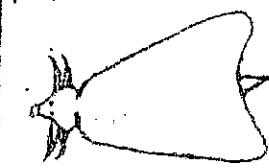
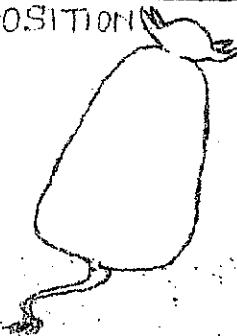
FRONT VIEW	SIDE VIEW	AERIAL/TOP	RESTING POSITION
			

MUSCULAR OR FAT

SMALL UDDER SHORT LEGS

SHAPE: Rectangular or SQUARE

VIEWING DAIRY (MILK) COW/CATTLE

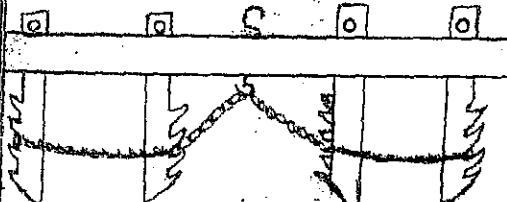
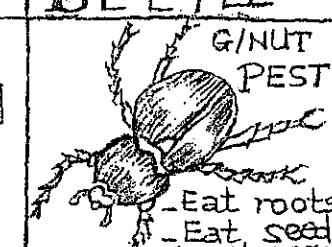
FRONT	SIDE VIEW	AERIAL VIEW	RESTING POSITION
			

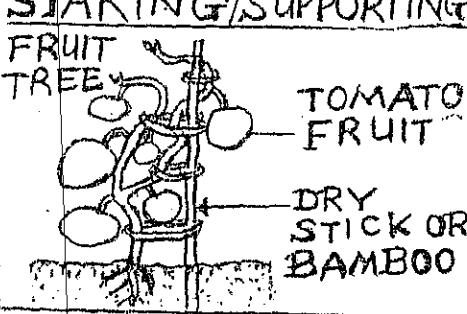
IS LEAN

LARGE UDDER

LONG FRONT LEGS.

SHAPE: TRIANGULAR OR WEDGE

BURDIZZO castrator	OX-YOKE	BEETLE G/NUT PEST
		

STAKING/SUPPORTING	NEMATODE OR ATTACK IN TOBACCO TOMATO	MULCHING
FRUIT TREE 	TOMATO FRUIT SIGN: ROOT KNOTES OR SWOLLEN ROOTS	water mulch ✓ grass NURSERY BED

QUESTIONS

- State any four physical distinctions between the beef and dairy cattle above.
- Why are the following important
 - Burdizzo? (mulching - five points (f))
 - Ox - yoke?
 - staking?
 - Castration (g)

FOR PAGE NUMBER SEVEN
PART FUNCTIONS

(A) IN BEANS

- a. OVARY WALL - Protects bean seeds from physical injury and Pathogens.
- b. FUNNICLE - Attaches seed to inside wall of the pod.
- c. MICROPYLE - Allows oxygen in for respiration.
- d. HILUM - Point attached to funnicle
- e. TESTA - As in ovary wall above
- f. COOTYLEDONS - Stores food (proteins) for the embryo growth
- g. RADICLE - Develops into roots system.
- h. HYPOCOTYL - Develops into stem
- i. PLUMULE - Develops into shoot system (first leaves)

(B)

- a. HUSK - As in ovary wall above
- b. SILK - Transfers pollen to ovules
- c. PEDUNCLE - Attaches cob to maize stalk (stem)
- d. SILK SCAR - Where silk attached to grain.
- e. FUSED PERICARP/TESTA - Protect the delicate inner parts from injury and pathogens. Form bran
- F. ENDOSPERM - Stores food (carbohydrates) for energy in Germinating seeds
- g. SCUTELLUM - Fleshy sheath, separates embryo from endosperm.
- h. COLEOPTILE - Sheath protecting the plumule (shoot) as it pushes via the soil at emergence.
- I. COLEORHIZA - Sheath protecting the radical via the soil at

(C) MANGO FRUIT

- a. EPICARP - Protects all inner parts from physical injury and Pathogens
- b. MESOCARP - Contains nutrients vitamins, sugar etc
- c. ENDOCARP - Protects the kernel (seed) from physical injury and Pathogens

(D) TOMATO FRUIT

- a. ENDOCARP - Protects seeds
- b. PLACENTA - For seed attachment
- c. MESOCARP - Contains nutrients

(E) INSECT POLLINATED FLOWER

- a. SEPALS - Protect upper part of flower.
- b. PETALS - Attract insects to collect flower nectar and transfer Pollen.
- c. RECEPTACLE - Holds all the upper parts of flower
- d. OVARY - Contains young seeds (ovules)
 - Form fruit after fertilization.
- e. OVULES - Develop into seeds
- f. ANTERS - produce pollen
- g. FILAMENT - Holds the anther
- h. STIGMA - It sticky to receive pollen grains
- i. STYLE - Transport pollen grain in pollen tube to the ovary ovules.

(F) LEAF (BROAD & NARROW)

- a. PETIOLE - Attaches leaf to the branches
- b. VEINS - Distribute water and salt for food making in green leaves
- c. MIDRIB - Transport food

DEFINITIONS

- a. MONOECIOUS : Have both male and female flower parts in the same (one) plant e.g. tassels and cob in maize.
- b. DIOECIOUS PLANT : Have their male and female flowers on separate plants e.g. paw paws
- c. STAMENS : Ring forming male part of the flower E.g. filament and anther.
- d. PISTIL : Female parts of the flower e.g. ovary (ovules) style and stigma.

DIG

t

c

d

e

NOTE
PAGE N
REPROD
PART

a

b

c

NOTE

COTYLEDONS diminish or shrink or become smaller (the embryo uses the food they store before green leaves are developed for photosynthesis)

PAGE TEN (10)

BASE LINE (16) ROOT STRUCTURE

- | | |
|-------------------------------|--|
| a. ROOT HAIR | Absorbs water and mineral salts |
| b. ROOT CAP | : Protect the apical meristem. |
| c. APICAL MERISTEM
of root | The growing point giving rise to all other parts |
| d. XYLEM | Conducts water and mineral salts to leaves |
| e. PHLOEM | : Transports products of photosynthesis (food) from leaves to all parts of the plants. |
| f. SPIDERMIS | : Hard cells protecting all the inner parts |
| g. CORTEX | : Group of cells for food storage. |
| h. VASCULAR CAMBIUM | : Cells separating Xylem from Phloem. |

STEN

B117

PAGE FOURTEEN (14)

- | | | |
|----|-----------|---|
| a. | ANTENNA | : for sensing smell, heat and objects |
| b. | SNOUT | : For chewing feed |
| c. | ROSTRUM | : For boring into grains or fruits. |
| d. | MANDIBLE | : For cutting and chewing of feed |
| e. | PROBOSCIS | : Pieces plant tissue to suck cell sap. |

*Also transmits virus causing Rosette disease

- f. ELYTRA : Protects the abdomen and the wings and for flying
 - g. SPIRACLES : For gaseous exchange or breathing
 - h. COMPOUND-EYE : Has multiple eyes

PAGE FIFTEEN (15)

RUMINANT ANIMALS

PART

FUNCTION

- a. DÉSOPHAGUS : Passes feed from mouth into the rumen.

b. RUMEN : Stores and ferments grass feed.

c. RETICULUM : Sieves feed (sends back sand, wood pieces and cud).

d. OMASUM : Absorb water and some nutrients like glucose.

e. CARDIAC SPHINCTER: Controls opening into the true stomach.

f. ABOMASUM : Initiate chemical digestion of proteins

g. PYLORIC SPHINCTER: Controls the opening out of the true stomach.

h. DUODENUM : For protein digestion

i. PANCREAS : Secrets pancreatic juice.

j. LIVER : Secretes bile fluid..

k. GALL BLADDER : Stores bile fluid.

l. BILE DUCT : Passage of bile fluid into duodenum.

m. ILEUM : Highest nutrient absorption zone of small intestine

n. CAECUM : Contains microbes (fungi, bacteria, protozoa) for digestion of grass cellulose.

o. CECUM : Absorbs water and stores faeces.

p. RECTUM : Temporary stores of faeces before ejected.

q. ANUS : For exit of faeces.

NOTE: ADAPTATION OF SMALL INTESTINE FOR ABSORPTION

- a. Is very long (b) Has yilli (c) Dense network of capillaries

DIGESTION IN BIRDS (CHICKEN)

- a. BEAK : Strong for pecking seed.
 b. CROP : Stores and softens grain feed (maize)
 c. PROVENTRICULUS : For chemical digestion of proteins.
 d. GIZZARD : For grinding food (physical digestion)
 e. VENT : For exit of faeces, eggs, urine and droppings.

NOTE : ADAPTATIONS OF GIZARD

- a. Has strong, thick muscular walls
 - b. Contains sand particles or grit to act as teeth

PAGE NIETEEN (19)

REPRODUCTION IN FEMALE CATTLE OR BULLS

PART

FUNCTION

- a. VULVA : Opening into the vagina
 - b. VAGINA : Receives the penis at coition
 - c. CERVIX : Controls opening of passage into the uterus
 - Closed up in pregnant female

UTERUS — Where the foetus develops (is implanted to its walls).

- e. UTERINE HORN : Drops the embryo or egg into the uterus.
- f. OVIDUCT : Fertilization site.
- g. FUNNEL : Receive eggs from ovary.
- i. OVARY : Contains and releases ova (eggs)

IN A BULL (MALE CATTLE)

- a. SCROTUM : Protects testes from physical injury.
- b. TESTIS : Produces sperms (male gametes)
- c. SPERMATIC CORD: Supply food and oxygen to testes.
- d. EPIDIDYMIS : Stores sperms.
: Produces testosterone hormone.
- e. SPERM DUCT : For sexual desire LIBIDO
- f. SEMINAL VESICLES: Produce semen (sticky fluid) that move sperms in urethra.
- g. URETHRA : Passage of semen (sperms) and urine.

IN A HEN (FEMALE BIRD)

- a. FIMBRIA : Receives eggs from ovary
For fertilization (stores sperm)
- b. MAGNUM : Albumen is added to egg
- c. Isthmus : Egg membranes, mineral salt and water are added.
- d. SHELL GLAND : Porous shell is added. 18 – 21 hours
- e. Vagina : Mucus seals up pores in the e.g. shell.
- f. Vent : Here egg is passed out (oviposited)

DIFFERENCES

COW

- Small egg
- Has no egg shell

HEN

- Large egg
- Has egg shell

DIFFERENCES

BULL

- Has penis
- Testes outside the body
- Has urethra

COCK

- No penis (papillae)
- Testes inside the body
- Has ureter

PARTS OF CHICKEN EGG

- a. SHELL : Protects all internal parts
- b. MEMBRANES : Form air space.
- c. AIR SPACE : Separate shell from inner parts.
- d. YOLK : For gaseous exchange (oxygen used in chick respiration)
- e. CHALAZA : Stores mineral salts
- f. ALBUMEN : Holds the yolk in a fixed position
- g. GERM LAYER : Stores proteins
- g. GERM LAYER : Where the embryo develops from

PREGNANT COW

- a. AMNIOTIC FLUID : Warms and cushions the foetus or embryo
- b. PLACENTA : Supplies food and oxygen to foetus from mother
Release CO₂ and urine from foetus to mother through diffusion

NOTE : Umbilical cord as in placenta.

Placenta (mother) and umbilical cord (foetus) are separated.

FLUID FILLED MEMBRANES SURROUNDING THE FOETUS ARE :

- a. AMNION : Water sac.
- b. CHORION : Surrounds the amnion.
- c. ALLANTOIS : Urine sac before the urinary bladder develops.

UNDER STRUCTURE IN COWS:

- a. ALVEOLUS : Synthesises milk using water, proteins, vitamins, carbohydrates.
- b. LOBES : Cavities that stores milk.
- c. MILK DUCT : Passes milk from alveolus to gland cistern.
- d. CISTERNS : Major milk store before ejected.
- e. TEAT CANAL : Passes milk out of the udder.
- f. SPHINCTER MUSCLE : Opens to ejected milk close the teat to stop milk release

- Milk is released when milking or suckling the young one.