



# education

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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 (5)  
Soil type  
Soil fertility  
Water capacity  
Appearance of brackish salts

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 (3)  
Dark place  
Vegetable shelf of freezer

- 2.5 Sow clean seed (5)  
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

- 2.6 2.6.1 Lucerne caterpillar (1)

- 2.6.2 Green with white stripes on both sides and 3,75mm long (2)  
Spraying with insecticide

- 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]**

**QUESTION 3: WHEAT PRODUCTION**

- |     |        |  |      |
|-----|--------|--|------|
| 3.1 | 3.1.1  | No tillage   |      |
|     | 3.1.2  | Plough-sole  |      |
|     | 3.1.3  | Plant breeders rights (Act 15 of 1936)   |      |
|     | 3.1.4  | Hectolitre mass  |      |
|     | 3.1.5  | Shatterproof   |      |
|     | 3.1.6  | Nitrogen   |      |
|     | 3.1.7  | Texture  |      |
|     | 3.1.8  | Evapotranspiration   |      |
|     | 3.1.9  | Fungus   |      |
|     | 3.1.10 | Systemic herbicides  | (10) |
|     |        |  |      |
| 3.2 |        | Yield potential  |      |
|     |        | Disease and pest resistance  |      |
|     |        | Price  |      |
|     |        | Straw strength   |      |
|     |        | Availability of water  |      |
|     |        | Climatic conditions  |      |
|     |        | Lodging  |      |
|     |        | Adaptability   |      |
|     |        | Length of growing period   | (5)  |
|     |        |  |      |
| 3.3 | 3.3.1  | Soil auger   | (1)  |
|     | 3.3.2  | Properties of the soil   |      |
|     |        | Climate  |      |
|     |        | Production history   |      |
|     |        | Fertilizing history  | (2)  |
|     | 3.3.3  | About 200mm  | (1)  |
|     | 3.3.4  | If samples was taken on a 50ha land the samples must betaken evenly spread over the whole area | (2)  |
|     |        |  |      |
| 3.4 | 3.4.1  | Chemical control and any suitable example  |      |
|     |        | Mechanical control any suitable example  |      |
|     |        | Biological control any suitable example  |      |
|     |        | Cultural control any suitable example  | (6)  |

- 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 (3)  
    Add kraal manure  
    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 (3)  
    Crop rotation  
    Cultural control
- 4.4.3            High volume spray  
    Low volume spray (3)  
    Ultra low volume spray
- 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)
			<b>[50]</b>

**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)



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	<b>Site</b> -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	<b>Location</b> -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	<b>Design</b> -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	<b>Materials</b> -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	<b>Layout</b> -should be a simple design. -well constructed and -requires little maintenance.	(2)





- 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<br>Blood sample  | (2) |
|      | 10.5.2 | Iron   | (1) |
|      | 10.5.3 | Poor growth<br>Coarse hair<br>Hard hair<br>Listlessness                              | (3) |
|      | 10.5.4 | Iron injection 3 – 5 days after birth  | (2) |
| 10.6 | 10.6.1 | The animal gets the disease.<br>The body produce antibodies.                         | (2) |
|      | 10.6.2 | Antibodies came from mothers milk (colostrum)<br>Antibodies of milk prevent illness. | (2) |
|      | 10.6.3 | Inoculation<br>Of pregnant sows<br>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. |      |
|      | 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.  | (10) |
| 11.2 | Job creation.<br>More money and welfare increase.<br>Fresh milk available.<br>Dairy products.<br>People more healthy.<br>People more productive.<br>Or any other relevant answers.            |  | (3)  |
| 11.3 | Incomplete heritability.<br>Different gene combinations.<br>Different environmental and managerial conditions.<br>Only selected record available.<br>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]**