MARKING SCHEMES

1994 – 2005 TOPICAL

Introduction to Agriculture.

1. **1996:** This is a system of farming in which one crop is grown in large scale.
2. **1997**: **Characteristics of shifting cultivation.**
   - When fertility of the soil goes down crops are not grown again until fertility is restored.
   - Plenty of land is available to the farming community
   - Practicable with annual crops not with the perennials.
   - Agricultural output from the whole system is low / subsistence production.
   - Input such as pesticides, fungicides fertilizer are rarely used / build up of pests and diseases is avoided by periodic movements to the new lands.
   - Use of simple hand tools.
3. **2001:**
   - It is a source of food for the population. • Earns foreign exchange for the country
   - Provides market industrial goods.
   - Farmers earn a lot of income
   - Provides employment both directly and indirectly.
4. **2002**
   - Providing market for industrial goods.
   - Providing raw materials that are used in industries.
5. **2004 Limitations of pastoral farming** • Drought and aridity Diseases and parasites.
   - Diseases and parasites
   - Attack by wild animal
   - Soil erosion due to over stocking • Poor pastures species

- Inadequate land/over population.

6. **2004**
   - Low production
   - Uncontrolled mating
   - Difficult to control parasites and diseases
   - Leads to overgrazing hence soil erosion.

FACTORS INFLUENCING AGRICULTURE.

1. **1995**
   - Temperature/altitude
   - Prevailing winds
   - Soil types
   - Rainfall
2. **1996:**
   - Cause physical damage / breakages to crops (accept any physical damage)
   - Causes water stress / increases rate of transpiration in crops.
   - Spread crop pests, diseases and weeds.
   - Can cause stress to crops due to chilling caused by cold air.
   - Cause soil erosion leading to loss of soil fertility.
   - Encourage transpiration hence water and mineral uptake.

3. **1999:**
   - Rainfall intensity
   - Rainfall reliability
   - Rainfall distribution
   - Rainfall amount

4. **1999:**
   - Poor soil fertility due to lack of manure and fertilizer application.
   - Less rainfall/unreliable rainfall/too much rainfall.

- Poor soil type leading to water logging or excess leaching.
- Inappropriate pH/poor soil pH.
- Pest attack
- Poor weed control leading to competition.
- Too high or low temperature / inappropriate temperature.
- Excess wind that increase evapotranspiration/lodging of crop/floral abortion.
- Inappropriate humidity, either too high or too low.
- Extreme light intensity that may reduce photosynthesis / exhaustion of nutrients.
- Inappropriate topography that may limit crop growth.
- Hailstorm damage.

5. **2000:**
   - Decompose organic matter.
   - Help to aerate the soil
   - Atmospheric Nitrogen to nitrates.
   - Upon death and decay release plant nutrients.
6. **2001**
   - Ploughing at the same depth season after season
   - Use of heavy machinery on wet soil.
7. **2002: a)**
   - Physical weathering
   - Biological weathering
   - Chemical weathering

b)

- Soil texture is the relative proportion of the different sized particles in the soil;
- Soil structure is the genera appearance of the soil in relation to the arrangement of the individual soil particles.

c)

- Allows proper infiltration/drainage of water
- Has good aeration.

- It is not easily eroded.

8. 2003:

a)

- Light intensity.
- Light wavelength
- Light duration / photosynthesis

b)

i) Capillarity in the three different soil samples.

ii) G – Sandy soil
H – Loam soil
J – Clay soil

iii) G – Rough and coarse texture
J – Fine textured

iv) Addition of organic manure –
Addition of lime

9. 2004:

a) Why soil is important to crops.

- Supports plant life anchorage.
- Provides nutrients and water
- Contains organic matter, food for micro – organism

b) Benefits of optimum soil temperature.

- Increase the rate of bio chemical reactions hence breakdown of materials to form organic matter i.e. for every $10^{o}C$ rate doubles.
- Activates soil micro – organism especially the useful bacteria for nitrogen fixation,
- Ensures maximum activities for bio chemical enzymatic reactions that bring about growth e.g. germination process.

c) Factors of soil which influence soil productivity.

- Good supply of plant nutrients and oxygen.
- Good depth
- Good drainage
- Abundance of useful soil and organism
- Adequate water retention.
- Freedom from plant pests and disease causing agents.

10. 2004

- Provide anchorage to crop roots
- Provide nutrients to crops
- Provide water to crops
- Hold air/oxygen for crop growth.

11. 2004 a)

- Good aeration is necessary for root respiration. • Suitable for microbial activity
- Easy to work on.
- Raises soil temperature
- Removes toxic substances e.g. sodium, iron and magnesium salts. b)
- Enhance seed germination
- Enhances plant growth.
- Enhance soil microbial activities
- Improves quality of crops e.g. Tea, pineapples.

c)

- Soil depth / drainage / aeration
- Water holding capacity
- Level of nutrients / cation exchange • Soil pH/ Soil borne – pests and diseases.

12. 2005:

- Improves soil structure
- Reduces leading.
- Improves water holding capacity
- Increase cation exchange capacity
- Improve nutrient status upon decomposition • Moderate soil temperature. Butter the soil pH.

FARM TOOLS AND EQUIPMENT

1. 1995: i) – Riveting / flattening metal sheets / driving cold chisel
ii) – Breaking / crushing hardcore / big stones - Driving wedges into wood.

2. 1996

- N I – pipe wrench
- N II – Adjustable spanner
- N III – Ring spanner
  i) Holds different sizes of nuts and bolts.
  ii) NI is used for holding pipes during plumbing work.
  iii) Maintenance of NI – Lubrication of adjustable screw.

3. a) i) 1 – Disc harrow
2 – Disc plough
ii) Secondary cultivation / Harrowing b) i) 2 (Disc plough) ii) It is able to fide over obstacles, bouncing on its springs.

4. **1996:**
i) Smoothing rounded/curved edges of timber.
ii) To check verticalness of an upright object.

5. **1997**: Hacksaw / pipe cutter.

6. **1998:**

- Cleaning it after use.
- Lubricating the adjustment screw.
- Sharpening the plane iron / blade
- Tightening loose screws and nuts.
- Proper storage
- Replacing the broken parts.

7. **1998:**

- Spirit level/trowel/float.
- Plumb bob/plumb line.
- Mason's square/tape measure.
- String/line/mason's hammer
- Mason's chisel/bolster.

8. **1999 (a)**

- A tenon saw is shorter
- A tenon saw has a rigid flame at the back
- Unlike a cross cut saw.
- A tenon saw has more teeth per unit length
- Than a cross cut saw.
- A tenon saw is used in joinery work while the cross cut saw cuts wood across the grains.

b)

- Hold the work firmly.
- Ensure the saw is in good working condition / straight blade / sharp teeth / well set teeth/firm handle.

c)

- proper storage after use
- Oil the blade to avoid rusting
- Sharpen the teeth
- Set the teeth properly
- Tighten the handle screws if loose / replace broken handle.

9. 2000

- Soil type/ hardness of the soil
- Vegetation cover of the field.
- Cost of the tool. Skills required
- Availability of the tool
- Availability of capital

10. 2000 <u>When to use a jembe and not a disc plough.</u>

- When the land is very steep.
- Lack Technical skills in operation of disc plough
- When size of land is too small
- When capital is inadequate to acquire a disc plough.
- When it is cost effective to use a jembe.
- When disc plough is not available. • When inadequate time is available
- When land is rocky / stony.

11. 2000: a)

i) – Pruning / cutting crops
- Harvesting rice / grasses ii)
Pruning
- Cutting vegetative materials for planting / harvesting flowers.

b)

- To avoid injury to the user.
- To reduce repair / replacement cost • To increase their durability / life span

- To make them more efficient.

c)

- Soil type/hardness of soil.
- Vegetation cover of the field
- Cost of the tool
- Skill required / availability of the tool
- Availability of capital.

12. 2001: (i)

L – Monkey strainer / wire strainer.
M – Sash clamp
N – Dibber
O – Spoke

(ii)

L – Touting fencing wire during fencing.
M – Holding pieces of timber together when joining them together. i
N – Making holes for transplanting. J
O – Smoothing curved/round edges of timber.

13. Tools used.

i. Monkey strainer/wire strainer.
ii. Steel/wood float
iii. Drenching gun. iv. Butter churner.

14. 2003.

- Hand saw/bow saw.
- Claw hammer/plumb bob
- Hole digger/soil anger/panga.
- Ramming rod/builders trowel.
- Soil scoop/spade/shovel.
- Tape measure/mallet/garden line.

15. 2004: (a) M – Sickle
N – Pruning saw
P – Float
Q – Garden trowel.

(b) M – Harvesting rice/grasses
N – Pruning/cutting stems/branches in crops e.g. coffee citrus.
P – Spreading screed on concrete floors/wall

Q – Transplanting seedlings

LAND PREPARATION

1. 1994

- To kill the weeds
- Bury crop residues/organic matter into the soil
- Loosen up the soil/facilitate rainfall infiltration/improve aeration/easy penetration of roots.
- Control soil borne pests/diseases by destroying their life cycles.
- Make subsequent operations easier.

2. (ii)

- Clean after use.
- Hammer bent share
- Replace worn out parts e.g. hooks, share.
- Check, tighten loose nuts and belts during the day's work
- Oil shiny parts e.g. mould board, if of use.
- Paint metallic parts e.g. handle, beam and braces, to prevent rusting.
- Store properly in a shed.

3. 1997:

- To kill weeds
- To bury organic matter/crop residual into the soil
- To loosen up the soil/improve aeration/improve water infiltration/improve root penetration. To control soil borne pests/diseases.
- To make subsequent operations easier.

4. 1999:

- Type of crop/rooting system of crop to be grown.
- Type of implement available.
- Type of soil.

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- Soil moisture content at ploughing time • Presence of certain weeds e.g. cough grass.
- Source of power.

5. 2000:

- When the land steep
- Lack of skill to operate the disc plough
- When capital is inadequate to acquire disc plough • When it is cost effective to use a jembe
- When there is adequate time.
- Where the land is rocky/stony.

6. 2000: (a)

- Kills soil organisms.
- Leads to loss of nutrients.

Destroys soil organic matter.

Leads to accumulation of some nutrients to toxic levels e.g. potassium. **(b)**

Control weeds/control pests and diseases

- Incorporate organic matter in the soil
- Improve soil physical conditions/attain appropriate tilt
- To make seedbed appropriate for growing certain crops e.g. in ridging. **(c)**
- Saves time/reduce cost of production.
- Maintain soil structure
- Minimizes soil erosion.
- Minimizes root/tubers disturbance.
- Less laborious/conserves soil moisture.

7. 2001:

- Use of heavy machinery/implements when soil is wet.
- Continuous shallow cultivation.

8. 2001: Maintenance practices of a plough

- Cleaning after work
- Storing under shed

HELLO

- Tightening loose nuts and bolts
- Replacing worn out parts/ repair broken parts.
- Greasing moving / rotating parts • Oiling / painting for long storage.

9. 2002 <u>Destroy soil organisms</u>

- Loss of soil nutrients / loss of soil fertility.
- Accumulation of some nutrients to toxic level e.g. potash.
- Destruction of organic matter by oxidation / burning.

10. 2003 <u>Reasons for secondary cultivation</u>

- Control weeds
- Control pests and diseases
- Incorporates organic matter in the soil
- Improves physical condition / form required tilth
- Make appropriate tilth for planting certain crops e.g. ridging, rolling. leveling.

11. 2004 <u>Benefits of minimum tillage</u>

- Saves time and costs of production. • Maintains soil structure
- Minimizes soil erosion.
- Less laborious
- Conserves moisture • Minimizes root damage.

12. i)

- Cost / expenses / when distance is short
- Availability of skilled worker.

13. 2000:-

Disc harrow / rotavators
Spring tine harrow / rigid tine harrow / ox – tine harrow.
Spike toothed / peg – toothed harrow
Chain harrow / zigzag harrow

14. 2004

- Application of herbicides.
- Use of mulch / timely cultivation
- Use of cover crops

HELLO

- Uprooting / slashing / grazing to control weeds

WATER SUPPLY IRRIGATION

1. 1994

- Transporting in containers.
- Piping / use of channels.

2. 1995: Dams/ ponds, Tanks / containers **3.**
1995:

- Draining the land / Any method of drainage. • Growing water tolerant crop e.g. rice
- Ridging / making furrows.

4. 1996:

- Boiling water / filtration
- Use or chemicals / chlorination / alum / soda ash
- Aeration of water / sedimentation.

5. 1997

a) Dams / weirs tanks / containers

b)

- Piping / use of pipes
- Use of channels
- Use of containers by vehicles , animals

6. 1998:

- Centrifugal / rotor dynamic pump.
- Reciprocating / piston pump
- Semi – rotary pump • Hydram pump / hydraulic ram.
- Rotary pump / hydraulic ram.

7. 1998:

- Quantity of the material / durability.
- Size of the pipe / diameter / length • Working pressure / thickness of the wail.
- Colour of the pipe of the pipe.

HELLO

8. 1998: a)

- Type of soil
- Type of crop to be grown
  Source of water / quality of water
  Size of land to be irrigated
  Capital available / topography of land
  Profitability / viability of the enterprise.

HELLO

b)

- Water is evenly distributed over the required area
- Less water is used / it more water economical.
- Causes less soil erosion in sloppy areas compared to surface irrigation
- Leveling of land is not necessary
- Help to clean the plant for ease of transpiration / photosynthesis.
- Soluble fertilizers can be applied with irrigation water more easily than in surface irrigation.

c)

- Use of sprinkler
- Use of hose pipes
- Use of watering cans.

9. 1998

- Quality of material used for making the pipes / durability / resistance to rodent attack.
- Size of pipes i.e. diameter / length.
- Working pressure of the pipe / thickness of the pipe wall.
- Colour of the pipe.

10. 1998:

- Centrifugal motor dynamic pumps
- Piston / reciprocating pump • Semi rotary/Hydram
- Rotary pump.

11. 2000 Uses of water

- For diluting / mixing chemicals used to control pests, diseases, weeds for watering livestock e.g. drinking.
- Watering plants e.g. irrigation
- In processing farm produce e.g. coffee, carrot hides. • Domestic use e.g. drinking cooking
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-

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- For rearing fish.
- Mixing concrete in construction
- Recreation e.g. swimming pooling.
- Cooking and running machine engines water treatment plant and process.

12. 2000: a)

- To remove bad smell/taste from water thus makes it fit for human consumption.
- To kill disease causing organism that thrive in dirty water.
- To remove solid particles/impurities.
- To remove excess chemicals e.g. fluorine/that may cause hardness in water. **b)**
- For diluting/mixing chemicals e.g. pesticides.
- Acaricides, herbicides, fungicides.
- For watering livestock.
  For irrigation/watering crops.
  For processing farm produce e.g. hides, coffee, carrots.
- For washing farm tools equipment and farm structures e.g. animal houses.
- For domestic use e.g. cooking, drinking, sewerage disposal.
- For rearing fish.
- Mixing concrete/mortar in construction.
- Recreation purposes e.g. swimming pools.
- For cooling/running machines

c)

Stage I: Filtration at intake:	Water is made to pass through a series of sieves. Sieves trap large solid impurities.
Stage II softening of water	Soda ash (sodium hydrogen carbonate is added into the water).
Stage II coagulation and sedimentation	Alum/aluminum sulphate is added into the water. Alum facilitates coagulation and sedimentation of solid.
Stage iv , filtration	Water is passed through a filtration tank, that removes all solid impurities.
State v; chlorination	Small amounts of chlorine solution is added to the water chlorine kills pathogens disease causing organisms.

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Stage vi storage Treated water is stored in clean tanks before use/distribution.

13. 2001

Size of the farm

Type of enterprises in the farm

Source of water

Method of conveyance of water

15. 2002

It is water economical

Can use water under low pressure

Does not encourage fungal diseases

Discourage growth of weeds between the crop rows

16. 2003

Repair/ replace worn out parts

Regular cleaning

Regular painting to prevent rusting

17. 2003 The water treatment process

Stage 1. **Filtration of an intake**

Water is made to pass through a series of sieves where large particles of impurities are trapped

Stage 2 **Softening of water**

Water is let to circulate in a tank (open) and mixed with soda ash to soften it

Stage 3 **Coagulation and sedimentation**

Alum is added to water to facilitate sedimentation and coagulation. Water stays here for 36 hours

Stage 4 **Filtration**

Water passes into infiltration tank where all the remaining solid particles are removed.

Stage 5 **Chlorination**

Filtered water enters chlorination tank where a small amount of chlorine is added to kill disease agents.

Stage 6. **Storage**

Treated water is stored before entering distribution channels for use.

18. 2003

Furrow irrigation/ corrugate irrigation

Basin irrigation/ flood irrigation

19. 2003

.

- Open ditches

Underground perforated pipes

French drains

Cambered beds/ pumping water

Breaking hard pans/ sub- soiling

20. 2004 (a) Dams/ weirs/ streams/ river ponds/ lakes

(b)

Kill pathogens

Remove sediments

Remove bad smell/ taste

Remove chemical impurities

21. 2004 Reasons for water treatment

To remove bad smell and taste

To kill harmful micro-organisms which thrive in dirty water e.g. bacteria. To remove solid particles e.g. soil, sand sticks

To remove excess chemical impurities e.g. fluorides to soften water

SOIL FERTILITY

1. Benefits of farm yard manure

Improves soil structure/ water holding capacity

Supplies more than one plant nutrient

Longer residual effect

Promotes microbial activities in the soil

Locally available

Imparts a dark colour to the soil which help in temperature regulation Buffers soil PH/ improves cation exchange capacity

2.(a)

Ability of a soil to produce and sustain high crop yields continuously by providing adequate moisture, nutrients, oxygen, space and freedom from pests and diseases damage.

(b)

Adequate depth

Enough aeration

.

Adequate moisture

Sufficient nutrients

Freedom from pests and diseases

3. (a) (i)

Foundation materials e.g. maize stalks accept material that occur in abundance

Kitchen refuse, leaves

Farm yard manure/ any well rotten manure

Ash/ pottesic fertilizer

Top soil

Leaves cover/ trash

(ii) Importance

Provide source of micro- organism

Enrich the manure with K and P.3

Provide food for micro- organism that bring about decay

(b) (i) Sharp pointed stick checks the temperature of the manure during its formation to avoid over heating

(ii) Prevent entry of too much water causing water logging, poor decomposition and leaching of nutrients.

4. (a)

(i) A- Pit method

B- Heap system

(ii)

Drainage/ free draining soils on site Type of soil

Topography/ slope should be gentle

5. 1995

A crop is grown and then ploughed and incorporated into the soil while it is still green

7. (a)

Farm yard manure (FYM) improves soil structure/ improves soils water holding capacity.

Supplies a variety of plant nutrients

Has a longer residual effect

Promotes microbial activities in the soil

.

It is locally/ easily available
Moderates the soil pH/ increases cation exchange capacity

(b)

Species of animal from which the waste is collected
Food material eaten by the animal
Material used as bedding
Method of storage of the FYM
Age of the animal which produces the waste matter Age of the farm yard manure.

(c)

It is bulky hence difficult to apply/ laborious/ difficult to store/ handle
It has less nutrients per given volume
May spread weed seeds
May spread crop diseases e.g. black scurf in potatoes
Releases nutrients slowly

8. 1998

Leaching/ soil erosion
Plant uptake
Volatilization/ burning/ denitrification

9. 1999

Leaching/ soil erosion
Change of soil pH
Burning of land/ volatilization/ denitrification/ accumulation of salts
Fixation of nutrients/ nitrogen lock up
Uptake by plants/ weeds/ continuous cropping
Soil capping/ formation of hard pan
Presence of soil – borne pests/ monocropping

10. 2000 Rapid growth rate
Production of abundant foliage
Rich in plant nutrients/ leguminous/ rich in nitrogen
Ability to decay quickly
Adaptable to wide range of conditions/ hardy.

11. 2002

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Method of storage

Degree of decomposition

Type of organic matter used

Presence/ absence of non – biodegradable materials Amount and type of inorganic fertilizers added.

12. 2003

Appropriate depth

Proper drainage/ good water infiltration

Well aerated/ good water holding capacity

Adequate nutrients/ correct pH

Free from excessive infestation of soil borne pests and diseases.

13. 2003

Cultivation along the slopes/ across contours/ along river banks

Continuous cropping with annual crops

Pulverization of soil due to over- cultivation

Burning of vegetation/ overgrazing

14. 2005

Improves soil structure

Reduces leaching

Improves water holding capacity

Increases microbial activities

Increases cation exchange capacity

Improves nutrient status upon decomposition

Burning of vegetation/ overgrazing

LIVESTOCK PRODUCTION (COMMON BREEDS)

1. 1996

(i) Dromedary *camelus dromedaries*

(ii)

Can stay for long periods without water

Can with stand extremes of temperature

Able to eat dry feeds

It has thick hide and deep layer of subcutaneous which insulates in against effect of radiant heat

Feet have large surface area which enable it walk on sand without sinking

.

(iii) Characteristics of indigenous cattle

More resistant to tick borne diseases/ trop diseases

Can withstand high temperatures

Can survive on poor quality pastures

Can walk long distance in search of pasture and water

Have lower feed and water intake

(iv) Features of exotic beef cattle

Blocky/ square/ rectangular in shape

Low set/ short legs

A fleshy body

Thick neck

Smaller udders

3. 1998 (i) Jersey verses Friesian

Jersey requires less food.

Jersey are more tolerant to heat.

Jersey can survive on poorer pastures.

ii. Characteristics of goats that adopt them rid areas

Good foragers hence survive on poor pastures.
Ability to eat dry feeds Heat tolerant tissues.

iii. <u>Ways of improving indigenous cattle production.</u>

Cross breeding with exotic breeds with superior characteristics.

Supplementary feeding.

Proper control/prevention of livestock diseases.

1 (i) Jersey (ii)
Friesian

4. 1999:

Are more resistant to tick-borne diseases/tropical diseases.

Can withstand high temperature.

Can survive on poor quality pastures

Can walk for long distances in search of pasture and water.

HAVE lower feed and water requirement.

Layers/Broilers/Dual purpose

<u>AGRICULTURAL ECONOMICS</u>

1. 1994 The four types of records that a farmer should keep

Field operations records.

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Production records Consumable goods inventory.

Permanent goods inventory.

If there is no inventory records.

Market records Labour records Breeding records.

Breeding records

Benefits of labour

2. 2001 Reasons for keeping health record

- For use in selection and culling of animals on health grounds.
- Help to detect theft on the farm
- Help in planning and making sound decision
- Provide information for income tax assessment • Help to determine how creditworthy is a farmer. • Shows the assets and liabilities of the farmer
- Determine the value of the farms.
- Used in comparing performance between' enterprises/seasons/different farms.
- Help to solve disputes on the farm.
- Provide a history of the farm
- Help to determine terminal help trace history of diseases for better approach in treatment.
- Show when to vaccinate, deworm.
- Show costs on health of the animals in assessing/no fat ability of animals.

3: Conditions under which opportunity cost is zero

Where there are no alternative enterprises to choose from/competing for resources available

This is the value of foregone best alternative/choice. When resources are free/unlimited.

9. 2005: If there is no choice. When resources are free/unlimited.

SOIL FERTILITY II- INORGANIC FERTILIZERS

1. 2001:

They are highly soluble water/ easily leached/ no residual

Have a scorching/ burning effect on crops

.

They are highly volatile

2. 1996:

5 kg of K2o is contained ii 100kg of 25: 10:5

Therefore 400kg of fertilizer contains $\frac{400x5}{100}$=20kg

3. 1996:

Help in Carbohydrate formation and translocation/plays role in plant metabolism

Assists in uptake on Nitrates from the soil

Imparts diseases resistance to crops

Strengthens straws of cereals

Formation of chlorophyll

Help neutralization of organic acids in plants.

4. 1997:

Lodging in crops/ weak sterns Scorching of leaf tips and margins.

Chlorosis.

Premature leaf fall.

Mottling/brownish spots on leaves Stunted growth.

5. 1998:

Leaching

Plant uptake.

Volatilization/burning

6. 2001

(a)

Needed in protein synthesis.

Hastens vegetative growth in crops.

A constituent of the chlorophyll molecule

Increases the size of cereal grain

Regulates the availability of phosphorous and potassium. Improves succulence in crops.

(b)

Chlorosis of leaves Stunted growth.

Premature ripening of crops.

Premature leaf fall

Formation of purple pigments.

.

7. 2003:

Lodging? Weak stems? over succulence of stems
Scorching of leaves Delayed maturity.
Excessive foliage growth.
Cause blossom end rot in tomatoes

8. 2004:

Amino acids/protein synthesis
Increase oil content and hormones
Needed in formation of chlorophyll. Aid in Nitrogen fixation in legumes Needed in carbohydrates metabolism.

9. 2004:

Leave have purple pigmentation
Stunted growth
Poor root development
Lodging/weak stems in cereals
Poor seed and fruit formation

10. 2005: Broadcasting
Foliar application
Side/row/basal application
Fertigation
Hole placement/drilling

11. 2005: a)

Macro nutrients are required by the plants in relatively large quantities, but macro nutrients are required in small quantities

b)

Elongation of apices of roots and shoot,
Strengthens plant cell wall
Help in protein formation
Help in formation of the middle lamella
Used in cell division

CROP PRODUCTION- PLANTING

1. 1995

Early maturity of the crop
Plant assumes desired shape and size.
Possible to obtain two or more varieties of oranges on one root stock
Highly yielding.
Maintains parental genetic characteristics.

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Possible to propagate seedless e.g orange varieties.

2. **1995: (a)**

   Seed economical

   Easy to achieve correct spacing

   Make subsequent operations easy

   b)

   To obtain optimum plant population/efficient land use.

   Avoid competition for resources.

   Control spread of pests and diseases.

   Makes subsequent operations easy/easy to mechanize.

3. **1996.**

   Soil moisture content Seed size.

   Soil type.

   Type of germination Soil moisture content Soil fertility.

   Machinery to be used.

   Intended use of the crop.

   Growth habit

   Prevalence of pests and diseases. Cropping system used.

4. **1997**

   To enable the crop to smoothens.

   For maximum utilization of seasons rainfall.

   Enable the crop evade serious attack by pests and diseases.

   Enable maximum utilization of available nutrients before they are leached.

   Reduced competition for labour. To get good market price.

5. **1997**

   To improve Nitrogen fixation in the roots of legumes

6. **1997**

   Highly yield.

   Eases control of weeds/pests/diseases. Aids in soil and water conservation.

7. **1998**

   Variety of maize Method of planting Purpose of the crop.

.

Soil fertility Soil moisture content Number of seeds per hole.

Use of machinery in subsequent operations

8. 1998

Rainfall pattern/reliability.

Variety of beans

Incidence of pests and diseases attack. Expected harvesting time.

9. 1999

To obtain high yield.

Reduce pest/disease /weed attack

To ensure high germination percentage, To obtain high quality produce.

To obtain high quality produce.

To obtain seeds suitable to the particular area.

10. 1999

Fertility status of the soil Use moisture content.

Use to which the crop is to be put, machinery to be used. Growth habit of the crop/variety Number of seeds per hole. Prevalence of certain diseases, pests Crop stands either pure or mixed.

10.2000

Intensive land use.

Control soil erosion.

Reduce cost of production Ensure early pasture establishment.

11. 2000: (a)

Induces lodging

Difficult to carry out field operations.

Reduced yields.

Low quality produced/ small cobs.

(b)

1 ha= 10,000m^2

1m x 0.5m

= 20,000 plants/ha

12.2002

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Thinning

Gapping

13.2002

Free from pest/ disease attack

Resistant to diseases

High yielding

Has high quality produce

High rooting ability

Early maturing

15.2002

Rainfall availability

Incidence of pests and diseases

Expected weather conditions during harvesting

Market demand of the crop

Type of soil

16. 2002

Uses higher seed rate

Not easy to sue machines

Not easy to establish the right population

Overcrowding in some areas

Uneven germination

Difficulty to carry out field practices

17. 2004 Soil type

Soil moisture content

Size of seeds

Type of germination

18. 2005

Enable the crop to withstand competition from weeds

Enable the crop to escape attack by pests and diseases

To better utilization of nutrients in the soil

For better utilization of available rainfall

To get good market

To reduce competition for labour

To time harvesting to occur during appropriate weather conditions

.

CROP PRODUCTION – NURSERY PRACTICES

1. 1996/ 2005

(i) Reduce competition/ ensure healthy seedlings

(ii) Prepare the seedlings for the harsh conditions expected in the field **2. 1997**

Removal of the shade
Reduce the frequency of watering

3. 1998:

Free from pest/ diseases
Resistant to diseases
Adaptable to different soil pH
Can withstand water loggings
Compatible with several scions

4. 2006

Requires less skills to establish
Easier to prune
Higher yielding in the early years of bearing
Does not allow accumulation of CBD due to frequent removal of old stems
Comes to bearing earlier

CROP PRODUCTION – FIELD PRACTICES

1. 1997/2005

Allow adequate light penetration into the plant
Improve quality of the fruits
Reduce incidence of pest and disease attack
Enable effective use of chemical sprays
Facilities easy harvesting **1998:**
To prevent sprouting
Reduce pest attack
To prevent fungal diseases/ rotting

4. 1999 (a)

Facilitates field practices e.g spraying and harvesting
Improves the quality of crops by preventing soiling
Enable crop grow in the required direction
To improve yield
To control pests and diseases

(b)

.

Passion fruits, tomatoes, cucumber, grapes, tea, pumpkin, water melons, Boungain vellia, garden peas, yams, gourds, indeterminate beans, roses, money plant, hops, okra

5. 1990

Moisture content of grains

Colour of leaves and grains

Intended use of the crop

6. 1999

Improves soil aeration upon decomposition

Reduce toxicity of plant poisons upon decomposition

Reduce soil erosion

On decomposition it improves soil structure

Modify the soil temperature

Add nutrients on decomposition

Improves water infiltration

Increases microbial activity

Control weeds

Reduces evaporation of water

Buffer soil pH upon decomposition

7. 2000

Reduce run - off thus increase soil moisture

Reduce evaporation thus maintaining high moisture in the soil

8. 2001 (a) Growing of different types of crops on the same piece of land following orderly sequence.

(b)

Ensure maximum utilization of nutrients

Control soil – borne pests and diseases

Control weed

Add nitrates into the soil

Control soil erosion

Improve soil structure

(c)

Deep rooted crops alternate with shallow rooted ones

Crop easily weeded are alternated with those difficult to weed

Crops of the same family should not succeed each other

Heavy feeders should come first in the cycle

Include a legume crop

.

CROP PRODUCTION V- VEGETABLES

1. 1996 (a)

Irregular watering of the crop/ water stress
Excess application of Nitrogen in early stages
Deficiency of element calcium in young fruits

2. 1996/ 2005 (a)

Regular watering
Addition of calcium into the soil
Mulching

(b)

Regular watering
Addition of calcium into the soil
Mulching
Avoid excess Nitrogen in the soil

(c)

Size of fruits
Degree of ripeness
Damage of tomatoes
Shape of fruits

LIVESTOCK HEALTH – INTRODUCTION

3. 1996/1997 (a)

They have a longer productive life
Produce high quality produce
They are less expensive to keep
They are high yielding
Do not spread diseases others/ man
They breed regularly

2 (b) 1997

Foot and mouth diseases
Anthrax
Rinder pest
Lumpy skirt disease
Rabigs

3. 1999

Prevent deficiency disease

.

Improves animals and ability to resist diseases

4. 2000

General farm hygiene/ cleanliness of houses. Feed/ water trough – W proper carcass

Disposal; to destroy pathogens

Isolation; prevents spread of the diseases

Drenching; to control internal parasites

Treat sick animals; prevent spread of the diseases Vaccination; develop resistance against diseases.

Control vectors, prevent transmission of diseases

Prophylaxis; avoids infection

Slaughtering en- mass; prevent spread of diseases

Proper breeding; control breeding diseases

Quarantine; avoid spread of the diseases

Hoof trimming; minimize occurrence of foot rot

Proper housing; avoid predisposing causes of diseases

5. 2002

Through vectors/ external parasites

Ingesting contaminated feed, water, milk

Inhaling contaminated air

Through surgical and instrument e.g. scalpels, needles, docking knife etc

Mating

Suckling young ones

LIVESTOCK HEALTH – PARASITES

2. 1995 (a) (i)

Red water (Babesiasis)

Gall sickness (Anaplasmosis)

(ii)

East Coast Fever (ECF) Theileriosis

Red water (Babesiasis)

Nairobi sheep disease

Texas fever

(b) Two hosts **2.**

1998 (a)

Anaemia

Irritation/ scratching

Loss of hair

.

Wounds on skin

Presence of parasites on the body

(b)

Regular drenching Rotational grazing

Drain swampy areas

Use of latrines by farm workers

Use appropriate chemicals on swampy areas/ sue $CuSO_4$ solution

Burn heavily infested pastures

Plough infested pastures

Peripheral fencing

Use of ducks on snail

(c)

(i) Pig

(ii) Fresh water

snail **3. 2000**

Larvae climbs on host

Larva feed on 1st host

Larva drop on the ground and moults into a nymph

Nymph climbs – onto 2nd host

Nymph feeds on 2nd host

Nymph drops on the ground and moult into an adult

Adult climb on 3rd host

Adults feeds and mate on 3rd host

Mated, engorged female drops and lay eggs on the ground Egg hatches into larvae

4. 2003

Burning infested pastures

Hand picking and killing of ticks

Rotational grazing

Double fencing of pastures

Zero grazing

Ploughing infested pastures

5. 2004

Proper meat inspection

Proper disposal of infested carcass

Routine deworming of livestock/ human beings pets

Rotational grazing

Proper use of latrines

.

Proper cooking of meat

Burning/ ploughing infested pastures

LIVESTOCK HEALTH – NUTRITION

1. 1995/ 2002

Production ration is the feed given to an animal over and above maintenance level in order to produce a given product

2. 1995

Water soluble vitamins

Fat soluble vitamins

3. 1996

Size of the animal

Level of production

Type of feed eaten

Ambient temperature

Physiological status of the animal

Species of the animal

4. 1996

(a) Roughage is a feed with high fibre content and low energy content; while concentrates is a feed with high protein/ energy content and low fibre content

(b)

Synthesis/ formation of various products e.g. milk, meat

Foetal development

For work. Provide draft energy

Growth

4. 1992 Bulky

Low digestibility

Low in energy/ protein content

Highly fibrous

Plant origin

5. 1998

Raw materials for synthesis of livestock products e.g milk, eggs

Growth of cells

Production of energy

Formation of enzymes. Hormones and antibodies

Repair of worn out tissues

.

6. 1999/ 2002 Body weight/ size

Age of the animal

Work done

Level of production

Physiological condition e.g. pregnancy

Weather conditions ambient temperature

7. 2000

A component of milk

Formation of the skeleton / teeth

Blood clotting

Nerve functioning/ control milk fever

8. 2001

Nutrient requirement of the animal

Age of the animal

Type of animal whether ruminant or non- ruminant

Availability of feedstuffs

Cost of the food stuffs

10. (a) 2002

Production ration is the feed given to an animal over and above maintenance level in order to produces a given product

(b) 2002

Body weight/ size

Age of the animal

Work done

Level of induction

Physiological condition e.g. pregnancy

Weather conditions/ ambient temperature

11. 2004

Provide energy/ maintenance of body temperature

For growth and repair of body tissues

For maintenance of good health

Production of various products

Enhance reproduction

LIVESTOCK PRODUCTION (III)–SELECTION & BREEDING

1. 1994

.

By concentrating genes from the parents to the offspring's

2. 1994

Reddening and swelling of the vulva
Clear mucus discharge from the vulva
Frequent bellowing
Cow mount others
Cow stands still when mounted by others
Cow becomes restless
Slight rise in body temperature
Slight drop in milk in lactating cows
Loss of appetite urinating frequently

3. 1996

It is uneconomical to keep a bull
May lead to uncontrolled mating
High risk of transmission of breeding diseases
Only a small number of cows can be served

4. 1997: Mating of two unrelated animals of the same breed

5. 1997 (a)

(i) A- Oviduct/ fallopian tube
B- Ovary
C- Uterus
D – Vagina

(ii) A – passage of Ova from the ovary to the uterus
-Site of fertilization
B – Production of ova
Production of female sex hormones

(b)

(i) Artificial insemination
(ii) Natural method (c) 19 – 23 days/ 3 weeks **1998:**

Increased ability and performance of the offsprings above the average of the parents

7. 1999

Should be of age/ mature S – 7 months old/ 90 – 100kg live weight
Good mothering ability
Able to grow fast
Good conformation

.

With no physical defects
Healthy
Has 12- 14 teats
Highly prolific
Able to withstand heat stress during mating

8. 2003

(i) Mating closely related animals e.g brother and sister
(ii) Mating unrelated animals but within the same

(b)

(i) Harmful traits/ diseases can spread fast
(ii) Requires trained personal/ skills
(iii) Laborious
(iv) Low chance of conception due to poor timing/ death of sperms,

(c)

Good body conformation/ wedge shaped
Docile/ mild temperament
Her ancestors should have a record of high milk production
Free from physical deformities
Good health
Good size/ weight for the breed

LIVESTOCK PRODUCTION (IV) – REARING PRACTICES

1. 1994 He goats
Male calves
Rams

2. 1993 Bad smell
Overheating
Lack of food/ water
Sick/ infertile queen
Attack by predators/ destruction of brood
Too much noise

3. 1996: J (i) Docking/ Tailing
(ii)
To facilitate mating/ to ease mating
To control blow fly attack
To ensure uniform distribution of fat
(iii) 1-2 weeks after birth
(iv)

.

Use of elastrators and rubber ring

Use of sharp knife

Use of a docking iron

(v) Hoof trimming

(vi) The animal would become lame

Foot rot may develop

(vii) In a sitting position facing away from the person shearing

4. 1998: To make the bees less aggressive

5. 1998

- Old age
- Low fertility
- Difficult in furrowing
- Less milk production
- Passing undesirable characteristics to its young ones
- Poor hearth
- Poor mothering ability

6. 1998 (a) Thick yellow secreted by the mammary glands within the first week after giving birth

(b)

- Has a laxative value that helps to cleanse the bowels
- Rich in antibiotics that confers artificial immunity
- Highly nutritious is necessary for fast growth) of the calf
- It is highly digestible, hence appropriate for the underdeveloped calf's digestive system

(c)

Bucket feeding/ Artificial feeding

Natural method/ calf sucks the dam

6. 1999

Restlessness

Loss of appetite

Swelling of vulva

Udder enlarges

Mucus discharge from the vulva

Presence of colostrums in the teats

.

Relaxation of ligaments on either side of the pelvic bones
Cow isolate herself **7. 2000**

To make them docile
To improve growth rate
Control breeding diseases
To prevent inbreeding
To control breeding
To improve meat quality

8. 2000

Highly palatable
Has high digestibility
Rich in nutrients

9. 2000

Prevent the bees from absconding
To avail food during time of seed scarcity
To attract bees into a new hive
To encourage multiplication of bees
To ease access of feed

10. 2000

Proper feeding
Control internal parasites
Control external parasites
Vaccination
Zugging/burlying
Hoof trimming
Provision of adequate clean water
Treat in case of infection

12. 2001

Routine feeding
Application of manure/ fertilizer
Cropping
Maintenance of water flow/ changing the water regularly Control of predators

13. 2002

Restless
Loss of appetite
Udder/ teats enlarge
Present of milk in the teats 24hrs before farrowing
Vulva enlarges

.

Muscle on either side of the tail/ pelvic bones slackens Sow prepares a nest

14. 2002

During drought/ when there are no flowers

Incase of a new colony

When the colony is small/ to encourage fast multiplication

15. 2003

Deworming

Flushing

Crutching/ ringing/ cutting wool around reproductive organs

Riddling

Wigging/ cutting wool around the face

16. 2005 Catfish

Tilapia

Trout

Carps

Bass

Tench

Blue gill

Nile perch

FARM STRUCTURES

1. 1994

(i) 0.5m/50cm

(ii) To prevent dampness

(iii) To allow proper lighting

(iv)

Nearness to the milking shed Well drained area/topography.

Soil type

Security

Wind direction

2. 1995 It is cheap

It is attractive

It is easily available

Easy to work with

3. 1995 Siting

Should be near the homestead for security

.

Should be in an accessibility place

Sheltered from strong wind

A well drained area

On the leeward side of the farm house

Where there is large space for possible expansion in future

Selection of building materials Use easily available materials

Choose durable materials

Consider the cost of the material

Consider the skills needed to work with the materials

Materials to choose from; iron sheets, wire mesh off cuts, timber, concrete

Requirement of the hutch

Should be leak proof

Should be well ventilate

Should be free from draught

Should be easy to clean

Should have raised floor

Floor should allow free drainage

3. 1996

To prevent warping/ bending / twisting

To prevent rotting/ damage by fungi

To prevent it from pest attack

To enable timber to achieve it maximum strength

4. 1996

Advantage: It's more effective in preventing animals from forcing their way through the fence

Disadvantage: It's more expensive than plain wire

The bars may cause injury to the animal/ destroy wool.

5. 1996

Allows air circulation in the house

Controls temperature in the house

Prevent humid condition inside the house

7. 1996: 1 cement, 3 and, 4 ballast/ gravel

(b) 1/ cement

(c)

It is durable

It is fire proof

It is easy to clean

.

Can be moulded into various shapes

9. 1997

Should be raised from the ground
Should be leak proof
Should be easy to clean
Should be well ventilated
Should be rat proof/ vermin proof
Should be easy to toad/ offload
Strong enough, spacious

10. 1998

Reduces incident of accident when using them
Ensure efficient usage of the structure
To increase its durability
To give high re- sale value of the structure

10. 1998

Topography/ drainage
Accessibility of the pen
Wind direction
Direction of the sun
Security of the calf
Location of existing, structure/ amenities
Space for future expansion

(b)

Strength/ durability of the material
Cost of the material
Availability of the material
Availability of capital
Workability/ skills required in using the material
Type of pens (permanent/ temporary)
Climate of the area
Safety of the calf

(c)

Repair/ replace worn out/ broken parts
Clean the pen regularly
Ensure drainage system is working
White wash the walls

11. 1999

Partial burning/ charring of the posts

.

Cut the top in a sloping manner
Cover the top with a plastic/ metal sheet
Reinforce with concrete

12. 1999 Well ventilated
Easy to clean
Leak proof
Well drained floor
Draught free
Spacious
Well lit

13. 1999
Repair/ replace broken parts
Regular cleaning to remove dirt
Dust/fumigate/ spray to control parasites and diseases
Apply old engine oil on timber parts
Ensure good drainage around the house
Maintain a footbath at the entrance

14. 2001
It is more durable
Its stronger
Its fire resistant
Its not attacked by vermin's

15. 2001 (a)
Provide security from thieves, predators
Enable paddocking/ rotational grazing/ mixed farming
Control parasites and diseases by keeping away foreign animals
Show boundaries between farms
Hedges act as wind breaks
Have an aesthetic value
Hedges help to conserve soil and water
Hedges may be source of fruits/ fodder/ firewood
Provides privacy
Enables isolation of animals for different purposes

(b)
Wind direction
Soil type
Security
Accessibility of the structure

.

Location in relation to existing structure
Topography/ drainage
Government policy/ regulations
Purpose of the structure
Position of the sun
Proximity to social amenities
Space for future expansion
Farmers tastes and preference

16. 2002 adds beauty to the farm
Source of firewood
Source of fodder/ mulch material
Serves as a wind break
Control soil erosion
Controls animal/ human movement
Provides security/ privacy
Mark farm boundaries

17. 2003

- Top bars can easily be removed and replaced when inspecting the combs
- Easy to construct
- Ensure high quality honey
- Easy to harvest
- Help to avoid mass killing of bees
- Possible to exclude the queen from the honey combs

18. 2003

- Paint metal tanks
- Regular washing of the tank
- Repair any leakage

19. 2004 (a)

- **Claw hammer;** for driving in and out nails from wood
- **Tape measure;** to measure the required sizes of timber
- **Tin snip;** for cutting iron sheets for roofing
- **Clamp/ sash camp;** for holding tightly together pieces of wood when cutting/ joining

.

- **Handsaw:** for putting timber to the required size
- **Wood chisel/ Brace/ hand drill;** for boring holes in wood
- **Mallet;** for hitting the chisel when boring holes
- **Pliers;** for cutting wires
- **Jack plane;** For smoothing timber surface
- **Marking/ mortise gauge;** for marking points for cutting / planning on timber

.

-
-

Ball pen hammer; for straightening/ shaping metal sheet

Try square/ combination square; for determining right angles on cutting points of timber

(b)

- Clear the site to be fenced
- Use a string to layout the fence line
- Determine the position of posts using a tape measure
- Dig the holes using a hole digger/ claw bar
- Use a ruler to determine the right hole depth
- Obtain the right length of the posts using a tape measure
- Obtain the posts to the required depth using a handsaw
- Put concrete at the bottom of the hole
- Place the posts in the holes
- Ensure posts are vertical/ right angles
- Fill up the hole with soil/ concrete
- Firm the soil/ concrete in the hole using a ramming rod
- Heap soil/ concrete at the base of post

20. 2005

- It is more expensive
- It requires a lot of skills to work with
- Prone to rusting
- Its not easily available
- Its heavy and difficult to transport

SOIL AND WATER CONSERVATION

1. 1995

- Reduce the speed of water hence erosive ability
- Trap soil being carried by moving water

.

-
-
- Increase infiltration of water hence reduce surface run- off

2. 1996

- Reduce the volume of run- off due to increased infiltration
- Acts as windbreakers
- Reduce the impact of raindrops on the soil
- Tree roots bind the soil particles together reducing its erodibility
- Reduce the impact of raindrops on the soil
- Reduce speed of run- off
- Improve soil structures thus reducing the erodibility of soil

3. 1997

- To prevent loss of plant nutrients
- To maintain good soil structures

4. 1998

- Reduce the seed of run- off thus lowering the erosive of water
- Reduce impact of raindrops thus reducing splash erosion
- Cover the soil protecting it from wind erosion
  Grass roots bind the soil particles together reducing the erodibility of soil
  Reduce speed of run – off, thus reducing the erosive power of water
- Organic matter from grass improves soil structure thus reducing erodibility of the soil

5. 2003 – Reduce evaporation
- Reduce surface run- off

6. 2004 (a) Afforestation is the practice of growing trees in areas where they had not existed,

(b) Re- afforestation is the practice of growing trees where they have been harvested.

6. 2005

- Topography of the area
- Rainfall intensity/ amount
- Type of soil

.

-
-
- Soil depth
- Vegetation cover
- Farming practices

WEEDS AND WEED CONTROL

1. 1998

- Prevents weeds from establishing in the field
- Prevent allelopathic effects of weeds
- Reduce the cost of crop production
- Reduce multiplication and spread of the weeds
- Reduce spread of pests/ diseases for which weeds acts as alternate hosts
- Reduce competition between weeds and the crop
- Avoid contamination of crop with weed seeds
- Prevent injury to the farmer/ livestock

2. 2000

- Uprooting
- Cultivation
- Mulching
- Application of herbicides
- Slashing

3. 2000 (i) G – Couch grass *(digiteria sealarum)*
H- Sodom Apple *(solanum incarium)*

(ii)

- Compete for resource with cultivated crops
- It increases the cost of crop production
- Lowers the quality of pastures

(iii) It has deep underground structures difficult to remove

4. 2001 Disadvantages of weeds

.

-
-
- Compete for resources with crops
- Increase the cost of crop production
  Some may contaminate the crop lowering the quality.
  Irritate the workers lowering labour efficiency.
- Some weeds are parasitic to crop pests and diseases
- Some weeds are allelopathic.

4.2004:

Produce large quantities of seeds

Seeds remain viable for along time

They have effective mechanisms of dispersal

Some weeds have the ability to propagate both by seeds and vegetatively.

They have elaborate root system.

Some have underground structures difficult to control.

Some are able to survive with limited nutrients.

Some are able to compress their life cycle. Some weeds are allelopathic.

6.2004:

(i) Thorn apple (*Datura stramonium*)

(ii) Annual weed

(ii) Poisonous if eaten

LAND TENURE AND REFORMS

1. 1997:

Difficult to control pests and diseases/diseases and parasites spread faster.

Land disputes are common

No motivation to conserve land

No motivation to make long term investments An individual cannot use land as security to acquire

Difficult to control breeding in livestock.

2. 1999:

Saves time and money

Makes it easy to have a sound farm plan e.g rotation programme.

Eases soil conservation.

.

-
-

Eases supervision as al enterprises are at one place.
Facilitate mechanization.

3. **2003:**

To settle the landless.
To ease population pressure.
To increase agricultural production.
To improve people's standard of living.

4. **2005:**

Communal tenure
Co-operative tenure

.

PESTS AND DISEASE CONTROL

1. 1994:

(i) Weaver bird

(ii)

By eating the grains

Opening the cab to water that leads to rotting of the grains,

(iii)

Use of scare crows

Trapping

Use of explosives

Use of resistant varieties

2. 1994: (i) Cutworm/Agrotis

(ii) Cuts the stern causing lodging.

Use of appropriate insecticide. Removing it and killing it.

3. 1995:

Its cheap

Saves on labour.

Does not cause environmental pollution.

4. 1995:

- Destroy the alternate host
- Practice crop trapping.
- Destroy the crop remains **5. 1996:**

Seed dressing using appropriate chemical.

Use of resistant varieties Practice close season.

Practice field hygiene/destroy crop residual.

6. 1998:

Concentration of the pesticide

Weather condition during and soon after application Stage of development of the pest.

Persistence of the pesticide.

Formulation of the pesticide.

Mode of action of the pesticide.

1999: (a)

Biting and chewing

Piercing and sucking

(b)

.

Store hygiene/ensure store is clean Proper drying of grains.

Ensure store has proper ventilation.

Keep store airtight.

Clear the bush around the granary.

8 1999:

Proper plant nutrition, increase disease resistance/control deficiency diseases.

Crop rotation breaks life cycle of pathogens Rogueing, prevent further spread of the disease.

Use of disease free planting materials: prevents introduction of pathogens in the field.

Close season breaks the life cycle of pathogens.

Timely /early planting; help crop to establish early before attack.

Proper spacing; creates unfavorable conditions for some pathogens.

Weed control; eliminate weeds that could be alternate hosts for particular pathogens.

Resistant varieties; ensure crop is not attacked by the pathogen.

Use of clean equipment/tools, prevent spreading of the disease from one plant to the other.

Quarantine; prevent spread of the pathogen from one farm to the other.

Heat treatment; kills the pathogen.

Pruning; creates unfavorable microclimate for some pathogens/prevent spread of the disease.

Destroy crop residue; kills the pathogen.

Control the vectors, prevent further spread of pathogens.

9. 2003:

Plant resistant varieties Practice crop rotation.

Practice field hygiene.

Use of clean planting materials.

Trim roots of suckers before planting.

Plant Mexican marigold close to the banana plants.

10. 2003:

(a) Point at which damage on a crop by pest is beyond tolerance and has to be controlled. (b)

- By contact
- Through ingestion

.

- By suffocation

(c)

- Pesticides are expensive.
- Pesticides requires special skills to handle. They are poisonous/environmental hazard.
- Some are non-selective/they kill useful organisms.
- Some pest develop resistance to the pesticide.

11.2004:

- Lower the quality of farm produce.
- Lower they yield.
- Increase cost of production
- Some pests are vetors of crop diseases.
- Some pest lower labour efficiency by irritation.

12.2005:

- Early planting
- Roqueing • Trap cropping **13.2005 :**

Attack by nematodes.

Root nodules due to nitrogen fixing bacteria.

FIELD PRACTICES (II)

1. **1994:**

   Field birds; *accept any appropriate example.*
   Shoot fly; Stem borers.
   Diseases; Rust, Downy mildew, Ergot, smut

2. **1996:**

   The crop has well developed roots to absorb the nitrogen before it can be lost
   Maize is growing fast and requires a lot of nitrogen.

3. **1996:** Head smut/smut
4. **1996:**

   Putting rat guards/ ensures granary is vermin proof.
   Ensure store is clean.
   Clear the vegetation around the granary.
   Harvest the grains on time to prevent attack in the field.

.

Proper drying of grains.
Use rat traps Use of cats.

5. **1996:** Weevils,
   Flour beetles,
   Lesser grain borer;
   Greater grain borer;
   Khapra beetle;
   Warehouse moth; Saw toothed grain beetle;
   Angoumois grain moth.

6. **1996**
   (i) K, G, H, J
   (ii) Failure of boll to develop
   (iii)
      Do not pick the lint when it is wet
      Pick on weekly bases
      Avoid dry twigs or leaves contaminating the cotton
      Do not use sisal bags to hold cotton as the sisal fibres may contaminate lint,

   (iv)
      Cotton lint
      Cotton seed

6. 1997
   Early/ timely planting
   Practice crop rotation
   Practice field hygiene
   Destroy crop residue
   Practice rogueing
   Use healthy / certified seeds
   Practice close season
   Use appropriate pesticide to control the vector
   Uproot volunteer crop

7. 1998 (i)
   Field hygiene/ destroy crop residue/ rogueing
   Use of trap crop
   Destroy alternate host/ weeds
   Timely harvesting

.

(ii)

Stalk borers

Armyworms

Aphids

Dusty brown beetles

Weevils

Termites

Locusts

Leaf hoppers/ grasshoppers

Cystic beetle

Great/ lesser grain borer; cut worms

American bollworms

9. 2000

Uprooting weeds cultivation

Mulching; t application of herbicides

Slashing/ cutting the weeds

10. 2000

Control the vector

Use certified seeds

Use of resistant varieties

Practice field hygiene

Early planting

Roqueing

Practice close season

FORAGE CROPS

1. 1994/ 1995

Mixed pasture is more nutritious

Economies on nitrogenous fertilizers by N- fixation

There's higher yield per unit area

There is security incase of failure of one crop

It provides a good soil cover hence control erosion

There is maximum utilization of soil nutrients

3. 1996

Leads to exhaustion of pasture crop

May lead to high incidence of parasites and diseases Leads to soil erosion

.

4. 1997

To raise the carbohydrate level for proper fermentation

To increase the nutrient level of silage

To increase the palatability of silage

To restrict growth of undesirable microorganisms

4. 1997 (a)

(i) Under- sowing is the establishment of a pasture crop under a nurse crop

(ii) Over- sowing is the establishment of a high quality pasture crop on an existing grass pasture

(b)

- Slashing/ moving
- Uprooting
- Use of selective herbicides

(c)

Replenish soil nutrients

Hasten growth/ increase herbage yield

Improve the nutritive value of the crop

Amend soil physical and chemical properties

Enhance decomposition of organic matter by micro- organism/ increase microbial activity

5. 1998

Rotational grazing/ controlled grazing

Proper stocking rate

Conserve excess pasture

Timely defoliation

Practice zero grazing

Graze different classes/ species of animals

6. 1999/2004

Stage of growth at harvesting time

Species of the forage crop used

Duration of storage

Soil fertility where the crop was grown

Weather conditions during drying

Length of drying period

Pest/ disease attack on the crop

Method of storage

8. 2000

There is intensive/ efficient use of land

.

Reduces the cost of forage production

Control soil erosion due to ground cover

Ensure early pasture establishment

8. 2003 (i) Seedbed preparation

Practice early seedbed preparation/ during the dry period

Clear all the vegetation/ stumps

Carry out primary tillage

Dig deeply to remove all weeds/ perennial weeds

Carry out secondary tillage

Seedbed should have a medium tilth

Prepare furrow/ holes for planting

Spacing between furrows 90- 100cm for cuttings/ 90 – 100cm x 50cm for splits **(ii) Planting**

Plant at the onset of the rains/ early planting

Select desirable Napier grass variety for the ecology of the area

Use healthy planting materials

Use cuttings/ canes or splits for planting

Cutting/ canes should have 3-5 nodes

Select cutting from mature canes/ stems

Place planting materials in the furrows/ holes

Cover the material with soil to the appropriate depth

(iii) Fertilizer application

Apply phosphate fertilizer at planting

Apply farm yard manure/ composite manure before planting

Rate of organic manure should be 7 – 10 tons/ ha

Apply organic manure after harvesting and dig it into the soil every year

Top dress with Nitrogen and potassium 6-8 weeks after planting **(iv) Weed control**

Control weeds by; cultivation, uprooting, slashing, selective/ appropriate herbicides, intercropping with legumes that smoother or the weeds

Practice timely weed control **(v) Utilization**

Cut and feed it to ruminants.

Defoliate/ cut at the right stage of growth/ 3 - 5 months old/ when stems are 1 – 1.5 m high

Cut the stems at 2.5 – 5 cm above the ground surface

Use sharp panga for cutting

Conserve excess as silage

Chop Napier grass into small pieces before feeding

.

Napier grass can be dried and used as mulch

9. **2004** (a) Lucerne, silver/ green leaf, desmodium siratro, stylo (b)
   Reduce build- up of parasites and diseases
   Animal waste is evenly distributed in the fields
   Excess pastures can be conserved
   It is easy to carryout management practice
   Pasture is given time to regenerate
   Pasture is maximally utilized

(c)
   Sprinkling some water
   Reduce compaction
   Fill the silo and seal it from air rapidly

10. **2005**
   Control soil erosion
   Ensure adequate pasture for animals
   Increases the useful life of the pasture crop

11. **2005** (a) Practice of coating legume seeds with a nitro- culture/ rhizobium bacteria
   (b) Growing a legume pastures over an existing grass pasture

LIVESTOCK HEALTH (III)

1. **1994** Oral (mouth), broken skin (wounds), nasal, ocular (eyes), anal, ears, reproductive organs, umbilical cord
2. **1995**
   Routine vaccination
   Slaughtering all infected animals
   Impose quarantine
   Treatment of wounds
3. **1996/2004**
   Difficult in breathing/ respiratory problem
   Dullness/ birds stands with eyes closed
   Anorexia/ loss of appetite
   Nasal discharge
   Sneezing
   Droopy wings
   Yellow/ greenish watery diarrhoea
   Drop in production
   Soft- shelled eggs
   Torticolis/ bending of neck
4. **1996**

.

Wounds on the udder/ teats
High milk production
Very old cows
Unhygienic handling of the cow
Poor udder placement/ pendulous udder
Incomplete milking
Genetic factors
Early and late lactation period
Poor milking technique

5. **1996**

Blood/ pus in milk
Painful udder/ teat/ animal kicks when teats are touched
Swollen/ inflamed udder
Clots/ thick milk
Watery milk
Blocked teat canals
Drop in milk production
Foyer

6. **1997**

Anthrax
Rinderpest
Foot and mouth
Lumpy skin disease

7. **1996/ 2004**

Routine vaccination
Isolate infected birds/ kill all infected birds
Disinfect the poultry house before introducing a new stock
Obtain chicks from reliable sources
Imposition of quarantine

8. **1997 (i) Fowl pox**

May lead to death of the birds
Farmer incur extra expenses in its control

(ii)

Kill and dispose off all infected birds
Routine vaccination
Control biting parasites
Treat wounds

9. **1999**

.

Wounds in infected hooves
Foul smell from infected hooves
Spend most of the time lying if both hind legs are infected
Grazes when kneeling it fore legs are infected
Loss of appetite
Lameness/ limping
Swelling of infected hooves
Emaciation

10. **2000** (i) Protozoa/ coccidiax/ Eimeria species
(ii) Bacterium/ clostridium spp/ clostridium chauvei

11. 2000 (i)

Long hooves
Damp environment/ poor hygiene
Injury on hooves
(ii)
Anaemia
Fever
Constipation
Lack of appetite/ anorexia
Inability to move
Reduced milk production
Animal becomes aggressive

12. 2000

General farm hygiene to kill the pathogens
Isolate sick animals to prevent spread of the disease
Deworm the animals to control endo–parasite
Treat the sick animals to prevent spread of the disease
Vaccinate the animals to develop resistance against disease attack
Control vectors to prevent spread of the disease
Routine administration of drugs/ prophylaxis to prevent infection
Proper feeding to prevent deficiency / nutritional diseases
Mass slaughter of infected animals to prevent spread of diseases
Proper selection and breeding to control breeding and inheritable diseases
Proper housing to avoid predisposing animal to diseases
Foot trimming to minimize occurrence of foot rot disease
Imposition of quarantine to prevent spread of diseases

13. 2001

Lack of stiffness of the carcass/ lack of rigor mortis

.

Production of tar- like watery blood from all body openings Extensive bloating

14. 2001 (a) Bacterium/ *Brucella abortus*

(b)

Spontaneous abortion/ premature birth

Retention of after birth abortion

Bareness

Yellowish brown slimy odourless discharge from the vulva

(c)

Use artificial insemination

Cull infected animals

Vaccinate all young animal

Avoid direct contact with aborted foetus/ after birth

Observe hygiene/ proper disposal of aborted foetus

15. 2002

Routine vaccination

Improve quarantine

Kill and dispose off infected animals

Isolate sick animals

Disinfect the animal house

16. 2004/ 2005

Swollen lymph nodes High fever

Profuse salivation

Lachrymation/ production of tear

Difficulty in breathing

Bleeding in the vulva and mouth

Coughing

17. 2005 (a) Deficiency of calcium in the wood of the cow

Muscular twitching

Staggering as the animal moves

Animal become unconscious

Loss of appetite

Cessation of body functions

Dullness

Animal lies with the neck twisted for the head to lie on the shoulder

(c)

Feed animal with diet rich in calcium

Partial milking

.

Intravenous injection with calcium salts/ calcium borogluconate

POULTRY PRODUCTION

1. 1995 Debeaking

Making laying boxes/ nests dark

Feeding on balanced diet

Hanging green vegetation to keep birds busy scatter grains on the floor

Isolating and treating cannibalized birds

Control external parasites

Keeping birds according to age/ avoid introducing new birds Provide adequate space

2. 1995

Size/ weight/ volume of egg

Colour

Cleanliness

Shell quality e.g. broken, rough

Shape of the egg

3. 1998 (a)

Ensure brooder corners are rounded

Provide enough brooding space accordingly. Clean and disinfect the brooder house/ equipment.

Provide wood shavings/ proper litter on the floor

Maintain appropriate temperature range according to the age of the chicks

Temperature during the 1^{st} one week should be $32 – 35^0$ c, then reduce accordingly

Spread sheets of papers and sprinkle chick mash on them

Provide fire guard around the heat source

Maintain proper ventilation by adjusting the openings

Provide fresh, adequate and qualify feed/ chick mash

Provide brooder with reliable and appropriate lighting/ dim light

Provide adequate and appropriate waters/ feeders according to age/ number of chicks

Remove dead chicks from the brooder

Control parasites by applying appropriate pesticides

Control diseases appropriately

Isolate and treat sick chicks immediately

Keep proper records

Gradually change the feed in the last one week in the brooder

Debeak 8 – 10 days towards the end of brooding

.

Provide adequate clean water all the time

(b)

Combs and wattles are small, dry and cold/ combs have white scales

The space between the pelvic bones is narrow 2-3 fingers cannot fit in the space between the pelvic bones

Plumage is shiny, well preened/ sometimes moulting

Yellowish pigmentation in the vent, shanks and beak

Space between the keel bone and pelvic bone is small / 3-4 fingers cannot fit in the space

Eyes are dull and yellow

Abdomen is hard

The layer is lazy and dull

Hen becomes broody

4. 1999

Repair/ replace broken parts of the house

Maintain a footbath at the door of the deep litter

Clean and remove any dirt/ cob webs

Fumigate against pests and diseases/ spraying/ dusting

Paint some parts of the house/ apply old

5. 2000 Dirt

Abnormal size/ undersize/ oversize

Irregular/ broken/ soft shell

Internal abnormalities e.g. double yolk, meat spots, poor candling qualities Poor storage/ long storage beyond 5 days

6. 2001

Ensure laying nets are dimly lit

Provide adequate laying nests

Debeak perpetual egg eaters

Collect eggs regularly and frequently

Ensure birds get a balanced diet

Keep birds busy by hanging green vegetation in the house/ scatter grains on the liner.

7. 2002. (a)

Chicks move away from heat source

Parting/ opening beaks

Opening the wings/ spreading wings

Making abnormal noise

Drinking water excessively

Chicks may lie flat on their bellies

.

(b)

Requires less space/ high stocking rate
Less toss of eggs
Easier collection of manure/ easier accumulation of manure
Easier protection of birds from vermin's/ parasites/ diseases
Less labour requirement/ easier to collect eggs/ easy handling
Cheaper to set up than battery cage/ low initial cost

8. 2005

Should be fertilized
Should be medium in size
Should be oval in shape
Should not be cracked
Should de dean
Should be free from abnormalities/ blood spots/ meat spots/ double yolk
Should be 5 – 10 days old
Should have smooth shell

9. 2005

Regularly wash and disinfect the feeders/ waterers/ perches
Replace old wet litter/ turn litter regularly
Control visitors into poultry house/ use of footbath before entering the house
Avoid pouring water on the litter/ avoid dampness
Isolate sick birds
Treat sick birds
Dispose of dead birds immediately

LIVESTOCK PRODUCTION (vi)

1. 1995 (a)

K- Alveolus
L- Gland cistern
M – Teat cistern
N – Teat

(b)

(i) Milk let down is the flow of milk from the upper/ alveolar region of the udder to the gland and teat cisterns

(ii) Oxytocin

(c)

Practice farm hygiene/ milk infested cows last/ use a separate udder towel for each cow/ use disposable udder towel

.

Immediate treatment of infected cows to avoid spread of the diseases/ treat any wounds on the teat/ udder

Practice teat dips after milking

Applying milk salve/ jelly to prevent drying and cracking of teats

Practice good milking techniques

2. 1995

Ensure calf is breathing/ administer artificial respiration.

Clean mucus from the calf/ ensure cow licks the calf dry

Cut and disinfect the umbilical cord

Ensure calf sucks colostrums from the mother within the first 8 hours

Feed the calf on colostrums for the first 4 days

Keep records on the performance of the calf, introduce whole milk or milk replacer after the 4^{th} day.

Feed the calf with warm milk at regular intervals

Feed the calf 2-3 times per day for the first 1 – 4 weeks

Feed the correct amount of milk up to weaning

Observe strict hygiene in calf

Protect the calf against adverse weather conditions by providing proper housing

Provide adequate clean water from the 3^{rd} week

Introduce palatable dry fed e.g. concentrates and good quality grass/ mineral salts from the 3^{rd} week

Keep calf in individual pens until it is 3-4 months old

Spray / dip calf against external parasites

Drench deworm calf against internal parasites

Vaccinate the calf against prevalent diseases

Release the calf from the pen occasionally for exercises

Wean calf at 8 weeks/ 16 weeks

Deworm the calf using appropriate methods

Graze calf on good quality pastures ahead of adult cows

Separate heifer calves at puberty to avoid in breeding

Weigh the calf regularly

Treat sick calves

Put appropriate identification

Defeat if necessary

Change in feed be done gradually

Serve at the right age/ weight/ 15 – 20 months/ 250- 280 kg

3. 1997 (a)

Should be clean/ free from physical contamination

Has the right consistency/ no water added/ true to the breed

.

No strange odours/ no foul smell

Free from diseases causing organisms

White in colour/ normal colour/ not tainted

Normal taste/ flavour

(b)

The calf can be reared artificially even if a mother dies during birth

Many calves can be reared at a time

The calf can be given correct amount of milk It is possible to keep clear records on milk Yield

4. 1998

Free from diseases causing organisms

Free from dirt/ foreign materials

Appropriate smell and flavour

Chemical composition within the expected standards

5. 1999

(a) The milk secreted by the mammary glands within the first week of lactation/ thick yellow milk secreted by the mammary glands within the first week after parturition.

(b)

Has a laxative and helps to remove the faecal meconium/ first faecal matter/ opens up the alimentary canal/ cleanse the digestive system/ prevent constipation

It is rich in antibiotics that offers temporary immunity against diseases

It is rich digestible proteins/ fats/ minerals/ vitamin/ highly nutritious It is highly digestible

(c) Bucket feeding/ bottle feeding/ artificial method. Dam suckling the calf/ calf sucks the dam/ natural method

6. 2000

The milk person should be clean

Test for mastitis before milking

Milk person should be healthy

Ensure utensils/ equipment are clean

Ensure milking parlour is clean

Ensure milking heard is free from zoonotic disease e.g. TB

Cows with mastitis should be milked last

Clean the udder

Sieve the milk

.

Cover the milk

Avoid feeds/ weeds that would taint the milk just before milking Proper storage of milk/ cool, dry place.

7. 2001

Clean mucus from calf soon after birth/ ensure cow licks dry

Ensure calf is breathing / administer artificial respiration

Cut and disinfect the umbilical cord. Ensure calf sucks the mother to get colostrums, within the first 8 hours

Feed the calf on colostrums for the first 4 days. Introduce whole milk/ milk replacer after 4 days

Feed the calf with milk at body temperature

Weigh the calf regularly

Provide adequate clean water

Introduce palatable solid feed e.g. concentrates, good quality grass from 3rd week

Put appropriate identification marks

Treat calf if sick

Castrate male calf

Provide proper housing for calf

Keep calf individually up to the weaning time

Control external parasite with appropriate method/ spray/ dip

Drench/ deworm to control internal parasites

Observe hygiene

Remove extra teats

Dehorn/ disband using appropriate method

Release calf occasionally for exercises

Keep records on calf performance

Wean calf at 8 weeks/ 16 weeks

Reduce amount of milk gradually towards weaning Train calf to take milk from a bucket.

FARM POWER AND MACHINERY

1. 1995 (a)

It makes farm operations timely/ faster

Economizes on labour

Work is done more efficiently

Reduces drudgery/ can accomplish heavy task

Cheaper per unit work done in large

Operations

(b)

.

Turns/ inverts the furrow slices thus covering surface vegetation

Cuts the furrow slice horizontally

Holds the frame on to the mould board land side and share

Absorbs thrust exerted on the mould board to make the plough stable (c)

Always clean after use

Check the nuts and bolts and tighten if loose

Repair broken parts

Replace worn out parts/ lost parts

Proper storage

2. 1995

Reciprocating mower/ cuter bar mower

Power take – off shaft

Sharpen the cutting blades

Tighten loose nuts and bolts

Lubricate moving parts

Repair broken parts

Replace worn- out parts

Clean after a days work

Check the tension of the v- belt and adjust accordingly

Coat with old engine oil for long storage

3. 1996 (a)

Ox- drawn mould board is lighter hence does not compact the soil as much as the tractor – drawn mould board plough

Ox – plough can be use for more farm operations e.g. weeding, ploughing harvesting roots crops than tractors mould board.

Ox- plough requires less skills to operate compared to the tractor plough

Tractor plough is faster than ox- plough hence can plough a large area with a short time

Source of power for ox- plough is not as reliable as the source of power for tractor plough

Ox- plough relatively shallow compared to tractor plough that plough deeper

Ox- plough can be used in steeper lands where tractor plough cannot plough

Ox- plough requires more people to operate than tractor plough

Ox - plough is cheaper to buy than tractor plough

Ox - plough is cheaper to maintain than tractor plough

(b)

Grease the moving parts (rej movable parts)

Paint frame/ oil before long storage

.

Tighten loose nuts and bolts

Clean it after work

Store in a shed

Repair damage parts

Replace worn- out parts

(c) **Advantages** It is cheaper

Farmer does not incur maintenance costs of the tractor

There is no risk of owing the tractor

Farm operations are carried out faster

Disadvantages

Tractor may not be available when required

Some operators may charge high fees for the service

Some operators can carry out poor quality work **4.**

1997 (a)

To reduce wear and tear/ increase durability

Avoid rusting

(b)

Sharpen blades if blunt

Replace worn – outs parts

Clean the mower after use

Tighten loose nuts and bolts

Repair worn- out guard

Paint when necessary

Proper storage in shed

(c)

Size of land

Cost of the tractor

Availability of services facilities/ availability of skilled labour e.g drivers, mechanics, spare parts

Topography of the land

Time available for the operation

Availability of capital

Number/ type of enterprises on the farm

Availability of tractor hire services/ availability of other sources of power

5. 1999 (a)

Incorporating manure into the soil/ stirring the soil

Breaking soil clods

Leveling the seed bed

.

Covering broadcasted seeds

Gathering/ removing trash

(b)

Clean after use

Store in a shed

Repair/ replace any broken tine/ part

Apply oil for long storage

(c)

Ox- drawn harrow is cheaper than a tractor- drawn harrow

Ox – drawn harrow can be used where tractor drawn harrows cannot be used

6. 2000

Clean after work storing in a shed

Tighten loose nuts

Replacing worn- out parts

Greasing moving parts

Oiling/ painting for long storage

7. 2001 (a)

Decrease the angle of cut

Use of hydraulic/ draught control lever

Adding weights on the plough beam

Raising the land wheel

(b)

To avoid injury

To make disc plough last longer

To make disc plough work efficiently

To reduce replacement/ maintenance cost

(c)

Saves time

Improves efficiency

Saves on labour cost

Reduces drudgery/ less tedious

8. 2003 (a)

To make a vertical cut into the soil that separate the furrow slice from the unploughed land

Cut trash which would prevent the share from penetrating deep into the soil

(b)

Lubricate moving parts

Adjust the tyre pressure

Replace worn-out tyres

.

Tighten loose nuts and bolts
Proper storage/ in shed
Clean after use
Paint the trailer
Repair broken parts

9. 2004

Poor quality work unless under strict supervision/ poor skill of the operator
Not readily available leading to late land
Preparation
Disc harrow
Spring tine harrow/ rigid tine harrow/ ox- tine harrow
Spike toothed harrow/ peg toothed harrow
Chain harrow
Rotavator
Zigzag harrows

10. 2005 (a)

If a farmer has inadequate capital
If a farmer has little load to carry
If the area is too steep to use a tractor (b)
Tighten loose nuts and bolts
Straighten bent/ repair worn out/ broken parts
Store in a dry place
Apply oil on exposed metal parts when plough is not in use
Repaint the appropriate parts when necessary

AGRICULTURE ECONOMIC III

1. 1995 (a)

Training the labour force
Giving incentives to employees
Efficient supervision of labour
Assigning specific tasks to workers
Proper remuneration of a worker
Provide efficient tools
Mechanization of some operations
Provide transport within the farm

(b)

This is the production in which each addition unit of input results to a larger increase in output than the proceeding unit of input

.

(c)

Short term credit

Medium term credit

Long term credit

2. 1996 (a)

Opportunity cost is the value of foregone best alternative/ revenue foregone because of choosing the best alternative

(b)

Refers to the raw materials used up in the process of production, e.g. seeds, fuel fertilizer, feeds

(c)

Utility is the satisfaction one gets by using a commodity

3. 1997 (a)

Borrowing from financial institutions/ individuals co-operative/ credit

Person savings from ones income

Inheritance/ gifts/ donations

(b)

Assists the farmer in estimation of the required production resources

Assists the framer when negotiating for farm credit

Assist the farmer in making management decisions when comparing alternative projects

Help to reduce uncertainty in farming process

Encouraging farmers to efficient as to meet the projected targets

Show progress/ lack of progress in the farm business/ focus profit or foresee losses

4. 1998 (a) Fixed costs are those that do not change with the level of production while variables costs are those that change with level of production

(b)

Casual labour costs

Fertilizer/ manure costs

Costs of chemicals

Cost of fuel

Costs of repair of machinery

Cost of hiring machinery

(c)

Planning helps in selection of the best enterprise/ production option to undertake

Helps in setting production targets/ goals

Helps in allocation of resources to various enterprises

Helps to identify the weakness and strength of farm operations

.

Helps in timely and careful considerations in decision making

Assists in negotiation of credit

Maximize use of resources

5. 1999

To compare the performance of one farm with another

To compare the performance of the farm between one season and another

To compare the contribution of one enterprise and another on the same farm Acts as a measure of profit in a farm

6. 1999 (a)

Zone I. For each addition unit of fertilizer applied, the output of potatoes increases at an increasing rate because resources are under utilized

Zone II. For each additional unit of fertilizer applied, the out put of potatoes increases at a decreasing rate as the resources are utilized to the maximum

Zone III. For each additional unit of fertilizer applied the out put of potatoes decreases since the resource is excessively applied.

(b) Zone II

(c)

Flexibility in production.

Produce under contract

Input rationing/appropriate allocation of resource input.

Insurance of the crop.

Use of modern technology e.g. disease resistant varieties, Use of pesticides and fungicides, use of fertilizers.

7. 2002: (a)

Training/ educating labour force

Mechanizing farm operations/proper working tools.

Giving incentive/proper housing/transport bonuses.

Supervision of labour

Assign specific tasks to workers.

Proper remuneration

Assigning tasks according to skills/ability/interest. (b)

Improvement in quality of work/quality of produce.

Reduced time of performing a given work.

Increase in returns per unit of labour.

(c)

Amount of work/ task performed e.g. kg of tea leaves picked per head.

Duration of work e.g. 30/= per hour/day.

Labour regulations/market rates

.

Nature of work

Quality of work/skill of labour

8.2001:

Amount of money to be paid to them as wages.

Number of people in the labour market

Health /fitness of the work force

Ability/skills of the labour force

Working conditions/incentives

Nature of work

(b)

Adopting modern methods of production

Flexibility in production methods

Input rationing

Taking insurance cover

Selecting more reliable enterprises

Diversification.

(c)

Provides employment

Source of food

Earns the country foreign exchange

Source-of raw materials for industries

Provide market for industrial goods

Source of income for farmers Improves infrastructure relationship.

9.20002

Maximize profit

To maximize cost of production

To spread/ reduce risks

10.2 2003(a)

Milk and butter

Beef and hide

Honey and wax

Mutton and wool

Pork/bacon and bristles

Rabbit meat and skin/pelts

Mutton and skin

(b)

- Feeds
- Pesticide

.

- Replacement stock
- Veterinary services
- Drugs
- Casual labour
- Packing materials e.g trays and carton boxes

(c)

(i) $V=\frac{48-39}{2-1} = 9$

$W= \frac{32-27}{4-3} = 5$

$X=\frac{23-21}{6-5} =2$

$Y= \frac{20-19}{8-7} =1$

L.C.C occurs where MRS = $\frac{X1}{PX2}$

L.C.C.

Where Δ= change

P= price

X_1= dairy meal

X_2= Home made feed

$\frac{8}{2}= 4$

L.C.C. is where MRS = 4 I.E where 5 units of dairy meals are mixed with 23 units of home made feed.

11. 2004: (a)

Joint products

Competitive products

Supplementary products

Complimentary products

b) (i) Production function is the physical relationship between inputs and output (products). The quantity of product expected from a certain-combination of in put.

.

(ii) Equi-marginal returns states that limited amounts of resources should be allocated in such away that the marginal returns those resources is the same in all alternative to which they are put.

12. 2005:

Crop boards/marketing board/statutory boards.

Commercial banks

Cooperative societies

Agricultural finance corporation (A.F.C)

Settlement fund trustees

Private money lenders/Non –Governmental Organizations (NGOS) insurance companies/ Hire purchase companies.

13 2005: a) Costs of feeds

Wages casual labour

Cost of pesticide / chemicals/drugs

Cost of insemination services

b)

depreciation of machinery /buildings

Land rent

Salaries of regular/permanent labour

Interest on borrowed capital

14 2005 (a)

Partial budget is prepared when minor changes are to be made in an enterprise

Complete budget is spread when major changes are to be made in an enterprise/ starting arrow enterprise.

b)

Diversification of enterprises to avoid total loss

Insurance against tosses to maintain high liquidity/for compensation /to access money easily for any eventuality.

Strategic farming/keeping crops produce and selling when prices are high.

Flexible enterprises-engage in enterprises that can be stopped and changed

Rationing of inputs use of insufficient inputs such that incase of failure losses are not too high.

Contracting for marketing-making arrangements with marketing agencies in advance.

Selection of more certain enterprises/ selection of enterprises that can do well in an area/section of enterprises with ready market and less price fluctuation to reduce degree of risk.

AGRICULTURE ECONOMICS- FARM INPUTS

.

1. 1996 (a)

Journal
Cash book
Ledger
Inventory

b)

- Shows the assets and liabilities of the farm business,
- Shows farm net worth/net capital/ owners worth/ can be used to negotiate for credit/correct income tax assessment, • Used in decision making;
- Show profit or loss.

AGRICULTURAL ECONOMICS (MARKETING & ORGANIZATION)

1. **1995:** -Ten members

(b)

Number of sellers
Price of the commodity
Availability/ seasonally of the commodity / weather.
Technique of production
Market information
Transportation
Price expectations of the commodity.
Government policy/taxation.

(c)

Price fluctuations/ low prices Lack of transportation.

perish ability of some products poor storage facilities.

Competition with substitute products.

Delayed payments

Some government policy

(d)

Kenya Planters Co-operative Union Coffee Board of Kenya.

2. 1996

a) Marketing is the performed of business activities that direct the flow of goods and services from producers to consumers.

.

b) An imperfect market is g situation in which some buyers, some setters or both have limited knowledge of goods and services offered for sale at various prices.

c) The price of mangoes will go down.

(d)

Milk is highly perishable we hence needs cool storage which the farmer may not afford.

Lack of vehicles/poor roads/high transportation costs
Containers for handling milk are expensive. Lack of market information Price fluctuation.

Delayed payments.

3. 1997

a) The quantity of the product demanded varies inversely with the price 7 as the price declines the corresponding quantity demanded rises and as the price increases the corresponding quantity demanded falls. (Mark as a whole)

Advertisements/ sales promotions

Price of related goods, price of the goods,

Level of income Price expectations Tastes and preferences.

Tastes and preferences

Population,

Religious beliefs / taboos.

(c)

Elasticity of demand of a commodity is the percentage in quantity demanded of a commodity resulting from a percentage change in existing price.

The degree of responsiveness of quantity demanded, to a- percentage change in existing price.

Buy farmers produce / delegates buying to an approved agent Arrange for supply of inputs.

Fix prices of farm produce in consultation with the government.

Collect farm produce from areas of production to the stores/factories.

Inspect the production process to ensure and maintain quality of the produce.

Provide storage facilities for farmers produce.

Provide credits to farmers,

Provide technical advice on production/extension services where applicable
Process farm produce e.g. K.T.D.A.

Undertake research services on techniques of production

Sell farm produce for farmers

Regulate production to prevent under supply of the produce.

Pack/package the farm produce.

.

Invest accrues profits.

Advertise/promote sales of the produce.

4. 1998

Members buy inputs at lower prices.

Has easy access to credit facilities from the society.

Gets advice/education from the society.

Society share overhead costs with the member.

Society share overhead costs with the member.

Provide special services e.g. A.I, Banking

Bar society bargains for better milk price on behalf of the member.

5. 1999

(i) Most agricultural produce are perishable hence, farmers incur extra costs in transportation-processing/storage/incur losses due to spoilage.

- Most of them are bulky, occupy large space/expensive to transport.
- Poor transport network/lack of vehicles lead to loss due to spoilage.
- Most of them are seasonal; hence create storage problems/over supply at times leading to price fluctuation.
- Due to bulkiness they are expensive to store/difficult to store.
- Due to changes in market demand, there is time e.g. between decision to produce and actual availability of the product making it difficult to respond immediately to market demand.
- Change in supply due to under/over production/competition from cheap imports cause price fluctuation.
- Lack of perfect market information makes selling difficult/many farmers are ignorant on the prevailing prices of their produce in other parts of the country.
- Delayed payments lead to lack of capital for farm operations. (b)

Itinerant traders/ middlemen buy and resell produce from farmers.

Processors / Manufacturers buy and process produce from farmers.

Wholesalers- Buy produce in bulk from farmers and resell/ process.

Brokers / Commission agents- acts on behalf of other business people for a fee commission.

Co-operative societies/ unions- buy farmers produce locally.

Marketing boards- promote production and marketing of agricultural produce/buy produce from farmers.

Retailers- buy from wholesalers and resell to consumers.

6. 2000:

Price of related commodity.

.

Price of the commodity.

Size of population of consumers, Tastes and preference of consumers.

Income of consumers.

Advertisements/sales promotion Government policy Price expectations.

Religious beliefs/religious taboos/ cultural beliefs.

7. 2003

Elasticity of demand = $\frac{\% \Delta \text{ in quantity}}{\% \Delta \text{ in price}}$

Δ in price quantity = 22-20 = bags

% Δ in price => $\frac{22-20}{20}$ = 10%

Δ in price =. 100-800 = 200/=

% Δ in price $\frac{200 \times 100}{1000}$= 20%

Elasticity of demand =$\frac{10\%}{20\%}$= 0.5

8. 2003 (a)

Carrying out advertisement of the farm to increase demand Finance agricultural activities.

Transportation of farm produce to areas of consumption.

Storage of farm produce to minimize losses/ as a marketing strategy.

Selling the produce on behalf of the farmers.

Packing/package farm produce to ease transport/ reduce storage space.

Grade farm produce to provide uniform standards/ cater for various consumers.

Process farm produce from areas of production for bulking/ transportation Protect the farm produce from damage by use of chemicals/ insurance/ bear risks. Buy from produce from the producers.

Gather, analyze and interpret market information to determine appropriate market and price. b)

Co-operators pool their resources together to buy expensive machinery e.g tractor for use by farmers.

Provide education/technical information to members.

Provide credits to members inform of inputs and cash.

Negotiate for higher produce prices for members.

Reduce overhead costs e.g transportation, storage and use of machinery.

.

Bargain with suppliers to give discount on seed fertilizer and other farm inputs /provide inputs at lower prices.

Provide employment for their members and other people.

Benefits farmers from lower taxes charged Market farmers produce.

Provide strong bargaining power for members on policy issues.

Invests and pay dividends to members.

Help to negotiate loans for their members without security. Provides banking services to it's members.

9. 2004:

Perishability of the produce.

Inadequate supply to spread supply over a long period.

Drastic changes in supply/seasonality.

Poor infrastructure e.g. poor roads no vehicles/piped water/ telephone / electricity,

Bulkiness

Lack of market information, Delayed payments.

2. 1998

Mr. Rambo's farm balance sheet as at 31-12-95

ASSETS			LIABILITIES		
	Kshs	Cts		Kshs	Cts
Fixed Asset			Long term Liabilities		
Buildings and structures	60000		Loan payable Dank	300,000	-
Five cows	250,000	=			=
400 layer	80,000	=			=
20 goats	30,000	=			=
Spray equipment	12,000	=			=
TOTAL	972,000				
Current Assets			Current Liabilities		
Cattle feeds in store	10,000		Debts to co-p	20,000	=
Animal drugs in store	4,000	=	Bonus payable to workers	19,000	
Debts receivable	18,000	=	Breakages and repair	30,000	-
Cash at hand	20,000	=			
Cash at bank	30,000	-			

.

Total Total Assets	82,000 1,054000	=	Total Total liabilities Capital	69,000 369,000 685,000	=
TOTAL	1054,000		TOTAL	1054,000	
ASSETS			LIABILITIES		
	Kshs	Cts		Kshs	Cts
Fixed Asset			Long term Liabilities		
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Cash at bank	30,000	-			
Total Total Assets	82,000 1,054000	=	Total Total liabilities Capital	69,000 369,000 685,000	=
TOTAL	1054,000		TOTAL	1054,000	

3.2001

(a) **Cash account**; is a record that shows all cash receipts and payments,

Ledger: This is a financial book that shows all financial transactions in the farm business in a summarized form,

Balance sheet: This is a financial statement that shows the value of assets and liabilities of a business at the end of an accounting period.

Purchase order. This is a financial document drawn by a buyer to a supplier requested goods on credit.

(b)

Permanent goods inventor Consumable goods inventory.

.

5. 2004

PROFIT AND LOSS ACCOUNT FOR MRS. MBUTA'S FARM FOR THE YEAR ENDED 31-12-03			
PURCHASES AND EXPENSES	Shs. Cts	SALES AND RECEIPTS (CREDITS)	Kshs. Ct
Opening valuation	6,000.00	Pig sales	7,000.00
Wages	5,000.00	Piglet sales	4,000.00
Equipment	8,000.00	Maize sales	3,000.00
Pig feeds	4,000.00	Closing valuation	4,000.00
Drugs	3,200.00		
		Total	18,000.00
		Loss	8,200.00
TOTAL	26,200,00		2,600.00

Marks allocation

(i) Correct columns (sales & receipts) ½ mk

(ii) Purchases & expenses ½ mk

(iii) Correct entries – Sales & receipts – ½ mk
Purchases & expenses – ½ mk

(iv) Correct totals – sales & receipts – ½ mk

(v) Purchases & expenses – ½ mk

(vi) Correct balance / profit/ loss ½ mk
3 ½ mk

(vii) Mrs. Mbuta made loss

6. 2005 (a) it is an entry in a financial statement showing the worth of all assets of an enterprise at the beginning of an accounting period

(b) (i)

Issued to the buyer as evidence of cash payments for goods or services rendered

Used for requisition for the supply of goods/ services on credit

Given to the buyer by the seller as evidence of goods supplied

K.C.S.E 2006 AGRICULTURE PAPER 1 MARKING SCHEME SECTION A

1. Olericulture is growing of vegetables while pomocuhure is growing of fruits (Mark as whole) 1mk

2.

Movements of animals in large numbers

.

Decomposition of plants and animals remains by soil micro-organism

Physical breaking of rocks by roots of higher plants

Man's activities e.g. cultivation, mining and road construction

Mixing up of soil burrowing animals e.g. earth worms and termites

Any 3 x 1 ½ =(1 ½ mks)

3

Little amount of water is used/economics water use

Reduces incidences of certain leaf diseases/ Fugal discs

Can be used in sloppy areas because there is no risk of surface run off/no risk of soil erosion

Water under low pressure can be used

Some fertilizers and pesticides can be applied with irrigation water.

Minimizes growth of weeds (any 4 x ½ = (2mks)

4.

Adds nutrients.

Increases microbial activity in the soil

Improves water holding capacity/reduces leaching/ improves capillarity

Buffers soil PH

Moderates soil PH Moderates soil temperatures

5.

Type of cop-soil nutrient status

Stage of growth of crop

Expected yield

6.

Lowers soil acidity raises soil ph(modifies ph

Increases the calcium content of organic matter

Improves soil structure through flocculation of soil particles/improves drainage.

Facilities the availability and absorption of Nitrogen and prosperous

Improves legume nodulation and N fixation

Encourages multiplication of micro-organization in the soil

7.

Free from foreign materials e.g. weeds

Gives rise to vigorously growing plants

Have high germination percentage

Free from pest and diseases attack/healthy True to type not contaminated any 4x ½ = 2mks)

8.

.

Easy to determine plant population in a given area Ensure high quality produce.

Ensures high production

Facilities optimum use of nutrient moisture and light

Permits use of machines when carrying on subsequent farm operations Facilities control of pests and e.g. ground

9.

Pollution of the environment

Loss of plant nutrients and soil microorganisms

Siltation of dams and rivers

Reduction of soil depth

Destruction aid farm structures (Any 4 x ½ = 2 mks)

10.

Burning pasture during grazing season, cultural method

Moving/physical method

Use of biological agents/ Biological methods

11.

Provide feed during period of scarcity/ distribute available forage for livestock through the year

Ensure better and proper utilization of land

Can be sold for money

12.

Top dress with N fertilizers occasionally/ apply manure

Control weed

Practice controlled grazing to avoid denudation

Cut back dry and unpalatable stems to encourage fresh re-growth/ topping

Re- seeding when necessary

Irrigation when necessary

Control of pest (Any 4 x ½ = 2 mks)

13 (a)

GDP- is the sum total of goods and services produced by a country within a period of one year. (1 x ½ = ½ mk)

16.

To keep check on income and expenditure / profit and loss

To know which activities are financially viable/ weakness and strength of the business

To obtain knowledge of the total value of the farm/ the value of assets and liabilities for farm planning

.

To assess credit worthiness

To provide information for tax purposes

Organizing agriculture field days for the local community

Participating in agricultural exchange programs both locally and internationally

(Any 4 x ½ = 1 ½ mk)

17.

Organizing and participating in annual YFC rallies and camps

Participating and completing in ASK show activities e.g livestock judging

Planting trees/ carrying out agricultural project in schools

Organizing agricultural field days for the local community.

Participating in agriculture exchange programs both locally and internationally.

(Any 4 x ½ = 2 mks)

18.

Adds- organisms matters

Recycles soil nutrients

Helps to control soil erosion

Improves drainage of swampy areas

Plays an important part in the hydrogical

B- Trapping and killing

Use of scare crows/ scaring

Poisoning/ rodenticide usage 1x1 = (1 mk)

21.

(a) The law state that "if successive units of one input are added to fixed units of other inputs, a point is eventually reached where additional output per additional unit of input will decline" (mark as a whole)

(i) At the end of the third unit of fertilizers application

(ii) This is the least profitable unit of fertilizer application beyond which there would be a loss

(iii) Marginal returns (MR) at the point of optimum production MR = Kshs 1200 x 2 = 2400/=

22. (a)

Read the label/ the manufactures instruction

Measure the requirement amount of fungicide

Place it into a container and mix thoroughly

Powder has dissolved completed/ has formed slurry

Pour the mixture into the knapsack sprayer though the sieve Spray the mixture onto the crop

(b) Blight (late or early) powdery mixture (1 mk)

(c)

.

Spray following the direction of the wind

Wear protective clothing

Avoiding eating or smoking while handling fungicides

Avoid spillage of the fungicide/ avoid containing the environment

Do not suck/ blow a blocked nozzle Any 4 x Vi = (2 mks)

23.

(a) blackjack/ Bidens pilosa

(b)

To avoid competition for nutrients, moisture arid light

Black jack seeds may contaminate some crops/ farm practice

Blackjack may be an alternate host to some pest e.g aphids which may attack crops like beans

Black jack seed prick and irritate workers Any 2 x 1 = 2 mks)

(c) - MCPA

- 2, 4-D

(d) At what stage if growth of maize should the weed controlled using a pest?

- 10 to 15 cm hi

- 2 to 4 week after emergence 1 x 1 = 1 mk

SECTION C

24.

Clear the place, if bushy

Dig/prepare the site to a desirable tilt/ Fine with

Remove roots and stone from the site

Prepare nursery beds 1- 1.54 wide by any convenient length

Prepare raised or sunken nursery bed depending on moisture content available

Level the Nursery bed (Any 4 x 1 = mks)

(b)

Make shallow furrow drills/ about 10cm apart

Apply phosphates fertilizers in the furrows/ Drill and mix with the soil

Sow seeds by drilling

Cover the seed lightly with soil

Apply some mulch after sowing seeds

Water the nursery thoroughly (any 3 x 1 = 3 mks)

(c)

Remove the mulch as soon as seedling emerge

Water the nursery at least twice a day, preferably morning and late evenings

Remove weeds as they come up

.

Thin young seedlings if over crowded/ prick seedlings

Control diseases

Harden off the seedling/ remove shade gradually and reduce frequency of watering

(any 5 x 1 = 5 mks)

(d)

Water nursery thoroughly before transplanting

Dig the planting holes at appropriate depth

Select healthy seedlings

Uproot seedlings carefully with as much as possible to avoid root damage/ use a garden trowel

Transport seedling carefully to the end field using appropriate means

Transport on a cloudy day or late in the afternoon

Place insecticide in the hole to control soil borne pests

Place the seedling in the planting holes at the same depth they were in the nursery bed

Fill the hotels with soil and firm around the seedlings

Apply mulch or erect a shade

Water the seedling thoroughly (Any 5 x 1 = 5 mks)

25. (a)

Availability of adequate funds or capital/ inputs

Training of personnel or availability of advisory services on managerial skills

Loyalty on the part of all farmers, co-operators and officials to support their organization

Proper and accurate record keeping and accountability for all operations

Efficiency with which produce from farm are marketed

Honest on the part of personnel with regard to the handling of co-operative finances

Timely payment of farmers dues

(b)

Diversification/ growing a variety of crop or having various enterprises so that if one fails has something to rely on.

Insurance against losses/ taking insurance policy for farming activities so that in case of failure the enterprises are covered.

Inventory marketing/ strategic farming keeping farm product and selling at when prices are favorable

Flexible enterprises engaging in enterprises that can be stopped or started early as condition change.

Rationing of inputs using just sufficient inputs such that in case of losses the cost are not too high

Using more certain husbandry practices using practices that the farmer is sure of and has used in the pas.

.

Hedging/ contract marketing making arrangements with marketing agencies in advance so that changes in price after the arrangement do not change the price of the farmer's produce.

Selecting more certain enterprises selection of enterprises that the done well in the area/ tried though research (any 7 x 1 = 7mks)

C.

Determination of the farmer's objectives and preference in order to eliminate those production possibilities that are unsuccessful

Determination of available resources to the farmer in order to establish his/her abilities and limitations.

Determination of possible productive enterprises

Determination of tentative budget/ translation of physical plan into a financial

Determination of yield f various enterprises

Development of financial flow in order to establish the capital requirements

Examination of the plan to ensure that is is consistence, workable and desirable

Determination of government policies and regulation to make the plan realistic.

(Any 8 x 1 = 8 mks)

26. (a)

Ponds/ water pumps

Dams/ weirs

Roof catchments

Rock catchments

Retention ditches/ level terraces

(b)

Continuous cropping without giving the land a rest

Burning

Ploughing along the slopes/ farming on step land

Deforestation

Ploughing along river banks

Cultivating when the soil is too dry or wet

Overgrazing/ overstocking

Flooding/ application of a large amount of water at high rate

Over cultivating the land to fine tilth/ pulverizing the soil (c)

Mulching by reducing the speed of run- off and reducing the impact of raindrops

Contour farming by reducing the speed run off

Terracing effective length of the slope and consequently slowing down speed of running off

Planting trees/ holding soil particles together hence reducing effects of wind erosion and reducing the impact of rain drops

.

Establishing and maintaining vegetated water; by reducing the impact of livestock on the soil erosion

Establishing trash lines/ sones lines by reducing speed of run- off an effects of wind erosion

.

K.C.S.E 2006 AGRICULTURE PAPER 2 MARKING SCHEME

SECTION A

1. Hampshiredown (1 mark)
2. Cross cut saw/ Tenon saw/ Back saw/ spokes have/ circular plane 2 x ½ = 1 mk)
3. Removal/ harvesting of marketable size fish from the pond (1 mk) 4. Prevents metal engine parts from rusting

   Promotes free movement of engine parts by reducing friction

   Traps foreign materials e.g. soot, dirt and dust

   Lowers engine temperature by conducting away excess heat

   Helps in sealing compression between the piston and cylinder 4 x ½ = 2 mks

5. Keeps radiator fins free of rubbish and dirt. Water pump lubricated regulated/ weekly

   Ensure that the fen belt is tightly fitted/ proper tension/ lock bolts and nuts should be tightened

   All pipes should be fitted tightly to avoid leakage

   To up the level of water in the radiator before using the tractor

   4 x ½ = 2 mks)

6. Disc ploughs work better in dry/ sticky and hard soils than mould board plough

   There is less hindrance to operations chances of breakages because the discs roll/ ride over obstacles

   The maintenance costs of disc plough are lower than the moldboard\

   Disc plough require less tractor- power to pull than moldboard

7. An outlet to drain off excess water

   An inlet for fresh water supply

   A spill way channel to take away excess water/ overflow water

   A screen to prevent escaping of fish/ entry of unwanted objects/ fish

   A fence to keep away predators/security

   Dikes walls embankment/ leaves (4 x ½ =2 mks)

8. Through the mough/ natural openings

   Through umbilical cord

   Through respiratory track

   Through injury/ wounds on the body

   Though bites by disease vectors (4 x ½ = 2 mks)

9. Spraying insecticides the breeding places

.

Clearing the vegetation
Use of appropriate insecticides to spray cattle
Sterilization of the male tsetse flies (4 x ½ = 2mks)

10.

Overgrown hooves
Wet and muddy conditions
Physical foot injuries (2 x ½ = 1 mk)

11.

High milk yields
Good health
Fast growth/ early maturity
High growth/ maturity
Good mothering ability
Good body conformation (4 x ½ = 2 mks)

12.

They can browse and survive on poor vegetation
They have hooves with tardy pads which enable them to tra- verse large area sandy ground/ flat hooves
They can tolerant to high temperature/ have thick skins
They can travel long distances for several days with very little water
Store fats in humps/fats can be metabolized to metabolic Long eye lashes to prevent entry of sand/ have nose flaps

13.

Softening moistening of the food
Storage of food (2 x ½ = 1 mks)

14.

Using of caustic potash stick
Use of disbudding ron/ dehorning
Use of dehorning saw or wire
Use of rubber ring and elastrator
Use of dehorning collusion (4 x ½ = 2 mks)

15.

Overcrowding
Pest infestation/ pest diseases
Noise/ strangers
Lack of food and water
Sudden change in routine/ management
Unbalanced diet

.

Fluctuation in temperature Introducing new bird in the flock

16.

Feeding the queen / the broods
Protecting the hive from intruders
Collecting nectar, pollen, gums and water/ Foraging
Cleaning the hive
Building combs and sealing cracks
Making honey bee wax
Scouting (4 x ½ mk= 2 mks)

17.

Should be rain- proof/ leak proof
Should be well ventilated
Should be easy to clean
Should be well lit
Should have adequate space
Drought free
Good drainage (4 x ½ = 2 mks)

SECTION B

18. (i) A- Furrow opener
B- Fertilizer hopper
C- seed hopper
D- Press wheel (4 x ½ = 2 mks)

Clean hopyjers/ tuirow openers after use
Lubricate/ grease moving parts
Replace worn out lost bolts and nuts

(ii)

Check tension of chains/ drive sprockets before use
Tighten loose bolls and nuts (any 2 x 1 = 2mks)

(b) (i) E - adjustable spanner
F - Ring spanner 2 x ½ = 2mks)

(iii) Tool E can be used for tightening or loosening more than two sizes of nuts and belts (Rejects one is adjustable (1 mk)

19 (a)

(i) Slatted floor 1 x1 = 1 mk

(ii) (H 40 – 60 cm high

(b) (i)

To allow urine and dung to pass through

.

To keep the floor dry (Any 1x 1 = 1mk)

(ii)

Prevailing direction of the wind

Safety/ security

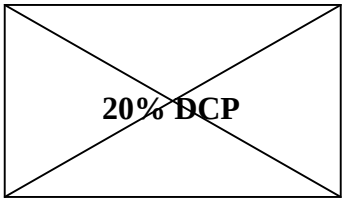
Proximity to the dairy shed/ accessibility of the dairy shed

Drainage

Topography (any 3 x 1 = 3 mks)

20. (a) Term used to express that amount of the crude protein absorbed by an animal's body from a feed 1 x ½ = 1mk)

(b) Pearson's square method

Maize 10% DCP 35- 

20 = 15 parts of maize

Sunflower 35% DCP Sunflower

Amount of maize 15/25 x 200 = 120kg

Amount of sunflower 10/25 x 200 = 80 kg

Mark as shown in the diagram 4 x 1 = 4 mks

21 (a) G - Muzzle

H - Poll

I - Shoulder

J - Heart girth 4 x ½ = 2 marks)

(b) Ear lobs/ deep in the ear

Anus

Vulva

Under tail 4 x ½ = 2mks)

22. (a)

Spray the entire backline from my shoulder to the tail head

Spray the sides in a zigzag motion to trap me retain the wash from the backline

Spray the belly with me nozzle facing upward

Spray the scrotum/ udder and the hind flanks carefully

Spray both hind legs up to and including the heels

Spray under the tail head and the area around the anus and vulva

Hold the tail switch on to the rump and spray it thoroughly to ensure complete wetting

.

Spray the neck and the foreleg; from the flanks to the heels

Spray the head and face making sure that bases of the horns are thoroughly wetted,

Spray the inside of the ears 10 x 1 = 10 mks)

(b) (i) Causal organisms – Virus/ virus types O, A, C/ south African types SAT1, SAT2, SAT3, / Asian type 1 (1 x 1 = 1mk)

(ii)

Cattle

Pigs

Goats

Sheep

Profuse salivation (Any 2 x 1=2 mks)

Blisters which are painful around the mouth and hooves of the fect leading to lameness

Drop in milk production in lactating cows

Sharp rise in temperature/ high fever

Emaciation

Complete loss of appetite

Diarrhoea (any 4 x 4 = 4 mks)

(iv) Quarantine

(a) Vaccination very 6 months

(b) Slaughter and destruction of carcass

(c) Regulations of livestock movement by issue of movement permits (d) Burn/ bury dead animals

23 (a)

Select good animals on the basis of high yielding cows

Select animal with good health

Select animals having high fertility

Select animal having good dairy conformation

Cull poor producers

Use superior bulls/ semen from superior bulls to service the cows

Mate heifers when fully mature considering weight/ age

Breed cows 60- 90 days after calving to maintain after calving interval of one year

Keep animals health by routine vaccination

Control internal parasites by routine drenching using appropriate drugs

Treat sick animals

Avoid physical injuries to the animals/ predisposing disease factors

.

Improve sanitation/ cleanliness in the farm
Feed the cattle on a balanced diet
Give adequate feeds
Give clean and uncontaminated feed
Provide plenty of clean water
Provide minerals/ vitamins
Provide housing/ avoid overcrowding/ provide shelter that is leak proof
Use proper milking techniques
Milk at regular intervals (Any 15 x 1 = 15 mks)

(b)
Control stocking rage
Control of water pollution
Supply adequate feed regularly
Provide appropriate feed
Aerate the eater by ensuring constant inflow and outflow of water
Control predators
Harvest fish at the correct maturity stage
Maintain appropriate water level in the fish pond always
Add manure or fertilizer in pond to encourage growth of planktons
(Any 5x 1 = 5 mks)

24. (a)
Farm operations can be achieved on time
Large area can be covered within a short time
Reduce drudgery/ makes work easy and enjoyable
Better job is done mechanically than human labor/ increased efficiency
High yields are obtained because farm operations are carried out on tme
Pest and disease outbreak can be controlled relatively in a shorter time
Tends to encourage farmers to consolidate their land
Farmers benefit from economies of scale
Use less labor (Any 6 x 1 = 6 mks)

(b) TWO STROKE CYCLE ENGINE
Cheap to buy and easy to maintain
Produce less power/ do less heavy
Mainly air cooled
Inefficient in fuel and oil utilization
Easy to transport to different areas of the farm land e.g hilly areas\

.

Require two complete upward and downwards movements of to be position, and one revolution of crankshaft

There is no provision of oil in the sump, during induction, to lubricate the crankshaft

Simple in construction with no valves

Has 2 openings exhaust

(c) FOUR STROKE CYCLE ENGINE

Expensive to buy and maintain

Produce more power/ do heavy work

Efficient in fuel and oil utilization

Mainly water cooled

Difficult to transport easily due to weight

Require 4 complete upwards and downwards

2 revolutions of 1 he crankshaft

Engine have oil in the sump to lubricate the crankshaft bearings

Complex in constructions with two valves (inlet and outlet)

Has no parts and inductors ports any 6x 1 = 6 mks)

Using a dip – stick to check the level of oil in the sump

Check the fuel tank to ensure there is adequate fuel for the day's job Check the level of the electrolyte in the battery and adjust accordingly.

Grease/oil moving parts

Check-fan belt. Tension' and condition and adjust accordingly

Check level of water in radiator and top up if necessary

Check air cleaner to ensues that there is no dirt/check level of oil

Check tyre pressure before work and adjust accordingly

Tighten bolts, nuts and pins

Open and remove the dirt from sediments bowels

Any 8x1=8 marks

KCSE AGRICULTURE MARKING SCHEMES 2007 PAPER 1

1.

- Very steep land
- Water logging / marshy area.
- Forested / Bushy area.
- Rocky / Aridity/Tsetse fly infested areas.

2.

.

- Wind / Moving water
- Temperature changes
- Moving ice/ Glacier

3.
- Using a sieve / sieve analysis.
- Sedimentation method

4.
- Can be used as a security for credit.
- Encourage long term investments
- Reduces land disputes
- Motivates the farmer to conserve soil water.

5.
- Improves soil structure
- Controls soil borne pests and diseases.
- Ensure maximum utilization of farm labour.
- Aids in weed control
- Improves soil erosion.
- Security incase of failure of one crop.
- Add nitrogen through N – fixation by Rhizobium bacterial when legumes are included.

6.
- Crop attacked / mode of feeding .
- Whether field or storage pest.
- Crop parts attacked.
- Stage of crop growth attacked.
- Scientific classification e.g. insects, mite, rodents.

7.
- Important in calcium utilization.
- Necessary in sugar translocation
- Needed in water absorption.

.

- Aids in translocation of sugar nitrogen and phosphorous.
- Aids in fruit development.

8.

- Development of infrastructure.
- Housing status of the citizens.
- Increase in recreation facilities.
- Ratio of teachers to students.
- Improvement in the level of technology/ more industrialization.

9

Price of substitutes.
Price expectations in future.
Quality of the commodity
Tastes and preference of the commodity.

10

Medicago sativa/Lucerne Leucaena leucocephalal/calliondra.
Artemisia annual/Artemisia.
Calliandra calothyrsusl calliandra
Desmodium species
Kenya white clove/ Infoliuim sempilosum

11

Quantity of forage available for ensiling.
Number of animal to cater for.
Length of the period of forage scarcity.
Bulkiness of the material.

12

To avoid poisoning of livestock.
Minimize diseases spread.
To ensure the forage is of high palatability.
Minimize competition for nutrients, space light.
To increase the life span of the pasture.

13

Has appropriate depth The right PH/ Good soil structure.
Good water logging capacity.
Well aerated/good drainage.

.

Free from soil borne pests and diseases.

Rich in nutrients in the right proportions.

14

Should be of high purity.

Should be free from pest and disease attack.

Should be appropriate size Should be mature.

Should be free from any physical damage.

Should be of high percentage of germination.

Should be suitable to the ecology of the area. 15 (a)

- Over –cultivation, overstocking/overgrazing.
- Deforestation/planting annual crops on steep slopes.
- Burning of the vegetation.
- Ploughing up and down the slope.

(b) V- shaped gullies U-shaped gullies.

16. (a)

There is proper supervision of the farm. Reduces costs on traveling

Easy to get extension services.

Allows good farm planning.

It enhances proper pests, diseases and weed control.

Encourages long term investments.

(b)

Landlord can earn income from the land.

People who have no land are able to access to farming.

Idle land is put into agricultural use.

Tenant is able to increase/decrease the size of land leased depending on profitability.

17. (a) Shs. 800

(b) (i) 120 bags ii) 900

18. a) A_1- root stock A_2- Grafting

b)A_3 Grafting b- Trench layering

19. a) C_1 – Maize stalk borer, maize weevil, Aphids C_2 – Maize streak, white leaf blight.

20. a) $p_2 o_5$ = 20%

.

b) 1 ha = 10,000m^2 requires 300kg of fertilizer.

5m x 10m_2= 50m2 requires x of the fertilizer

10,000 x = 300 x 50

X = 300x 50= 3

10,000 2 21. a) Single stem pruning.

b) The main stem is capped at 38cm above the ground to encourage more suckers to grow. Select two strong and healthy suckers and remove the others. The selected suckers should form a U-shaped to avoid splitting.

22. (a)

Clear the land

Divide the land into plots of 0.4 ha Construct /repair bunds /dykes.

Construct/ repair inlet and outlet channels

Flood the field to a height of 7.5 – 10cm above the soil surface. Carry out primary tillage

Puddle the soil to a fine mud.

Uprooted weeds should be heaped on the bunds.

Level the plots by dragging a wooden board/ jembe.

(ii)

Flood the plots to a depth of 7.5 – 10 cm.

Leave the field flooded for 4 days.

During transplanting, drain the filed to a depth of 5cm, Introduce water gradually as the crop establishes. Maintain the water level at 1/3 the height of the crop Change water every 2-3 weeks or when it is cold. Water should allow to flow slowly through the field Drain the field 2-3 weeks before harvesting.

(b)

Irrigation during the dry season. Timely pest control.

Timely weed control

Pruning, Coppicing/pollarding/capping.

Thinning/selective harvesting.

Protection against damage by animals.

Grafting/budding.

Fertilizer/manure application

Construction of micro-catchments

Structures around the trees

.

Provision of shade/mulch to reduce evaporation.

23. (a)

Competition from cheap/synthetic / products, causing loss. Change in supply of the produce; leading to price fluctuation Change in market demand; leading to price fluctuation.

Lack of market information; leading to exploitation by middle .

Inadequate capital; hence poor financing of various marketing functions.

Poor quality of produce; leads to price fluctuation.

Seasonally of produce; leads to price fluctuation.

Bulkiness of most agricultural produce; making it expensive and difficult to transport.

High perishability; this leads to low quality of produce Poor storage structure; leading to heavy losses of the produce.

Lack of knowledge in marketing leading to heavy losses.

Government interference through its agents leading to price fluctuation Acts as a record for future reference.

Helps in deciding the viability of the enterprise Assist in securing credit.

Helps to predict the profitability of the enterprise.

Aids in detecting problems easily hence correction is done in good time.

Aids in making management decisions especially when comparing between enterprises.

Helps in making changes in the farm.

Ensures periodic analysis of the farm business.

Encourage the farmer to be efficient so as to meet the target.

24 (a)

Enables one to grow crops during the dry seasons.

It's a method of land reclamation/ allows crop production in arid and semi-arid areas.

Makes it possible to grow crops in special structures e.g. green house.

Enables one too grow crops that require high amount of water e.g. paddy rice. It supplements rainfall in case it inadequate in crop produce. (b)

Topography,

Soil type

Type of crop to be irrigated.

Amount of water available.

Technology available.

Distance of the source of water to the field.

Capital available, skills available Climate factors of the area.

.

K.C.S.E 2007 PAPER 2 MARKING SCHEMES

1.

To keep the house warm.
To absorb moisture from poultry droppings.
Keeps birds busy scratching, thus reducing cannibalism.

2.

Marks's disease, avian spirochaetosis.
Fowl typhoid, Gumboro/ infectious bursa disease.
New castle, fowl pox, infectious bronchitis.
Chronic respiratory disease.
Infectious coryza of chicken.

3.

- If the sow is barren.
- Poor nutrition if the calf cold milk.
- Poor timing services

4.

Overfeeding/ giving the calf cold milk.
Lack of colostrums.
Irregular feeding of calf.
Feeding milk at wrong temperature.
Feeding milk in dirty containers/ feeding contaminated milk.

5.

- Level of milk production
- Quality of roughages.
- Availability of the concentrates.
- Economic factors/cost of concentrates.
- Physiological status.

6.

- Washing the udder with warm water.
- Allow the calf to suck for a while
- Feeding the cow during milking.
- Regular milking time
- Sound associated with milking.
- Massaging the udder when washing it.

.

7.

To make the animal docile

Reduce, incidence of animals injuring each other/attendant.

Reduce incidence of animals damaging farm structures.

Increase feeding, watering transportation space. Add aesthetic value to the animal.

8.

Halters, Nose bull ring and leading stick. Rope.

9

Carcass lacks rigor mortis.

Excess bloating

Water tar-like blood oozes from body openings

Oozing blood clot.

Rapid purification.

10

Introduce toxins that are harmful to the animal.

Cause anaemia/transmit diseases.

Cause wounds that allows secondary infection.

Cause irritation which leads to scratching/destroy wool.

11.

Source of water/Type of soil Topography.

Closeness to homestead/accessibility.

Closeness to the market/consumers. Far away natural sources of fish.

12.

Adjust the depth of ploughing Adjust furrow width of ploughing Front furrow depth.

Lowering /raising ploughing pitch.

13.

(a)

-Saanen, anglo-Nubian, Toggenburg. British alpines, Jamnapari.

14 proper feeding. prophylaxis, quarantine.

Proper housing, control of parasite.

Practice farm hygiene.

Routine vaccination.

Use of healthy breeding stock.

Timely treatment of the sick livestock.

Control of vectors, dipping, spraying.

.

15

Wind power. Water power, animal power solar energy. Human power, Biogas Geothermal.

16.

Painting metallic parts Regular washing.

Repair broken parts/cracks. Replace lost parts.

17.

Fuel systems, 1

Lubrication system.

Electrical system. Ignition system,

Cooling system,

Hydraulic system

Power transmission system

18

Permanent calf pen.

Movable calf pen.

Concrete floor calf pen.

Slatted floor calf pen

19.

Calcium deficiency in the birds body.

Blight light in the laying nests Birds laying on the floor.

Presence of broken, soft shelled eggs.

Prolonged stay of eggs in the laying boxes.

Idleness of birds.

Inadequate feeding.

20

(a) A- cross-cut saw B- rip saw

(b) A- cutting across the grain B- cutting along the grains (c)

Wipe blade with an oily rug.

Regular sharpening of the teeth.

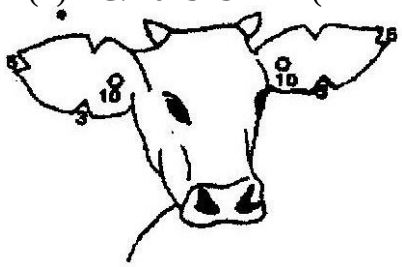
Ensure the handle is firm, Teeth setting.

Straighten the blade if bent. Proper storage of the foods.

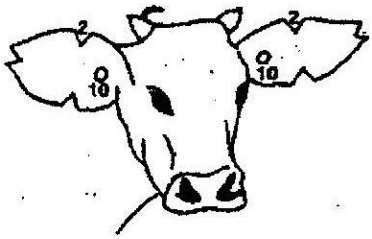
.

21(a) (i) ear notching (ii) Number 40 (forty)

(ii) AC. 10+5+5+2+2 (17+17)



Animal No 36



Animal no 34

(b) Between 18-1-2007 and 20-1-2007

22. (a) Barbet wire gate

(b) C – gate post/King post/strainer

D – Wire loop

E – Dropper.

(c) (i)

Support the gate post

To ensure the barbet remains tout.

(ii)

Prevent movement of farm animals outside Keep away livestock from outside.

Used as entrance into/exit from the farm.

23. (a) Animal/ ox-drawn plough. (b) G – Mould board.

J – Share

H – Land slide

K – Land wheel

(c)

Plough/ridging

Harvesting root crops e.g. groundnuts.

.

Weeding row planted crop.

Opening furrows for planting.

24. (a) **Advantages of battery system**.

Higher egg produce due to less energy wastage.

Easy to keep individual production records.

Control cannibalism and egg eating.

No contamination of water and feed.

Birds are not exposed to predators, parasites and diseases.

Facilitates culling and handling. Easy to collect eggs

Egg losses are reduced.

Many birds are kept in a given/high stocking rate.

Eliminates broodiness.

Birds still have tender meat at culling due to confinement.

Facilitates mechanization.

Keeps eggs clean.

(b) **Factors considered in selecting livestock k for breeding.**

Body confirmation.

Fertility/breeding ability.

Adaptability of the breed to the arts/hardiness.

Mothering ability in case of females.

Production potential/yielding capacity.

Temperament/behaving e.g. cannibalism egg eating.

Deformities/abnormalities e.g. one eye lameness.

Offspring performance Age of animal.

Growth rate, quality produce Disease resistance, prolificacy.

Lifespan/reproductive life.

25. (a) **Operation of a four stroke engine.**

(i) Induction stroke/sunction.

The piston moves down the cylinder, causing the inlet valve to open and draw in fresh supply of petrol vapour and air into the cylinder, exhaust valve closed

(ii) Compression stroke.

The inlet valve closes and the piston moves up the cylinder. This compresses the fresh fuel mixture into the combustion chamber, exhaust valve to close.

.

(iii) The power stroke.

Fully compresses the fresh fuel mixture and as a result a spark is produced at the spark plug. This causes the fuel mixture to ignite and expand resulting in pressure that forces the piston down the cylinder. Inlet valve closed exhaust valve closed.

(b) Functions of gearbox.

Helps the driver to select any forward or reverse gear.

Adjust speed of the driver from the engine crankshaft to the driver shaft.

Helps to alter the speed ratio.

Enables the power from the engines to be more easily applied to the work done by the tractor.

Enables the driver to stop the tractor movement without stopping the engine or without foot oppressing on the clutch all the time.

26. (a) **Features of an ideal calf pen.**

Concrete/raised stated floor – Easy to maintain cleanliness.

Dry litter/bedding – Maintain warmth.

Proper lighting – Should have good supply of natural light/sunlight.

Proper drainage – facilitate free flow of urine and water to avoid dampness.

Draught free – The structure should stop strong winds from blowing into the calf pen.

Proper ventilation – Structure should allow for fresh air circulation.

Security – Should be strong enough to keep away intruders/wild animals.

(b) Pneumonia in calves.

(i) **Predisposing factors**

Overcrowding of calves in the pen.

Dampness/chilliness in the pen.

Poor ventilation.

Age/younger calves are more prone to pneumonia than older calves.

Effects of diarrhea and other illness.

(ii) Symptoms.

Rough hair coats/ruffled hair.

Loss of appetite.

Abnormal lungs sounds e.g. whizzing.

Emaciation, frequent coughing.

Nasal discharge.

Fluctuating body temperature.

.

Dull and reluctant to move.

(iii) Control measures.

Treating the sick calve with antibiotics.

Providing warmth in pens.

Maintaining good sanitation in pens.

Isolating sick calves to avoid spread of the disease.

.

AGRICULTURE PAPER 1 MARKING SCHEME

SECTION A (3O MKS) 2009

1. **Methods of treating water**

i. Chemical treatment/chlorination/soda ash/sodium hypchlorate

ii. Filtration iii. Boiling iv. Aeration

v. Sedimentation/decantation/use of Alum(Aluminium Sulphate) vi. Storage for 36 hrs

2. **Examples of water pipes**

a) Meta pipes:

i) Galvanized iron popes/steel pipes ii) Aluminum pipes iii) Copper pipes (2x ½)

(1mk)

b) **Hose pipes: hose**

i) Rubber pipes

ii) Plastic Hose pipes/ Pvc pipes (Poly viney chloride pipes) (1 mk)

3. **Disadvantages of Communal land tenure:**

i. Encourage soil erosion ii. Results in overgrazing/overstocking iii. Difficult to control breeding/breeding diseases iv. No individual security on land ownership

.

v. Difficult to acquire loans for agricultural development projects vi. Difficult to carryout sound farm vii. Encourages spread of diseases and parasites viii. Encourages land disputes among community members. (2 mks)

4. **Site for agro-forestry trees;**

i. Farm boundaries ii. Homestead

iii. Terraces iv. River banks/water catchment areas

v. Steep slopes/slopes vi. Within pasture land between crop plots

5. **Financial documents:**

i. Receipt ii. Invoice iii. Statements iv. Purchase order

v. Delivery 4x 12=(2mks)

6. **Check dams and erosion control**

i) slow down the speed of run-ff to reduce erosive power of water

ii) Reduce the volume of run-offs

iii) trap soil sediments (2x ½) (1mk)

7. Methods of budding

.

i) T-budding

ii) Top budding iii) Patch budding 2x ½ (1mk)

8. **Reasons for sitting a nursery under shelter.**

i) Reduce damage to seedlings by strong wind ii) Reduce evaporation/transpiration rate due to strong sun and wind. (1mk)

9. **Burning of vegetation.**

i. Destroys organic matter humus ii.

Destroys soil structure iii.

Kills useful soil micro-organisms

iv. Exposes soil to agent of erosion

v. Causes nutrient imbalance/loss of volatile nutrients/accumulation of soils

(2 mks)

10. **Forms of Nitrogen**

i) Nitrate form/Nitrate ions/ NO^-_3 ii) Ammonium form/ammonium ions/ NH^+_4 (1mk)

11. **Wilting of sorghum**

i) To avoid prussic acid/hydrocyanic acid poisoning (1mk)

12. **Roles of soil micro-organisms**

.

i) Decomposition of organic matter to release plant nutrients ii) Some fix nitrogen/ sulphur into soil iii) Some produces toxic substances that help control soil borne disease.

(1mk)

13. **Hybrid and composite**

Hybrid- Is bred by crossing to bred varieties/inbred lines under controlled pollination while:

Composite:- Is bred by crossing a number of varieties under uncontrolled pollination (mark as a whole) (1mk)

14. **Optimum temperature**

i) Enhances seed germination/emergence ii) Promotes soil microbial activities iii) enhances vigorous growth and development

iv) Enhances high yields (1 ½ mks)

15. **Harmful effects of strong wind**

i) Results in soil erosion/loss of plant nutrients ii) Results in lodging of crops/distortion/ shading of leaves, flowers, fruits

/brae of branches

iii) High evapo transpiration rates causing wilting of plants.

iv) Spreading of diseases/weed seeds/pests

(1 mk)

16. **How cover crops conserve soil moisture**

.

i) Reduces surface run-offs/increase water infiltration into the soil

ii) Reduce evaporation rates (1 mk)

17. **Reasons for**

a) **Pricking out**

i) Reduces competition for light, space, nutrients

ii) To enable the seedlings to (1x1) grow strong (1mk)

b) **Root trimming**

i) Encourages development of short, dense and strong rooting system for faster establishment after transplanting

ii) To facilitate/ease lifting of seedlings/minimize root damage during transplanting (1mk)

18. **Control of damping off disease**

i) Reduce/remove shade ii) Thinning to reduce overcrowding iii) Reducing amount and frequency of watering iv) Spaying with copper fungicides /appropriate fungicides (1mk) 19. **Effects of pests with both piercing and sucking mouth parts**

i) Suck plant sap causing wilting/stunted growth ii) Some inject toxic saliva/secretions, which may cause distorted Growth/death of plants

iii) Lowers quality of crop products

iv) transmits/introduces disease agents

.

v) Inflicts wounds/openings which provide entry for secondary infections.

vi) Lowers crop yields (2mks)

20. **Natural factors that influence soil erosion**

i) Amount of rainfall/rainfall intensity

ii) slope/topography iii) Type of soil

iv) Size of watershed/catchment

v) Length of the slope vi) Vegetation cover vii) Wind velocity/strength of wind

viii) Soil depth (2mks)

21. **Opportunity cost is zero**

i) When there are no alternatives/choices in enterprises ii) When production resources are not limited/are abundant/free (1mk)

SECTION B (20 MKS)

22. a) **smut/maize smut /Ear smut** (1mk)

b) i) sugarcane ii) Sorghum iii) Barley, iv) Oats,

v) Millets

vi) Pasture grasses (accept specific examples e.g. nippier grass)

.

(1 mk)

c) **Control for smut:**

i) Plant certified seed ii) crop rotation/close season iii) Field hygiene/destroy crop residues iv) Hot water treatment (wheat and balley seeds) (2mks)

23. a) **To compare porosity/drainage/infiltration water holding capacity of different soils** (1mk)

Accept words that mean companion e.g. identify drainage)

b) Identification of soil samples.

A - Sandy soil

B -Loamy soil (1mk)

c) Improve soil structure of soil sample c.

i) Adding organic matter/manure

ii) Liming

iii) Sub soiling/proper silage

iv) Draining away excess water (2mks)

24. a) Ridging (½)

b) **Tertiary operation**

- Soil is dug in a continuous line; and heaped on the side(s); to form a bund/ridge/ridge/ a furrow is made and soil is heaped on the side to form a

.

ridge/bund (mark as a whole) (1 ½ mk)

c) **Advantages of planting on ridges.**

i) Promotes tuber/root expansion/development ii) Facilitates harvesting of root crops iii) conserves soil and water

iv) Facilitates drainage in water logged soils (2x1) (2 mks)

25. **Functions of ingredients**

a) Wood ash:-

i) Improves level of phosphorus & potassium in the manure

ii) Modifies soil PH to enhance microbial activities./reduces acidity

(1 mk)

b) Top soil

Introduces micro-organisms necessary for decomposition of organic materials. (1mk)

26. Deficient nutrient elements

a) Practices during harvesting of tea.

i) Use of a plucking stick

Helps to maintain a uniform/level plucking table (1mk)

ii) Use of woven basket

. Facilitates air circulation/ aeration to prevent fermentation of tea

(1 mk)

.

c) i) Staking (½ mk)

ii) **Reasons for staking**

i) Enhances production of clean fruits/improves quality of fruits.

ii) Helps in controlling diseases

iii) Facilitates spraying/harvesting of the crop/weeding/pruning

iv) Prevent infestation by soil borne pests (1 ½ mks)

SECTION C (40 MARKS)

Describe the production of dry beans under the following sub-heading

28. i) **varieties common in Kenya.**

i) Rose coco/GLP2, ii) mwezi moja/GLP,iii) 1004, iv) Canadian wonder/ GLP24;; K74;

v) Wairimu/Red haricot;v1) Mexican 142; Mwitemania (2mks)

ii) **Selection and Preparation of planting materials;**

i) Select varieties suited to the local ecological conditions

ii) Select dry and mature seeds

iii) Select sound seeds that are free form physical damage and winkles

iv) Dress seeds with appropriate chemicals to control soil borne pests and diseases/seeds should be dressed against soil borne pests and diseases.

.

v) obtain seeds from a reputable source/certified seeds (healthy pest and disease free) (3mks)

vi) Seeds should be inoculated with right strain of bacteria if necessary.

iii) **Planting and weeding**

i. Plant at the beginning of rains/timely planting/when soil/when soil has enough moisture.

ii. Make shallow furrows /holes at a depth of 3-5cm using appropriate tool iii. Apply phosphate fertilizer during planting iv. Place 2-4 seeds per hole and cover it up with the soil/seed rate of

50-60 kg/ha

v. Spacing is 30-50 cm by 10-15 cm depending on the variety vi. Shallow weeding is done to avoid root damage vii. Weeding should be done when the field is dry to avoid spread of diseases when conditions are wet.

viii. Keep the field weed tree during easy stapes of growth ix. Apply fertilizer at due rate of 300 kg of ssp or 150 kg/ha of Dsp or

200 kg/ha of DAP.

b) **Safety precautions when using herbicides:**

i) One should wear protective clothing such as masks, glove, overalls and boots.

.

ii) Avoid inhaling the herbicides by not smoking while spraying/spray alone the education of wind

iii) Read the manufacturer's instructions and follow them strictly

iv) Avoid sucking or blowing blocked nozzles

v) Immediately after handling chemicals the user must wash thoroughly to remove chemical traces.

vi) Herbicides should be stored in a safe place away from food and out of reach of children

vii) Equipment used in herbicide application should not be washed in water sources used by humans and animals/to prevent pollution.

viii) Equipment used in herbicide application should not be washed in water sources used by humans and animals/to prevent pollution.

ix) Empty containers and left-overs should be properly disposed off in such a way that they will not pose danger to people, animals or the environment

x) Avoid chemical spillage in places that are unintended/where it may cause danger to human and animals.

xi) Equipment used should be washed thoroughly to avoid damage to crops/animals in subsequent operations

xii) Avoid eating or handling food before washing (10 mks)

.

NB: (mark 1st 10)

29. **Explain five advantages of mulching in crop production.** (5 mks)

a) Advantages mulching:

i) Has an insulating effect thus modifies/regulates soil temperatures ii) Prevents water evaporation therefore moisture is retained in the soil for the plant use.

iii) Controls soil erosion by intercepting rain drops before they hit the soil, Reducing the speed of runoff and increasing rate of water infiltration.

iv) Organic mulch decomposes into humus thereby improving soil structure/water holding capacity/drainage/aeration

v) After decomposition it improves soil fertility by releasing nutrients.

vi) Controls weed by covering the soil and sup repressing their growth vii) After decomposition organic mulch betters soil PH/increases calcium exchange capacity.

(5 mks)

(b) **Outline five activities that may be undertaken in organic farming.**

(5 mks)

i) Mulching

ii) Application of organic manure/organic fertilizers iii) Crop rotation

.

iv) Use of medicinal plant products to control diseases and parasites

v) Rearing of livestock on natural/feedstuffs without use of chemical additives

vi) Physical/cultural /pests/weed/parasite and disease control

(Accept any specific measure of control) 5x1= (5 mks)

(c) **Discuss ten benefits a farmer is likely to get by using vegetative propagation in production of oranges** (10mks)

i) Production/development of early maturing crop ii) Development of high yielding orange crop iii) Makes the plant to assume the desired shape/size e.g. budding spread sideways/easy to manage.

iv) can obtain two or more orange varieties on the same root stock.

v) Ensures maintenance of genetic/clonal characteristics to ensure uniformity.

vi) Facilitates development of drought resistant crop vii) It facilitate propagation of seedless orange varieties viii) Its used to develop tree plant that are less thorny ix) Facilitates fast multiplication of the desired crop/variety of oranges

x) Is utilized to develop orange crop that is resistant to diseases

xi) Is utilized in repair/treatment of damaged parts of orange trees.

.

(10 mks)

30 a) **Explain then roles of a farm manager in agricultural production.**

(10 mks)

Roles of a farm manager:

i. Short- term planning for quick decision to avoid losses when where is an urgent activity.

ii. Long-term planning: -Collecting information relevant to the farm enterprises.

E.g. marketing activities, production techniques iii. Information gathering: -Collecting information relevant to the farm enterprises

e.g. marketing activities, production techniques iv. Budgeting :- for future income and expenses as proposed in the farm plan.

v. Comparing standards of the farm/enterprises with the set standards and making appropriate adjustments vi. Detects weaknesses and constraints and finds ways of overcoming them vii. Keeps up to date farm records and uses them in daily running of the farm viii. Implements farm decisions ix. Guides and supervises the implementation of the farm plan of

x. Compares performance of the farm with that of other similar farms xi. Makes predictions of the farm business xii. Makes predictions of the farm business xiii. Is the accounting officer on all financial transactions of the farm

.

(10 mks)

b) **Describe five roles of Agricultural based women groups in farming** (5 mks)

Roles of women Groups:

i. Loaning members to finance their farming activities.

ii. Enlightening members on improved/modern farming techniques/emerging issues

iii. Establish income generating activities for members iv. Assist in marketing agricultural produce for the members.

v. Buy farm inputs in bulk and sell to members at a low price

vi. Collectively assist members in their farm operations vii. Guarantees members for loans viii. Gathering information on intended projects/feasibility study.

ix. Acts as agencies of change in a community. (5mks)

c) **Describe land preparation and planting in carrot production. (5 mks) land preparation and planting in carrot production.**

i. Clearing the bush using appropriate tool ii. Primary cultivation using appropriate tool iii. Secondary cultivation/harrowing to a fine tilth iv. Make drills 30 cm apart and 1 cm apart and 1 cm deep

v. Apply phosphates /DSP/DAP /MAP fertilizer during planting

vi. Sow seeds along the drills vii. Cover and firm the seeds with soil viii. Apply at the rate of 90 kg/ha of DSp/DAP ix. Remove an perennial weeds

.

x. Plant at due onset of rains/when the soil has enough moisture.

AGRICULTURE PAPER 2 MARKING SCHEME 2009

SECTION A

	Cattle	Pigs	Poultry
Young from birth/batching to weaning	Calf	Piglet	
Young female before fist parturition/laying	Heifer		Pullet
Mature male for breeding		Boar	Cock

(6 x ½) (3 mks)

2. **Viral diseases:**

a) Cattle -lumpy skin disease

.

-cattle plaque/Rinderpest #mad cow disease

-foot and Mouth disease # Riftvalley fever (1 mk)

b) Poultry -Newcastle # Avian flue

-Fowl pox # marecks disease

-Gumboro/infection bursa (1 mk)

3. **Intermediate hosts.**

a) Liver fluke (Fasciola spp) - French water snail/Lymusea translated

b) Tapeworm (Taenia spp) - pig/cattle (1mk)

4. **Reasons for feeding colostrums**:

- It is highly digestible hence suitable for the digestive system which is not fully developed
- It is highly nutritious
- It contains antibodies enabling the young stock to resist early infections
- It has a laxative effect
- It is highly palatable. (2 mks)

5. **Advantages of artificial method of calf rearing**:

- Farmer is able to keep accurate records of milk yield
- Easy to regulate the amount of milk taken by the calf
- cows produce milk even in the absence of the calves
- allows for maintenance of high standard of hygiene during milking

.

- there is a possibility of the farmer selling more milk thereby maximizing profits.

(2 mks)

6. **Harmful effects of tsetse flies:**

- Transmit the disease trypanosomiasis.
- stuck blood thereby causing anaemia
- Their bites cause damage to skins
- bites cause wounds which may act as routes for secondary infections by pathogens cause irritation to the animal.

(2mks)

7. **Reasons for raddling in sheep management:**

- To help identify rams which have mated with ewes/those incapable of mating
- To identify ewes that have been served/fertile/those that are infertile/ not served.

8. **Reasons for steaming up;**

- Accustom the cow to concentrate feeding
- ensures birth of a healthy calf
- Build up energy for parturition

.

- Increases and maintains high mil yield after birth/stimulate alveoli cells development
- Promotes good health of the cow/mother
- Provide nutrient for maximum foetal growth. (2 mks)

9. **Limitations of using hydroelectric power**

- Very high initial capital required for installation
- If the market is not large, it becomes uneconomical to install
- Water supply can become unreliable in case of prolonged drought.
- The river may change its course leading to wasted investment
- Not all farmers can afford the use of electric appliances
- Lack of skilled personnel
- Lack of river on individual farms (2 mks)

10. **Reasons for maintaining a wheelbarrow:**

- To reduce cost of repair/replacement
- To improve efficiency
- To prolong life of the wheelbarrow
- To reduce injury/accident incidences (1mk)

11. a) bastard file used for smoothing metal while rasp file is used for smoothing

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wood. (1mk) (mark as a whole)

b) Copying saw is used for cutting curves wood while hacksaw is used for Cutting metal/Lastics

12. **Disease caused by Protozoa**:

- East cost Fever (E.C.F.)
- Anaplasmosis/gall sickness
- Coccidiosis (Nagana)
- red water/Babesiosis
- Corridor disease
- Nairobi sheep disease
- Trichomoniasis
- Sweating disease.

13. **Ways of restraining cattle:**

- Use of ropes/halters/casting
- Use of lead stick and bull ring

  Use of crush
- Use of crush
- Use of head-yoke
- Use of holding/isolation pen/yard

(4x ½) 2mks)

14 a) Incubation period:- is the duration between a disease causing organism

Infests/enters an animal and the time the first disease symptoms show.

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b) Mortality rate:- Is the likelihood of death occurring in case of disease outbreak which is expressed as a percentage of the affected animals that die.

15. **Conditions inhibiting milk let-down.**

- Changing of milking routine
- Strange surrounding/strangers/sudden noise/storm
- Poor milking techniques/pain
- Sickness (1mk)

16. **Reasons for rearing indigenous cattle in marginal areas of Kenya:**

- have fairly tolerance to high temperature
- Have considerable tolerance to tropical diseases - can walk for long distances in search of pastures and water
- Have ability to survive on low quality pasture/forage.
- are able to survive on less amount of food/water without seriously affecting performance.

(4 ½ mks)

17. **Maintaining conditions in artificial incubation**

a) Proper ventilation:

- For air/oxygen circulation for embryonic gaseous exchange

-for air circulation to control humidity (1mk)

b) Relative humidity at 60%

.

-Low humidity causes embryonic mortality due to loss of moisture -High humidity lowers hatchability and produces abnormal bigger chicks

which look marshy. (1mk)

SECTION B

a) Appropriate milking technique

-A/ squeeze method (1mk)

b) Squeeze method

-Teat is grasped at base between the thumb and the index finger. -The other fingers are sequentially tightened starting with index fingers to compress the teat so as to expel the milk into a container

-all fingers are relaxed finger and the thumb should hold the base of the teat firmly to prevent back flow of milk into glad cistern. (2 mks)

c) **Disadvantages of using wrong milking techniques**

-It is injurious and leads to formation of scar tissue/physical injury on the teat cistern

-The pulling effect leads to tearing of teat tissues making them more prone to bacteria invasion/mastitis.

-Chances of milk contamination are high because the application of milking salve/teat dipping becomes necessary for lubrication.

(2 mks)

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19. a) **Parts labeled**

- B-Inner shell membrane
- C-outer shell membrane
- D-Albumen/egg white
- F- Chalaza

(2mks)

b) - Texture/ smoothness of the shell
- Absence of cracks on the shell
- Cleanliness/absence of the shell
- Cleanliness/absence of blood stains
- Oval in shape.

(2mks)

c) **Function of the part labeled E.**

- Provides nutrients for the developing embryo/chick. (1 mk)

20. a) routine management practice:

-Hoof trimming **(1mk)**

b) Reasons for the practice:

-to prevent lameness/difficulty in walking

-To control foot rot

-To ease mating (2mks)

21. a) i) fowl pox/ cutaneous pox/avian pox

.

ii) Virus /avian pox virus (1 mk)

b) Other symptoms

-watery discharge through eyes and nose

-Difficult breathing and swallowing

-Dullness
-Loss of appetite

-Emaciation (2mks)

c) **Control Measures**

- Vaccination
- Removal killing of all affected birds
- Observe proper hygiene
- Isolation of affected birds (2mks)

22. a) - elastrator

(1 mk)

b) **Use of the equipment**:

- Stretching/enlarging/Operating the rubber ring during castration/dehorning/clocking.

(Reject Castration/dehorning/clocking as an answer)(1mk)

SECTION C 40 MKS

23 a) signs of ill-health

-**Behaviour of the animal**- aggressiveness, over excitement or produces

.

abnormal sound

-isolating from others/photophobic

-**animal movement**-limping/lameness/strained gait

-**General appearance**: restless, dull, less alert or less response to touch/abnormal posture

-**skin/coat**: -ruffled/starry coat/loss or hair/dull skin/parts peeling off/cracking/wounds/lesions/swellings

-**Mucous membrane**:-dull red/pale /dry/ having copious discharge

-**Production /performance** level:-Sudden decline in production/performance/loss of weight and condition.

-Pulse rate:-radical departure from the normal range

-respiratory rate: abnormal deviation from the normal range

-**Body Temperature**: Abnormal temperature from the normal range/too high/too low

-**appetite and feeding**:-Increased/lack of appetite/abnormal chewing/swallowing/feeding on abnormal food substances

Urination:-abnormal urine colour matter in terms of consistency/smell/colour, difficult urination/less or high frequency

-profuse salivation

-lachumation

-**defaecation process**:-abnormal faecal matter in terms of

.

consistency/smell/colour presence of parasite/egg segment/blood stains/frequency (10 mks)

b) **Process of digestion in anon-rumnant**

i) Mouth.

- food is chewed to break and increase surface area for enzyme action
- food is mixed with saliva which contains salivary amylase and lubricates the food
- salivary amylase converts starch to Maltose. (1 mk)

ii) **Stomach**

- Food is mixed with gastric juice/dilute hydrochloric acid
- Hydrochloric acid provides optimum PH for enzyme/ingested with food./converts pepsitrogen to pepsin
- Pepsin breaks down proteins to and peptones peptides enzyme/pepsin action
- Rennin coagulates milk to increase the surface for the enzymes/pepsin action

iii) **Small intestines**

- In the duodenum, food is mixed with bile and pancreatic juice (pancreatic amylase, lipase and typsin).

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- Bile emulsifies fats to increase the surface area for enzyme action/bile has salt to neutralize acid from stomach.

- Pancreatic amylase converts fats to glycerol and fatty acids
- Trypsin converts proteins to peptones and peptides
- In the rest of small intestines, food is mixed with intestinal juice/erepsin/peptidase maltase, sucrose/invertase & lactase enzymes).

- Erepsin/peptidase convert peptones and peptides to amino acids
- Maltase converts maltose to glucose
- Sucrase(invertase) converts sucrose to glucose and galactose
- Digested food materials are absorbed in the ileum
- Undigested and indigestible food materials then move to the large intestines for further digestion. (6 mks)

24. a) **Benefits of using biogas**

- is a cheap source of energy
- requires low running/maintenance costs
- Is versatile/can be put to many uses such as lighting. Cooking, electricity Generation, etc
- does not pollute the environment/environmental friendly
- Is a sustainable/renewable source of energy?
- By products/fermented slurry is used as manure

.

- Income generating
- Raw materials locally available

b) **Advantages of using a subsoiler**

- It breaks hard pans
- It improves drainage/water infiltration
- It improves soil aeration
- It destroys deep rooted weeds
- It facilitates growth and development of root crops/deep rooted cups
- It loosens top soil without bringing the subsoil to the surface to ensure conversation/minimum fillage/least soil pulverization.

(5 mks)

c) **Factors affecting sitting of a bee hire:**

- Availability of water;- should be available within a 3 km radios to facilitate collection by bees.
- Availability of flowers:- should be readily available to facilitate collection of Pollen and nectar by bees.
- Noise and other disturbances: Place should be free from pests and diseases
- Dampness and bad odours: - site should be free from dampness and bad odours

(Factors 5x1)

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(explanation 5x1) (10 mks)

25. a) **Life cycle of beef /pork tape worm:**

- Mature segments/prolottids full of eggs are dropped with human faeces
- Eggs are then released from the segments.
- Cattle/pigs ingest the eggs during grazing/feeding
- In the intestines, the eggs hatch into embryos
- The embryos penetrate the intestinal wall and enter the blood stream
- The embryos first localize in the liver
- From the liver, the embryos are distributed into the muscles in the body
- In the muscles, they become cysts/bladder worms/crysticercus cellulose
- Human beings get infected when they eat raw/ under cooked beef/pork with the cysts
- In the human intestines, the cyst wall dissolves, the bladder worms emerge and attach on the intestinal wall
- they then develop into adult worms and start laying eggs.

(Mark until the order is broken) (10 mks)

b) Process of egg formation

Ovary: Produces the ovum (1 mk)

.

Funnel/Infundibulum:

- Chalazae are added and the egg moves to the magmum.
- Fertilization takes place here
- receives ovum (1 mk)

Magnum:

- Light album is added and they yolk moves into the isthmus. (1mk)

Isthmus:

- Water mineral salts and vitamins are added
- Shell membranes are also added and the eggs moves to the uterus
- addition of albumen is completed (2mks)

Uterus/shell gland:

- Shell is added around the egg/it contains calcium deposits
- Shell pigmentation occurs here (3 x ½) (2mks)

Vagina:

- Egg is temporarily stored
- Egg is inverted to be laid with the broad end fist
- Egg is lubricated (2mks)

(Mark correct function and with correct part-ignore the order)

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