Possible Answers Supp 2007

Afdeling A

Vraag 1

1.1

1.1.1 C ✓✓

1.1.2 C ✓✓

1.1.3 A ✓✓

1.1.4 C ✓✓

1.1.5 B ✓✓

5 x 2 = 10

1.2

1.2.1 G ✓✓

1.2.2 H ✓✓

1.2.3 E ✓✓

1.2.4 B ✓✓

1.2.5 A ✓✓

5 x 2 = 10

1.3

1.3.1 Vorming van grondstruktuur / grondstruktuur ✓✓

1.3.2 Klei / Kolloïed / Humus ✓✓

1.3.3 Grondklassifikasie ✓✓

1.3.4 Veldwaterkapasiteit ✓✓

1.4.5 Vrugte ✓✓

5 x 2 = 10

Totale punte vir Afdeling A = 30

Afdeling B

Vraag 2

2.1

2.1.1 O Horisont✓ (1)

2.1.2 A Horisont✓ (1)

2.1.3 B Horisont✓ (1)

2.1.4 C Horisont✓ (1)

2.1.5 R Horisont✓ (1)

(5)

2.2 **Grondkleur**

2.2.1 - Rooi kleur✓ (1)

2.2.2 - Grys kleur✓ (1)

2.2.3 - Ligte kleur✓ (1)

2.2.4 - Donker kleur✓ (1)

(4)

2.3 - Sand ✓ (1)

- Slik✓ (1)

- Klei ✓ (1)

- Gruis✓ (1)

(enige 3 x 1 = **3**)

2.4

2.4.1 **Klimaat**

- Reënval en temperatuur beïnvloed die verwering van primêre minerale in die grond.✓ (1)
- Sekondêre minerale word gevorm wat die grondstruktuur bepaal. ✓ (1)
- Klimaat beïnvloed die vegetasie en humus inhoud van die grond. ✓ (1)

2.4.2 **Plantwortels**

- Wortels dring in die kluite en wat lei tot die vorming van aggregate. ✓ (1)
- Krummerstruktuur vorm.✓ (1)

2.4.3 **Organiese materiaal**

- Humus bind sandgrond om aggregate te vorm. ✓ (1)

2.5 - Grond met 'n helling moet onder 'n gewas gehou word tydens die reënseisoen. ✓ (1)

- Rig kontoerwalle op. ✓ (1)
- Dien organiese materiaal aan die grond toe. ✓ (1)
- Gebruik besproeïng effektief. ✓ (1)

(4)

 Blaai om asseblief

2.6

2.6.1 Tydelike verwelking.✓ (1)

2.6.2 - Water wat deur die plantwortels opgeneem word is minder as dit wat deur die blare verlore gaan deur transpirasie ✓ (1)

- Lae grondwatervlakke. ✓ (1)

(3)

2.7 - Makroporieë laat vrye beweging van water toe/Goeie dreinering. ✓(1)

- Makroporieë laat die vrye beweging van lug toe / Goeie deurlugting. ✓ (1)

(2)

2.8 - Tekstuur✓ (1)

- Struktuur✓ (1)

- Organiese materiaalinhoud✓ (1)

(3)

[30]

<u>Vraag 3</u>

3.1 **Faktore wat die grondvormingsprosesse beïnvloed**

- Klimaat✓ (1)
- Moedermateriaal✓ (1)
- Topografie✓ (1)
- Vegetasie✓ (1)
- Tyd / Periode✓ (1)

(5)

3.2 - Kalsium✓ (1)

- Magnesium ✓ (1)
- Kalium✓ (1)
- Natrium ✓ (1)

(4)

3.3 **Chemiese eienskappe van organiese materiaal**

- Organiese materiaal is 'n bron van plantvoedingstowwe. ✓ (1)
- Dit verbeter die adsorpsie van katione✓. (1)
- Minder loging weens 'n hoër Katioon Adsorpsievermoë.✓ (1)
- Organiese sure wat vorm veroorsaak die verwering van rotse en minerale.✓ (1)

- Grondmikrobes verander proteïen na beskikbare vorms van stikstof vir plante. ✓ (1)

(enige 4 x 1 = **4**)

3.4 - Hoër meer algemene vlak van onderskeiding. ✓ (1)

- Laer meer spesifieke onderskeiding. ✓ (1)

3.5 - Sekere organismes gebruik CO_2 as 'n grondstof✓in die vervaardiging van koolhidrate✓ (2)

- 'n Sekere deel van die CO_2 los in die grondwater op ✓ om koolsuur te vorm. ✓ (2)

3.6 **Redes vir die klassifikasie van gronde in Suid-Afrika**

- Grondklassifikasie help met die optimale benutting van 'n land se natuurlike hulpbronne. ✓ (1)
- Dit word gebruik vir die wetenskaplike beplanning van 'n plaas. ✓ (1)
- Dit word gebruik vir die ontwikkeling van nuwe streke. ✓ (1)
- Dit word gebruik vir die waardebepaling van grond. ✓ (1)
- Dit bevorder goeie kommunikasie oor die grond. ✓ (1)
- Dit bevorder goeie verbruik van 'n bepaalde grond. ✓ (1)

(5)

3.7 - Grond pH / Basis ewewig✓ (1)

- Kalk inhoud✓ (1)
- Organiese materiaal✓ (1)

(3)

3.8

3.8.1 Neutraal ✓ (1)

3.8.2 Sterk suur ✓ (1)

3.8.3 Sterk alkalies✓ (1)

(3)

[30]

Vraag 4

4.1 **Die koringblom**

4.1.1 - Tweeslagtig / Eenhuisig✓ (1)

- omdat dit meeldrade, styl en stamper het✓ (1)

4.1.2 A - Vervaardig stuifmeelkorrels✓ (1)

F - Beskerm die blom✓ (1)

4.1.3 - Aar ✓ (1)

4.1.4 - blombedekking /Palea/Lemma ✓ (1)

- Beskerm die blom✓ (1)

4.1.5 - Styl / Stempel✓ (1)

4.1.6 - Blom is wind ✓ of selfbestuiwend ✓ (2)

4.1.7 - Om 'n groter oppervlak te bewerkstellig ✓ vir stuifmeelkorrels wat deur wind vervoer word✓ (2)

(12)

4.2

4.2.1 - Ontkiemende stuifmeelkorrel ✓ (1)

4.2.2 A Eksien / buitenste wand✓ (1)

B Intien / Binneste wand✓ (1)

C Stuifmeelbuis✓ (1)

D Manlike gamete / Manlike geslagskerne✓ (1)

E Vegetatiewe kern / Buiskern✓ (1)

(6)

4.3

4.3.1 - Sultana druiwe✓ (1)

- Navel lemoene✓ (1)

- Piesang✓ (1)

- Eiervrug / Brinjal✓ (1)

(enige 2 x 1 = **2**)

4.3.2 Gibberelliene ✓ (1)

4.3.3 **Agente vir kruisbestuiwing**

- Wind ✓ (1)

- Water✓ (1)

- Diere / Insekte / Voëls✓ (1)

(3)

4.4 Aarbeie – lopers✓ (1)

Lelies – risome✓ (1)

Druiwe – steggies✓ (1)

(3)

4.5 - Stuifmeel word nat en kan nie vervoer word nie. ✓ (1)

- Stempel kan beskadig word deur wemel van chemikalieë. ✓ (1)

- Insekte wat blomme bestuif kan gedood word. ✓ (1)

(3)

Vraag 5

5.1.

5.1.1 Eenheidwaarde = Prys per ton
% plantvoedingstowwe ✓ (1)

= R1865.00
11.3 ✓ (1)

= R165.00 ✓✓ (2)

(4)

5.2 - Plaasmis✓ (1)

- Groenbemesting ✓ (1)

- Kompos ✓ (1)

- Veenmos (1)

- Gwano (1)

(enige 3) **(3)**

5.3 **Manipulasie van plante vir fotosintese**

- Opleisisteme ✓ (1)

- Snoei / wegbreek van blare ✓ (1)

- Plantdigtheid ✓ (1)

- Kweekhuis verbouing ✓ (1)

(4)

5.4 - Grondreaksie ✓ (1)

- Mikrobiese aktiwiteit✓ (1)

- Yster, Aluminium and Mangaan inhoud van die grond✓ (1)

(3)

5.5 - Die soort voer✓ (1)

- Ouderdom van die mis ✓ (1)
- Die soort en hoeveelheid strooi wat as beddegoed in hokke gebruik word✓(1)
- Berging van die mis✓ (1)
- Tipe dier ✓ (1)

(enige 4) **(4)**

5.6 **Redes vir die gebruik van vloeibare kunsmis**

- Hoogs gekonsentreerde bemesting kan gebruik word in 'n opgeloste vorm. ✓ (1)
- Vloeibare toediening bespaar arbeid.. ✓ (1)
- Dit is goedkoop want geen addisionele apparaat word benodig nie ✓ (1)
- Voedingstowwe bereik die plantwortels dadelik. ✓ (1)
- Dit is ideal om te gebruik op gewasse soos suikerriet waar toegang beperk is. ✓ (1)
- Chemikalieë om plae en onkruid te beheer kan by die bemestingmengsels gevoeg word. ✓ (1)
- Die akkuraatheid en egaligheid van toediening is baie hoog. ✓ (1)
- Effektiwiteit is soortgelyk aan die van vaste kunsmisstowwe. ✓ (1)

(enige 5) **(5)**

5.7

5.7.1 - Ru fosfaat / Rotsfosfaat✓ (1)

5.7.2 - Kaliumsulfaat✓ (1)

5.7.3 - Dolomitiese kalk✓ (1)

5.7.4 - Kalksteen Ammoniumnitraat✓ (1)

5.7.5 - Kalksteen Ammoniumnitraat / Uruim / Ammoniumsulfaat✓ (1)

(5)

5.8 - Suur gronde / Lae pH✓ (1)

- Om die magnesium tot kalsium verhouding reg te stel✓ (1)

(2)

[30]

Totale Punte Afdeling B = 120

Groottotaal = 150

Section A

Question 1

1.1

1.1.1 C ✓✓

1.1.2 C ✓✓

1.1.3 A ✓✓

1.1.4 C ✓✓

1.1.5 B ✓✓

5 x 2 = 10

1.2

1.2.1 G ✓✓

1.2.2 H ✓✓

1.2.3 E ✓✓

1.2.4 B ✓✓

1.2.5 A ✓✓

5 x 2 = 10

1.3

1.3.1 Structure formation / Soil structure ✓✓

1.3.2 Clay / Colloid / ✓✓

1.3.3 Soil classification ✓✓

1.3.4 Field water capacity ✓✓

1.4.5 Fruit ✓✓

5 x 2 = 10

Total Marks Section A = 30

Section B

Question 2

2.1

2.1.1 O Horizon✓ (1)

2.1.2 A Horizon✓ (1)

2.1.3 B Horizon✓ (1)

2.1.4 C Horizon✓ (1)

2.1.5 R Horizon✓ (1)

(5)

2.2 **Soil colours**

2.2.1 - Red colour✓ (1)

2.2.2 - Grey colour✓ (1)

2.2.3 - Light colour✓ (1)

2.2.4 - Dark colour✓ (1)

(4)

2.3 - Sand ✓ (1)

- Silt✓ (1)

- Clay ✓ (1)

- Gravel✓ (1)

(any 3 x 1 = **3**)

2.4

2.4.1 **Climate**

- Rainfall and temperature influence erosion of primary soil minerals.✓ (1)

- Secondary minerals form and determine soil structure. ✓ (1)

- Climate influences vegetation and humus content of soil. ✓ (1)

2.4.2 **Plant roots**

- Roots penetrate soil clods into aggregates. ✓ (1)

- Crumb structure forms.✓ (1)

2.4.3 **Organic matter**

- Humus binds sandy soil into aggregates. ✓ (1)

2.5 - Sloping soils should be under plant cover in a rainy season. ✓ (1)

- Construct contour walls. ✓ (1)

- Add organic matter into the soil. ✓ (1)

- Use irrigation system efficiently. ✓ (1)

(4)

2.6

2.6.1 Temporary wilting.✓ (1)

2.6.2 - Water that is absorbed by plant roots is less than that which transpires from the leaves ✓ (1)

- Low soil water levels. ✓ (1)

(3)

2.7 - Macro pores allow free movement of water / Good drainage. ✓ (1)

- Macro pores allow free movement of air / Good aeration. ✓ (1)

(2)

2.8 - Texture✓ (1)

- Structure✓ (1)

- Organic matter content✓ (1)

(3)

[30]

Question 3

3.1 **Factors influencing soil forming processes**

- Climate✓ (1)

- Parent material✓ (1)

- Topography✓ (1)

- Vegetation✓ (1)

- Time / Period✓ (1)

(5)

3.2 - Calcium✓ (1)

- Magnesium ✓ (1)

- Potassium✓ (1)

- Sodium✓ (1)

(4)

3.3 **Chemical properties of organic matter**

- Organic matter is a source of plant nutrients. ✓ (1)

- It improves the adsorption of cations✓. (1)

- Less leaching occurs due to high Cation Adsorption Capacity.✓ (1)

- Organic acids that are formed causes weathering of rocks and minerals.✓ (1)

- Soil microbes convert proteins into accessible nitrogen. ✓ (1)

(any 4 x 1 = **4**)

3.4 - Higher, more general level of differentiation. ✓ (1)

- Lower, more detailed differentiation. ✓ (1)

3.5 - Some organisms use CO_2 as a source✓in the formation of carbohydrates✓(2)

- Some CO_2 dissolves in soil water ✓ to form carbonic acid. ✓ (2)

3.6 **Reasons for classifying soil in South Africa**

- Soil classification helps with optimal utilisation of the country's natural resources. ✓ (1)
- It is used for the scientific planning of the farm. ✓ (1)
- It is used for the development of a new region. ✓ (1)
- It is used for the valuation of soil. ✓ (1)
- It enables good communication about the soil. ✓ (1)
- It enables good utilisation of a specific soil. ✓ (1)

(5)

3.7 - Soil pH / Base status✓ (1)

- Lime content✓ (1)
- Organic matter✓ (1)

(3)

3.8

3.8.1 Neutral ✓ (1)

3.8.2 Strongly acid ✓ (1)

3.8.3 Strongly alkaline✓ (1)

(3)

[30]

Question 4

4.1 **Wheat flower**

4.1.1 - Bisexual / Monoecious✓ (1)

- because it has anther, style and stigma✓ (1)

4.1.2 A - Produces pollen grains✓ (1)

F - Protects the flower✓ (1)

4.1.3 - Spike ✓ (1)

4.1.4 - Floral covers/Palea/Lemma ✓ (1)

- Protect the flower✓ (1)

4.1.5 - Style / Stigma✓ (1)

4.1.6 - Flower is wind ✓ or self-pollinated ✓ (2)

4.1.7 - To provide a larger surface area ✓ for pollen grains carried by wind✓ (2)

(12)

4.2

4.2.1 - Germinating pollen grain✓ (1)

4.2.2 A Exine / Outer wall✓ (1)

B Intine / Inner wall✓ (1)

C Pollen tube✓ (1)

D Male gametes / Male sex nuclei✓ (1)

E Vegetative nucleus / Tube nucleus✓ (1)

(6)

4.3

4.3.1 - Sultana grapes✓ (1)

- Navel oranges✓ (1)

- Banana✓ (1)

- Egg fruit / Brinjal✓ (1)

(any 2 x 1 = **2**)

4.3.2 Gibberellins ✓ (1)

4.3.3 **Agents of cross-pollination**

- Wind ✓ (1)

- Water✓ (1)

- Animals / Insects / Birds✓ (1)

(3)

4.4 Strawberries – runners✓ (1)

Lilies – rhizome✓ (1)

Grape – cutting/slips✓ (1)

(3)

4.5 - Pollen becomes moist and cannot be transported. ✓ (1)

- Stigma may be damaged by stream of chemicals. ✓ (1)

- Insects, which pollinate flowers, may be killed. ✓ (1)

(3)

Question 5

5.1.

5.1.1 Unit value = $\frac{\text{Price per ton}}{\text{\% plant nutrient}}$ ✓ (1)

$= \frac{R1865.00}{11.3}$ ✓ (1)

= R165.00 ✓✓ (2)

(4)

5.2 - Farm manure✓ (1)

- Green manure✓ (1)

- Compost✓ (1)

- Peat moss (1)

- Guano (1)

(any 3) **(3)**

5.3 **Manipulation of plants for photosynthesis**

- Trellising✓ (1)

- Pruning / Cutting leaves✓ (1)

- Plant density ✓ (1)

- Green housing✓ (1)

(4)

5.4 - Soil reaction ✓ (1)

- Microbial activity✓ (1)

- Iron, Aluminium and Manganese content of soil✓ (1)

(3)

5.5 - Type of the feed✓ (1)

- Age of the manure✓ (1)

- Nature and quantity of bedding used✓ (1)

- Storing of manure✓ (1)

- Type of animal ✓ (1)

(any 4) **(4)**

5.6 **Reasons for using liquid fertilisers**

- Highly concentrated fertilisers can be used in diluted form. ✓ (1)

- Liquid application saves labour. ✓ (1)

- It is cheap as no extra apparatus is required. ✓ (1)

- Nutrients reach the plant roots immediately. ✓ (1)

- It is ideal to use in crops with poor access like in sugar cane. ✓ (1)

- Chemicals to control pests and weeds can be added to mixture. ✓ (1)

- The accuracy and evenness of application are very high. ✓ (1)

- Effectiveness is the same as that of solid fertilisers. ✓ (1)

(any 5) **(5)**

5.7

5.7.1 - Raw phosphate✓ (1)

5.7.2 - Potassium sulphate✓ (1)

5.7.3 - Dolomitic lime✓ (1)

5.7.4 - Limestone Ammonium Nitrate✓ (1)

5.7.5 - Limestone Ammonium Nitrate / Urea / Ammonium sulphate✓ (1)

(5)

5.8 - Acid soils / Low pH✓ (1)

- To correct magnesium and calcium ratio✓ (1)

(2)

[30]

Total Marks Section B = 120

Grand Total = 150