



education

Department:
Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

AGRICULTURAL MANAGEMENT PRACTICES

EXEMPLAR 2007

MEMORANDUM

This memorandum consists of 21 pages.

QUESTION 1: MAIZE PRODUCTION

- 1.1.1 B
- 1.1.2 B
- 1.1.3 A
- 1.1.4 D
- 1.1.5 C
- 1.1.6 C
- 1.1.7 B
- 1.1.8 D
- 1.1.9 B
- 1.1.10 B (10)

1.2.1 Growth stage 1 Plant until emergence (2)

1.2.2 The following may occur:
 Water shortage may damage the young plant
 Sand blowing may damage grow point
 Dry conditions may harden the surface and plant cannot emerge
 Implement may damage plants
 Depth affect the time of emerge
 To much fertilizer close to the seed may burn the seed
 All above mentioned factors will have a big influence on yield (6)

1.2.3 5 to 8 days (2)

1.3.1 Warm weather crop
 Minimum temperature for germination 10 C
 High temperatures increase growth
 Increase in leaf growth
 Critical temperature detrimentally affecting yield is approximately 32 (3)

1.3.2 Water deficiency is usually the most yield-limiting factor
 350 – 450 mm per year
 At maturity each plant uses 250 liters of water
 Deficiency during germination may lead to a drop in yield (3)

1.4.1 A Tine implement - B Moulded board plough (1)

1.4.2 (1)

A	B
Use to do mulch cultivation	Use to do clean cultivation
Residues are left on the soil	Soil is turned over
Low wear	Heavy wear
No break down of soil structure	Brake down of soil structure
Weed control still necessary	No weed control

(4)

Slicing action to cut residues or weed
 Wear is lower than mouldboard plough
 Effective on lands with residues
 Clogging very seldom occur

- 1.5.1 Bacteria (2)
- 1.5.2 Weakening of the inter nodes
Wilting of leaves
Colour of inter nodes brown
Inside tissue change colour
Plant die
Smells bad (4)
- 1.5.3 Drainage of excess water
Burning of invested plants (2)
- 1.6 24% of 200
 $200 / 100 = 2$
48kg

3/6 of 48
 $48 / 6 = 8$
 $8 \times 3 = 24\text{kg}$ (6)
- 1.7 Wetting agents
Adhesive agents
Penetrators
Suspension agents
Buffers
Droplets (4)
- [50]**

QUESTION 2: LUCERNE CULTIVATION

- 2.1.1 T
 2.1.2 F
 2.1.3 F
 2.1.4 T
 2.1.5 T
 2.1.6 F
 2.1.7 T
 2.1.8 T
 2.1.9 T
 2.1.10 F

(10)

- 2.2 Climate
 Soil type
 Soil fertility
 Water capacity
 Appearance of brackish salts

(5)

2.3

Grade	Maximum grass	Maximum grain	Colour	Texture	Maximum dry stems	Maximum foreign material
	%	%			%	%
1Sup.	2	2	Green	Rich with leaves	1	0.5
2	4	4	Slightly bleach	Slightly with stems	2.5	2.0
3	6	6	Bleach	Full of stems	4.0	1.5

(9)

- 2.4 2.4.1 Rhizobium bacteria

(2)

- 2.4.2 Cool
 Dark place
 Vegetable shelf of freezer

(3)

- 2.5 Sow clean seed
 Avoid the buying of infected seed
 Good pasture management
 Make sure that the implement is clean after working on a infected land
 Make sure the land is free of any dodder reeds/residue

(5)

- 2.6 2.6.1 Lucerne caterpillar

(1)

- 2.6.2 Green with white stripes on both sides and 3,75mm long
 Spraying with insecticide

(2)

- 2.6.3 Don't let animals graze on infected fields
Cut the lucerne before the caterpillar reaches maturity
Irrigate regularly because wilting disease control the caterpillar (4)
- 2.7 2.7.1 25 – 75 (1)
- 2.7.2 200 – 400 (1)
- 2.7.3 uitgestrooi (1)
- 2.8 Fine stems then it contains less fibre and are more digestible
Green colour which is a indication of a high nutritional value and higher in Vitamin A
Pleasant smell and odour is a indication of the absence of fungus
Free of weeds – Weeds lower the quality
Free of fungus – fungus can be poisonous
Free of foreign material (ex ropes and plastic) (any 4) (4)
- 2.9 Soils with impermeable layer
Soil with a porous sub soil
Soil with brackish layers
Heavy clay soil (any 2) (2)
- [50]**

- 3.5 3.5.1 It is a system whereby various strategies are used to protect crops by suppressing the insect population and limiting insect damage (3)
- 3.5.2 As per area (2)
- 3.5.3 Will the pest cause economic damage (4)
 Are there alternatives to chemical
 At which growth stage or infestation level should the pest be controlled
 Which pesticides are registered to use on specific pest
 How would application be done (any 4)
- 3.6 Straw strength
 Straw length
 Threshing ability
 Kernel attachment
 Ear type
 Day length requirements
 Sprouting
 Yield potential (any 4) (4)
- 3.7 3.7.1 13% (2)
- 3.7.2 Lodging may be a problem
 Moisture
 Wind damage (2)
- 3.7.3 Rain
 Because of wrong cultivation the soil surface can be uneven
 To much weed (3)
- 3.8 Soil temperature and water affect seed germination
 The better the temperature the higher germination
 Germination process need water
 Correct tillage can manipulate the temperature and reduce evaporation
 Plant residues on the soil surface may lower the temperature (any 3) (3)
- [50]**

QUESTION 4: VEGETABLE PRODUCTION

- 4.1 4.1.1 F
 4.1.2 H
 4.1.3 M
 4.1.4 N
 4.1.5 G
 4.1.6 C
 4.1.7 E
 4.1.8 K
 4.1.9 L
 4.1.10 I (10)
- 4.2 Supplement of vitamins in people.
 Supplement of minerals.
 Increase resistance to diseases.
 Prevent deficiency illness in humans. (4)
- 4.3 4.3.1 Soil drainage
 Water capacity of soils (2)
 Percolation rate/ water infiltration rate
 Water holding capacity
- 4.3.2 (a) A sandy soil (1)
 (b) B loam soil (1)
 (c) C clay soil (1)
- 4.3.3 Add organic matter
 Add compost
 Add kraal manure (3)
 Work plant rests into the soil
- 4.4 4.4.1 Identify any pests that are visible.
 Look for damaged areas on the leaves.
 Pests are more likely to be underneath a leave.
 Vegetables that are vide or damaged. (4)
- 4.4.2 Biological control
 Chemical control
 Crop rotation
 Cultural control (3)
- 4.4.3 High volume spray
 Low volume spray
 Ultra low volume spray (3)
- 4.5 4.5.1 To apply the correct amount of chemical
 On a specific area for the best results. (1)
- 4.5.2 Choose a specific speed and gear that suits the surface
 Spray over a certain distance
 Determine the timeframe for a specific distance
 Determine the amount of water sprayed in that time for
 each nozzle.
 Calculate the water sprayed on that specific area.
 Compare the water used on the area to the amount

needed as prescribe in the instructions.
Make any changes if necessary
Recalculate/ control the equipment often.

(7)

- 4.6 Financial
Plant dates
Plant protection program
Rainfall/irrigation
Yield
Labour related records (any 2) (2)
- 4.7 4.7.1 Soil type. In sandy soils seed must be planted deeper to avoid drying out. (3)
In heavier soils seed must be planted shallow so that it penetrates the surface before a core is formed.
- 4.7.2 Soil moisture. If seed is planted shallow, the soil must constantly be wet to avoid drying out. (2)
- 4.7.3 Soil temperature. If the soil temperature is high, seed must be planted deeper where it is colder. (3)
If soil temperature is lower, seed must be planted shallower where the surface is warmer.
Seeds should be planted on the soil with a certain average temperature
- [50]**

QUESTION 5: SUNFLOWER PRODUCTION

- 5.1 5.1.1. A
5.1.1. B
5.1.2. C
5.1.3. A
5.1.4. D
5.1.5. C
5.1.6. B
5.1.7. B
5.1.8. C
5.1.9. D (10)
- 5.2 Take a soil sample for analysis
Sandy-loam to clay soil types.
Well-drained soils, susceptible to waterlogging and increase fungal diseases.
Neutral to moderately alkaline soils.
pH 6.5-8.0, dislike acid soils especially lower than 4.6
Low soil temperatures, high temperatures affect seedling emergence
Low salt content; affect plant growth, development, oil content and nutrient uptake.
High soil fertility, low in aluminium. (7)

- 5.3 Cultivate before the sunflower is too tall for equipment, otherwise the will be damaged easily.
To prevent damaging the sunflower roots, cultivation should be shallow (less than 75 mm).
Throw loose soil onto the row-this will help to suppress weeds which sprout the row.
Smaller weeds die off easily when dry soil is hoed.
Hoe during the hottest part of the day when the sunflower is wilted-this reduces stem breakage. (5)
- 5.4 Decreases the risk of diseases and weeds
Yield and quality of the follow-up crop is measurable.
Lessens weed and pest problems.
Soil is fully utilised if shallow-rooted crops are altered with deep-rooted crops.
Crop fertility can be maintained. (5)
- 5.5 disposal of crop residues by burning.
ensure that sunflowers are not grown successively on the same/adjoining land.
destruction of volunteer or wild plants.
seed dressing.
growing resistant varieties (5)
- 5.6. frost-free period.
long day-length because is affected by photoperiodicity.
high temperatures
sensitive to wind damage.
low rainfall susceptible to waterlogging.
grow well in arid western regions.
drought resistant. (5)
- 5.7 5.7.1 Top-dressing (1)
- 5.7.2 Broadcasting (1)
- 5.7.3 Broadcasting (1)
- 5.7.4 Broadcasting (1)

5.8	5.8.1	Centre pivot	(1)
	5.8.2	Spray irrigation/Overhead irrigation	(1)
	5.8.3	saves water. uniformity in water application. allows water measurement. little labour required.	(4)
	5.8.4	Occupational Health and Safety Act.	(2)
	5.8.5	High because they would be enough moisture for plant growth.	(2)
			[50]

QUESTION 6: VINICULTURE

- 6.1 6.1.1 True
 6.1.2 True
 6.1.3 False
 6.1.4 False
 6.1.5 False
 6.1.6 True
 6.1.7 True
 6.1.8 False
 6.1.9 False
 6.1.10 False (10)
- 6.2 6.2.1 Cultivation
 Harvesting
 Pruning
 Packing
 Plant protection
 Pulping
 Planting/inoculation
 Tipping and topping (5)
- 6.2.2 Chemical industry
 Fertilizer industry
 Commercial industry
 Food industry (3)
- 6.3 Weed control
 Establish crops in between the trees and ploughing in.
 Ploughing in of compost, fertilizers and other organic matter.
 Promoting root growth.
 Preserve soil moisture.
 Increase soil air.
 Increase water infiltration. (4)
- 6.4 Adaptation to soils.
 Growing ability.
 Disease and pest resistance
 Yield
 Grape quality
 Affinity (4)
- 6.5 6.5.1 A Ocular
 B T-cut
 C Rootstock
 D Protective band/plaster (4)
- 6.5.2 With a sharp knife, cut the ocular from the stem.
 Make a T cut in the rootstock.
 Open the cut and place the ocular into cut.
 Close the cut and cover it with protective plaster. (4)

- 6.1 6.6.1 Powdery mildew. (2)
Fluff mildew.
- 6.6.2 Spraying: use of fungicide that dissolves in water
Spray with low pressure.
Dusting: use of a dust. (4)
Spray with high pressure.
- 6.7 6.7.1
$$\text{Water/nozzle} = \frac{\text{water/ha}}{\text{amount of nozzles}} \times \frac{\text{area sprayed}}{\text{area of 1 ha}}$$

$$= \frac{100}{25} \times \frac{15 \times 100}{10\,000}$$

$$= 0,6 \text{ l}$$
 (2)
- 6.7.2 Change the type of nozzle.
Change the speed of the tractor (change gear or revolutions).
Change the pressure of the sprayer. Which changes can a farmer make to ensure that the correct amount of fungicide is applied per hectare if the sprayer is incorrect? (3)
- 6.8 6.8.1 Leaves from young, growing stems. (1)
6.8.2 Wash with tap water.
Rinse with distilled water.
Put into linen bag.
Dry for 24 h at 70°C (4)
- [50]**

QUESTION 7: BEEF PRODUCTION

- 7.1 7.1.1. A
7.1.2. A
7.1.3. B
7.1.4. A
7.1.5. D
7.1.6. A
7.1.7. B
7.1.8. C
7.1.9. C
7.1.10. D (10)
- 7.2 Enough roughage.
Higher energy levels.
Easy digestible.
Palatable
Higher protein levels. (5)

7.3	Bacteria	As in area	(10)
	Virus	As in area	
	Protozoa	As in area	
	Metabolic	As in area	
	Fungus	As in area	
7.4	7.4.1	Control external parasites.	(1)
	7.4.2	Spay dip. Plunge dip Pour on. Hand spray	(3)
7.5	7.5.1	Site -for accessibility by cattle and motor transport. -for slope to endure surface drainage. -to have sufficient shade. -to have permanent water supply.	(2)
	7.5.2	Location -to reduce the distance cattle travel in order to reduce energy expenditure by animals. -facilities must be sited at equidistant to areas it serves.	(2)
	7.5.3	Design -should allow for a well-organized flow of animals with least/minimum disturbance. -allow flow of animals with minimum possible injury. -should allow adequate supervision, by having a vantage/control point. -allow dip bypass to the working place. -paddock fences should tie into the layout, for holding herds before entry.	(2)
	7.5.4	Materials -all materials used should be strong and durable. -wooden posts should be solid and creosote treated and -be of correct dimensional specifications.	(2)
	7.5.5	Layout -should be a simple design. -well constructed and -requires little maintenance.	(2)

- 7.6 7.6.1 the higher the dry matter in a feed the higher the water intake. (1)
 7.6.2 Cattle feeding on succulent feeds tend to consume less water. (1)
 7.6.3 The higher the intake of minerals the higher the water consumption. (1)
 7.6.4 The form and intensity of the animal's production affect water requirements and water consumption e.g. milk production increases water requirements. (1)
 7.6.5 The higher the temperature the higher the water consumption. (1)
- 7.7 7.7.1 Eat a variety of food including fruit and vegetables. (1)
 Follow a balanced diet (1)
 7.7.2 -Follow normal health related principles such as correct eating habits and not smoking, drinking and eat fresh food. (1)
 7.7.3 -a person with HIV/AIDS does not have to use separate cutlery They should lead a normal life for as long as they can. (1)
 7.7.4 HIV/AIDS people should not be discriminated against they have equal right to privacy, health care, fair labour practice and education. (1)
- 7.8 -plan for the journey, avoid peak hours
 -obtain movement permit as specified in the Animal Health (movement of cattle) Regulations, permit should be given to the person travelling with the cattle.
 -ensure that fit and healthy animals are selected for travel, no animal should be transported if it is injured, diseased or heavily pregnant.
 -do not mix young and old animals together.

(3)
[50]**QUESTION 8: POULTRY PRODUCTION (BROILERS)**

- 8.1.1 B
 8.1.2 D
 8.1.3 A
 8.1.4 B
 8.1.5 A
 8.1.6 C
 8.1.7 D
 8.1.8 B
 8.1.9 B
 8.1.8 B

- 8.2 Should be near sufficient clean water.
 Slight slope with good drainage to prevent the accumulation of water.
 Should be near a reliable market.
 A permanent light breeze is a advantage.
 The site must be secure against theft and problem animals. (5)

- 8.3
- 8.3.1 Damage the lung and will increase respiratory diseases. (1)
- 8.3.2 Damage the respiratory tract lining and increase respiratory diseases. (1)
- 8.3.3 Growth will be affected negative. (1)
- 8.3.4 Causes as cited and are fatal at high levels. (1)
- 8.4 8.4.1 A. Temperature too high / spreading away from heat / Make no noise / Chickens pant/ head and wings drop.
- B. Evenly spread / appear happy
- C. Crowded to brooder / noise distress calling / too cold
- D. In one corner / influence of draught / external noise. (5)
- 8.5 8.5.1 Bacteria. (1)
- 8.5.2 Adopt a single age policy.
Admit only essential visitors on the site.
Make use of protective clothing.
Good disinfecting program.
Keep out wild or problem animals.
Spray wheels of all vehicles on site. (4)
- 8.6 Supply and feed ingredients
Live weight at slaughter
Age at slaughter
Yield and carcass quality
Market preference for skin colour (4)
- 8.7 8.7.1 Respiration rate increases rapidly.
Body temperature rises.
Death occurs if exposure is long enough. (2)
- 8.7.2 Respiration rate increases.
Body temperature rises. (2)

- 8.8 Deficiencies in ration.
Inadequate feeding s and water space.
Overcrowding.
Overheating.
Poor ventilation.
Breeding. (6)
- 8.9 Put hens and cocks in batteries
The hen or female has both legs clasped in right hand
Tail is pressed against the side of battery
Left hand applies pressure on both sides of the anus
Point of the syringe is inserted into the oviduct (5)
Two drops of sperm are injected
Depositing is done by second person

[50]**QUESTION 9: SHEEP PRODUCTION – MUTTON AND WOOL**

- 9.1.1 Mortalities
9.1.2 Individual mating
9.1.3 Vasectomies rams or teaser rams
9.1.4 Kemp
9.1.5 Micron
9.1.6 Brands
9.1.7 Blue tongue
9.1.8 Phenotype
9.1.9 Oestrus cycle
9.1.10 Pressure grazing (10)
- 9.2 9.2.1 Sheep Scab. (1)
9.2.2 Mite / Psoroptes ovis. (1)
9.2.3 The organism is only found on sheep and lives the whole life cycle on the sheep. (1)
9.2.4 Animal Disease Act (No 40 Of 1984). (1)
- 9.3 Mutton breeds
Dual purpose
Wool
Pelt (4)

- 9.4 9.4.1 $\frac{450}{400} \times \frac{100}{1} = 112.5\%$ (2)
- 9.4.2 Low The lambing percentage for sheep should be above 150% because of a large number of twins (2)
- 9.4.3 $\frac{350}{400} \times \frac{100}{1} = 87,5\%$ (2)
- 9.4.4 A lot died for one of other reason and that indicates bad management (1)
- 9.5 9.5.1 Gas tail cutter (1)
- 9.5.2 No clotting of manure
Animals appear better
Movement is easy
Reduce attack by blow flies
Mating is easy (5)
- 9.6 Suitable area
Structure must be neat and secure
Suitable material
Size must be correct for purpose
Gates must be big enough
Easy to clean
Prevent dust
Supply shadow (5)
- 9.7 Preferably buy rams from your area.
Make sure they are inoculated against the most important diseases.
Don't buy rams that were kept in a pen.
They must be tested for fertility. (4)
- 9.8 -fence together the veldt types with the same potential and palatability.
-fence small portions of less palatable veldt with larger portions of more palatable veldt.
-fence separately all portions which tend to erode more readily.
-grazing should be as if the whole camp is vulnerable.
-best veldt should be reserved for growing and lactating sheep such as veldt with the highest percentage of highly palatable perennial grasses. (5)
- 9.9 Provide suitable supplementary feeding or good grazing. (5)
Allow culled ewes to graze with the weaned lambs.
Wean older lambs first and the remainder at about the same time.
Do not apply any treatments that include fasting.
Keep the lambs in the same camp move the ewes

[50]

QUESTION 10: PIG PRODUCTION

- 10.1 10.1.1 B
 10.1.2 A
 10.1.3 B
 10.1.4 D
 10.1.5 C
 10.1.6 D
 10.1.7 C
 10.1.8 B
 10.1.9 A
 10.1.10 B (10)
- 10.2 10.2.1 Better growth rate.
 Better carcass quality.
 Higher wean mass.
 Better feed turnover. (4)
- 10.2.2 Landrace x Duroc
 ↓
 F – 1 generation x Landrace/Duroc
 ↓
 F – 2 generation x Duroc/Landrace
 ↓
 F – 3 generation
 Note: F – 1 en F – 2 cross the breeds must be alternatively. (4)
- 10.3 Hold piglet tide on its back. (10)
 Push testicle to one side.
 Cut through skin to expose membrane.
 Cut through membrane and expose testicle.
 Cut the nerve (white) quickly
 Scrape the blood vessel until it is clear and cut
 Repeat with other testicle.
 Disinfect and spray wound spray.
- 10.4 10.4.1 C (1)
- 10.4.2 A (1)
- 10.4.3 Need for nutrients in stage C are much higher as in stage A.
 Growth rate increases faster as the piglet grow older. (3)
- 10.4.4 C (1)
- 10.4.5 (a) 10 weeks (1)
 (b) 30 kg (1)

- | | | | |
|------|--------|--|-----|
| 10.5 | 10.5.1 | Blood smear
Blood sample | (2) |
| | 10.5.2 | Iron | (1) |
| | 10.5.3 | Poor growth
Coarse hair
Hard hair
Listlessness | (3) |
| | 10.5.4 | Iron injection 3 – 5 days after birth | (2) |
| 10.6 | 10.6.1 | The animal gets the disease.
The body produce antibodies. | (2) |
| | 10.6.2 | Antibodies came from mothers milk (colostrum)
Antibodies of milk prevent illness. | (2) |
| | 10.6.3 | Inoculation
Of pregnant sows
So that immunity is transferred through the milk. | (3) |

[50]**QUESTION 11: DIARY FARMING**

- | | | | |
|------|---------|---|------|
| 11.1 | 11.1.1 | Something goes wrong with machine, Front quarter is empty. | (10) |
| | 11.1.2 | Stimulate cow to cause pressure. | |
| | 11.1.3 | 60. | |
| | 11.1.4 | Adrenaline. | |
| | 11.1.5 | Animal is in pain. | |
| | 11.1.6 | Head first. | |
| | 11.1.7 | Legs first but head is turned. | |
| | 11.1.8 | Round about. | |
| | 11.1.9 | Correct position. | |
| | 11.1.10 | Wrong way around. | |
| 11.2 | | Job creation.
More money and welfare increase.
Fresh milk available.
Dairy products.
People more healthy.
People more productive.
Or any other relevant answers. | (3) |
| 11.3 | | Incomplete heritability.
Different gene combinations.
Different environmental and managerial conditions.
Only selected record available.
Milk can only be recorded in the female. | (4) |

- 11.4 11.4.1 Pistolet. (2)
- 11.4.2 Determine weather the pistolet is in the uterus and not into the uterus horns. (2)
- 11.4.3 Cervix. (1)
- 11.4.4 Pistolet must be in uterus.
Deposit half of semen.
Pull back.
Deposit other half just in neck of cervix. (3)
- 11.5 Calves are standing in air away from cold floor.
No physical contact with anther calf's.
The building supply fresh air.
Easy to do any treatment.
Not in contact with manure and urine.
No ropes. (6)
- 11.6 Cuts. (4)
Bruises.
Broken bones.
Muscle injuries.
- 11.8
- | | |
|-------------------------------|---------------------------------|
| Sweetveld | Sourfield |
| Grasable threw the whole year | Grasable for 3 to 5 months |
| Retain nutritional value | Nutrition's replaced to roots |
| In frost free areas | In frost areas |
| 650mm of rain per year | 850mm per year |
| No nutrition shortage | Protein and phosphorus shortage |
- (7)
- 11.9 11.9.1 Period from calving to reconception. (2)
- 11.9.2 End of lactation until calving. (2)
- 11.10 To use the grazing to its full capacity.
With out allowing it to be damage.
With out allowing it to deteriorate.
With out allowing foreign plants to invade. (4)

[50]