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Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

KEREITI YA 12

LOETSE 2023

AGRICULTURAL SCIENCES P2

MATSHWAO: 150

NAKO: **Dihora tse 2½**

Pampiri ena e na le maqephe a 14.

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DITAELO LE TLHAHISOLESEDING

1. Pampiri ena e na le dikarolo tse PEDI eleng KAROLO ya A le KAROLO ya B.

2. Araba dipotso TSOHLE BUKENG YA DIKARABO.

3. Qala potso E NNGWE le E NNGWE leqepheng le LETJHA.

4. Nomora dikarabo tsa hao ho ya ka tsela eo dipotso di nomorilweng ka yona pampiring ena ya dipotso.

5. O ka sebedisa khalekhuleitha e seng porokeramebole.

6. Bontsha dikhalekhuleishene TSOHLE ho kenyelletswa le di fomula moo di sebetsang.

7. Ngola ka mongolo o makgethe, o balehang.

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KAROLO YA A

POTSO YA 1

1.1 Ho fanwe ka dikgetho tse fapaneng e le dikarabo tse ka kgonehang dipotsong tse latelang. Kgetha karabo mme o ngole tlhaku feela (A–D) pela dinomoro tsa dipotso (1.1.1 ho ya ho 1.1.10) BUKENG YA DIKARABO, mohlala 1.1.11 D.

1.1.1 Makhething tjhanele moo mohlahisi e rekisang dihlahiswa tsa hae ka dimakkething ajensi tse senterale:

A Stock sales
B Fresh produce market
C Farm gate makhething
D Direct marketing

1.1.2 … ke mokgwa o bolokang tjhelete ka ho fetisisa wa ho strimolaena velyu tjheini ya dihlahiswa tsa temo.

A Ntlafatso ya mebila
B Kaho ya distoreje fasilithi
C Ho makhetha ka kopanelo ka ho kopanya diloutu le bahlahisi ba bang
D Tshebediso ya dikoloi tse nang le dihatsetsi le distoreje tse batang.

1.1.3 Fumana sekhwense e nepahetseng ya mekgahlelo ya porosese ya bo rakgwebo.

A Kaho ya kgwebo, kgolo ya mohopolo, moralo wa kgwebo,pokello ya disebediswa
B kgolo ya mohopolo, pokello ya disebediswa, moralo wa kgwebo, kaho ya kgwebo
C Kgolo ya mohopolo, moralo wa kgwebo, pokello ya disebediswa, kaho ya kgwebo
D Moralo wa kgwebo, kgolo ya mohopolo, kaho ya kgwebo, Pokello ya disebediswa

1.1.4 Tse latelang ke mehlala ya dithekinikhale riski ho temothuo

(i) Komello le di kgohola
(ii) Ho ata ha dikokonyana
(iii) Diphetoho tsa intereste reiti
(iv) Ho qhoma ha mafu

KGETHA motswako o nepahetseng:

A (i), (ii) le (iv)
B (i), (iii) le (iv)
C (i), (ii) le (iii)
D (ii), (iii) le (iv)

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1.1.5 Bajete ya polasi yohle e bontsha …

A gross margin
B net inkhamo ya polasi
C Porofithi ya kgwebo e le nngwe
D Ditlamorao tsa phetoho ditshebetsong tsa polasi ho porofithi

1.1.6 Bajete ya khesh flo ya kgwebo e bontsha inkhamo ya R700 000, ekspenditjha ya R400 000 le closing balanse ya R500 000 ka kgwedi eno.
Opening balance ya kgwedi e latelang e tla ba …

A R300 000.
B R1 100 000.
C R800 000.
D R500 000.

1.1.7 Haeba mmala o mokgubedu (R) o le mongata ho feta mmala o mosweu (r), ke efe ya dicross tse latelang e tlang ho ba le sephetho sa 1 :1, projene le mmala o mokgubedu : tshweu?

A RR X rr
B Rr X Rr
C Rr X rr
D rr X rr

1.1.8 Jenireishene ya F_1 e fumaneha ka ho crossa PP le pp. Ebe projeni a fumanweng a croswa. Ke mang reshiyo ya dipalesa tse dibridi tse pheyo ho di bridi tse seng pheyo jinireisheneg ya F_2?

A 3 pure: 1 non-pure
B 1 pure: 3 non-pure
C 1 pure: 2 non-pure
D 1 pure: 1 non-pure

1.1.9 … e sebedisa di dibaelogikhale vektha tse kang diplasmidi ho fetisetsa dijini tse foreini ho disele.

A Lipofekshene
B Recombinant DNA technique
C Chemical poreishene
D Bioballistics

1.1.10 … HA SE mohlala wa kromosomale mutheishene.

A Sabstitjhushene
B Deleshene
C Duplikheishene
D Translokheishene (10 x 2) (20)

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1.2 Kgetha lentswe/polelwana ho tswa ho KHOLOMO YA B le tsamaelanang le tlhaloso e ho KHOLOMO YA A. Ngola feela tlhaku (A–H) pela dinomoro tsa dipotso (1.2.1–1.2.5) BUKENG YA DIKARABO, mohlala 1.2.6 J.

KHOLOMO YA A		KHOLOMO YA B	
1.2.1	Makhething sistimo e nang le flaktjhuweishene e kgolo ya ditheko	A	Makhething e laolwang
1.2.2	Mokgwa wa bohlahisi o shebaneng le sehlahiswa	B	Risk sharing
1.2.3	Ho jala kotsi ka ho investa dikgwebong tse fapaneng tsa polasi	F	Ova khapitaliseishene
1.2.4	Dirithene tse fumanweng polasing di tlase haholo ho feta dipolasi tse ding	D	Ditheko
1.2.5	Phapano pakeng tsa diindivijuale tsa spesisi se le seng	E	Daevesifikheishene
		F	Varieishene
		G	Free makhething
		H	Undakhapitaliseishene

(5 x 2) (10)

1.3 Fana ka lentswe/polelwana e LE NNGWE bakeng sa tlhaloso ka nngwe ho tse latelang. Ngola lentswe feela pela dinomoro tsa potso (1.3.1–1.3.5) BUKENG YA DIKARABO.

1.3.1 Enthithi e linkiweng e tlisang dihlahiswa tse itseng ho tswa tlhahisong ho bareki.

1.3.2 Tekanyo ya karabelo ya khwantithi ya sehlahiswa se batlwang kapa se fanwang phetohong ya theko ya sona.

1.3.3 Boiteko bo fisikhale le ba kelello bo sebediswang ho hlahisa thepa le ditshebeletso.

1.3.4 Moralo wa porosese, ho nka qeto, ho hlophisa le ho laola batho, dirisose tsa ditjhelete le tse fisihkale tsa mokgatlo ho fihlella sepheo tsa ona.

1.3.5 Tekanyo ya hore ho se tswane ha diphoofolo ho tlisa ho se tswane ha direiti tsa tsona.

(5 x 2) (10)

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1.4 Fetola MANTSWE A SEHELLETSWENG MELA polelong ka nngwe ho tse latelang ho di NNETEFATSA. Ngola karabo feela pela dinomoro tsa dipotso (1.4.1 ho ya ho 1.4.5) BUKENG YA DIKARABO.

1.4.1 Maneja ke motho ya qalang kgwebo a ipehe kotsing ya ditjhelete ka tshepo ya ho etsa porofiti.

1.4.2 Khesh analisisi ke analisisi ya matla, bofokodi le menyetla le dintho tse ka amang kgwebo.

1.4.3 Tshebediso ya stathistiki ha ho analaeswa bayolojical datha e bitswa breeding.

1.4.4 Polyploidy ke mofuta wa mutheishene moo ho nang le phetoho lenaneng la khromosoumu e le nngwe kapa tse ngata seteng ya dikhromosoumu.

1.4.5 Selection ke hore bana ba indivijuale ba tla ba betere hakae kapa ka tlase hakae ho avareje ya sebopeho se itseng.

(5 x 1) (5)

MATSHWAO KAOFELA A KAROLO YA A: 45

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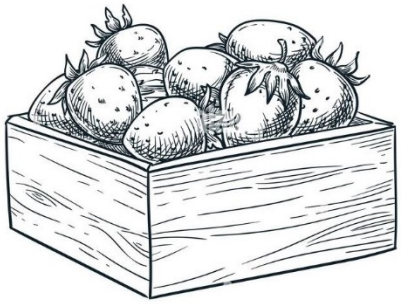
KAROLO YA B

POTSO YA 2: TSAMAISO YA TEMO LE MAKHETHING

Qala potso ena leqepheng le LETJHA.

2.1 Setshwantso se ka tlase se botsha mohlala wa makhething fankshene.



2.1.1 Hlwaya makhething fankshene e bontshitsweng ka hodimo. (1)

2.1.2 Bolela ditataiso tse PEDI tse laolang makhething fankshene e ho POTSO ya 2.1.1. (2)

2.1.3 Hlalosa lentswe *makhething*. (2)

2.2 Theibole e ka tlase e bontsha dikhwantithi tsa di sehlahiswa se fanweng le se hlokwang ka ditheko tse fapaneng.

THEKO	KHWANTITHI E FANWENG	KHWANTITHI E HLOKWANG
10	20	160
20	40	140
30	60	120
40	80	100
50	100	80
60	120	60
70	140	40

2.2.1 Teka tlhahisoleseding e theiboleng e ka hodimo ka mokgwa wa laene kerafo. (6)

2.2.2 Fumana theko ya ekhwilibriamo ho tswa ho kerafo. (1)

2.2.3 Hlalosa molao wa sapolaye (Law of supply). (2)

2.2.4 Fana ka difekethara tse PEDI ntle le theko tse amang sapolaye ya sehlahiswa. (2)

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2.3 Borapolasi ba bararo ba sebedisa dimakhething aporouche tse fapaneng jwalo ka ha ho hlalositswe ka tsase.

RAPOLASI WA A	RAPOLASI WA B	RAPOLASI WA C
O batla ho bapatsa ho bareki ba bangata ho ka kgonahalang ho tloha tlase ho ya hodimo ho kenyelletswa le mmaraka ohle o fumanehang.	O na le sehlahiswa se ikgethileng. O se poromouta le ho se rekisa karolwaneng e ikgethang ya mmaraka.	O nkile qeto ya ho fana ka dintho tse arohaneng ho mefuta e fapaneng ya mebaraka eo a e shebileng.

2.3.1 Hlwaya mekgwa ya ho rekisa e sebedisitsweng ke BORAPOLASI **A**, **B** le **C**. (3)

2.3.2 Hlwaya mekgwa ya ho rekisa e tla ba ya mantlha bakeng sa dikgwebo tse nyane. (1)

2.3.3 Hlalosa karabo ya hao ya POTSO ya 2.3.2 ka mabaka a MABEDI. (2)

2.4 Sekaseka logo e ka tlase mme o arabe dipotso tse tla latela.

2.4.1 Bolela prorosese ya ho beha diloko tse tshwanang le ena e ka hodimo. (1)

2.4.2 Loko e ka hodimo e sebediswa ho sastaina makhething. Hlalosa Sastainabole makhething. (1)

2.4.3 Bolela ditlhoko tse PEDI tse tshwanelang ho fihlellwa ha ho phackejwa ho sastainabole makhething. (2)

2.5 E nngwe ya dipherekano tse kgolo tseo borapolasi ba shebanang le tsona ho agrikhaltjharal velyu tjheini ke ho tlameha ho amohela ditheko. Ba na le matla a lekanyeditsweng ho barginning lehlakoreng la imphuthi le sapolae. Le ha ho le jwalo, ka ho sebedisana mmoho ba ka kgona ho ba le tshusumetso kabong ya porofete ho velyu tjheini.

2.5.1 Hlwaya mathata a sehloho ao borapolasi ba shebaneng le ona (1)

2.5.2 Fana ka tharollo e boletsweng seratswaneng. (1)

2.5.3 Hlwaya makhething sistimo e tsamaellanang le tharollo e boletsweng seratswaneng. (1)

2.5.4 Fana ka melemo e MMEDI ya makhething sistimo e hlwailweng ho POTSO ya 2.5.3. (2)

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2.6 Moralo wa kgwebo ke tokomane e bontshangi diobojekthifi le maano a kamoso a kgwebo le mokgwa wa ho a fihlella.

2.6.1 Fana ka mabaka a MABEDI ho nnetefatsa tshebediso ya meralo ya kgwebo samaiso ya meralo ya kgwebo tsamaisong ya kgwebo ya polasi. (2)

2.6.2 Hlahisa ditsela tse PEDI tseo disebediswa tsa elektroniki di ka sebediswang ho tsona ha ho etswa meralo ya kgwebo. (2)

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POTSO YA 3: DIFEKETHARA TSA PORODAKESHENE

Qala potso ena leqepheng le LETJHA.

3.1 Khaphasithi ya kotulo ya mobu e dithemaenwa ke maemo a mobu a fisikhale. E ka nyollwa ho ya maemong a itseng ka ntlafatso ya thekenoloji, le ha ho le jwalo ho tla fihlella moo tlhahiso e sa tlo nyoloha ka diyunithi tse eketsehileng tsa in-put.

3.1.1 Hlwaya matshwao a moruo wa mobu a hlaositsweng boemong bona. (1)

3.1.2 Bolela ditsela tse PEDI tseo rapolasi a ka di sebedisang ho ntlafatsa tlhahiso ya mobu. (2)

3.1.3 Fana ka mesebetsi e MMEDI ya mobu jwalo ka porodakshene fekethara. (2)

3.2 Setshwantsho se ka tlase se bontsha basebetsi ba polasi ba teraekang.

3.2.1 Bolela karolwana ya molao e fang basebetsi matla a ho etsa seteraeke. (1)

3.2.2 Bolela dintlha tse ding tse PEDI tse tshohlilweng ke karolo ya molao e boletsweng ho POTSO ya 3.2.1 ka hodimo. (2)

3.2.3 Fana ka disosa tse PEDI tsa seteraeke sa basebetsi polasing. (2)

3.2.4 Hlahisa maano a MABEDI ao borapolasi ba ka a sebedisang ho nyolla tlhahiso ya basebetsi. (2)

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3.3 Theibole e ka tlase e bontsha kakaretso ya inkhamo le eksepense ya selemo sa ditjhelete.

Inkhamo	**(R)**
Thekiso ya dihlahiswa tsa dijalo	470 000
Thekiso ya dihlahiswa tsa diphoofolo	220 000
Thuso ya mmuso	50 000
Totale ya Inkhamo	.....
Diekspense	
Peo	23 500
Manyolo	45 000
Dijo tsa diphofolo	18 200
Ho porosesa	28 300
Makhething	12 000
Inshorense	7 000
Dipreshieishene	4 500
Totale ya Diekspense	.....
Net inkhamo	.....

3.3.1 Hlwaya tokomane e bontsitsweng ka hodimo. (1)

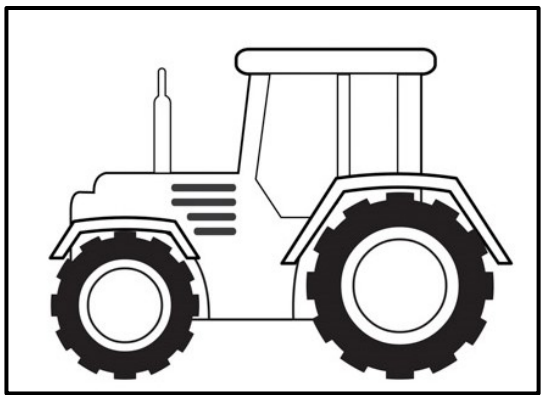
3.3.2 Khalekhuleitha Net inkhamo ya kgwebo. (4)

3.3.3 Tshwaela ka Porofitabilithi ya polasi. (2)

3.3.4 Hlwaya ditshenyehelo tse PEDI tse tsistsitseng tse thathamisitsweng tokomaneng e ka hodimo. (2)

3.3.5 Bolela mesebetsi e MMEDI ya bohlokwa ba ho sebedisa direkoto tsa. Ditjhelete mapolasing. (2)

3.4 Dayakeramo e ka tlase e bontsha mohlala wa asete ya polasi.



3.4.1 Hlalosa lentswe *asete.* (2)

3.4.2 Hlwaya mofuta wa khapithale o bontshitsweng ke asete ya polasi e ka hodimo. (1)

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3.4.3 Bolela mofuta wa keredithe o sebedisitsweng ho faenensa khapithale e bontshitsweng ka hodimo. (1)

3.4.4 Bolela mehlodi e MMEDI ya faenense e ka sebediswang ho reka asete e ka hodimo. (2)

3.4.5 Bolela rekoto ya polasi moo o ka fumanang diasete tse kang e bontshitsweng ka hodimo di thathamisitswe. (1)

3.5 Pheini e ka tlase e bontsha difose tse amang kgwebo.

tsa boitshwaro; phallo ya tjhelete; molao; bokgoni ba basebetsi; dikomello

3.5.1 Hlwaya diinthenale fose tse PEDI tse amang kgwebo. (2)

3.5.2 Ke dife difose ho tse ka hodimo tse ka ntlafatswang ka in-service training? (1)

3.6 Hlwaya diskili tsa manejemente tse loketseng maemo a latelang:

3.6.1 Bokgoni ba ho buisana le batho ba amehang ba fapaneng le basebetsi. (1)

3.6.2 Ho boloka direkoto tsa polasi. (1)

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POTSO YA 4: BASIK AGRIKHALTJHARAL JENETIKS

Qala potso ena leqepheng le LETJHA.

4.1 Sekaseka jenethiki cross e ka tlase mme o arabe dipotso tse latelang.

P_1	aaBB x AAbb			
Phenothaepe	Spotted and black		Solid and brown	
F_1 Jenothaepe	**A**			
F_1 Phenothaepe	All Solid and black			
P_2	AB	Ab	**V**	**X**
AB	AABB	AABb		
Ab	AABb	AAbb		
Y				
Z				

4.1.1 Bolela mofuta wa cross o bontshitsweng ka hodimo. (1)

4.1.2 Hlwaya ditereite tse dominente. (2)

4.1.3 Fumana jenothaepe ya **A**. (1)

4.1.4 Bolela molao wa Mendelian oo eleng ona feela o ka sebetsang crosong e ka hodimo. (1)

4.1.5 Fumana dikamete **V**, **X**, **Y** le **Z** mme o di sebedise ho teroya punnet sekwere se nang le diofosepring tse 4. (4)

4.1.6 Fumana fenothaepiki reshiyo ya jenereishene ya F_2. (2)

4.2 Ditapoleng, bolelele ba dijalo bo laolwa ke dijini tse 3. Locus ka nngwe e na le alele e additive kapa non-additive. Sefate se nang le jenothaepe ya AABBCC se ka ba le bolelele ba 100 cm, ha se nang le aabbcc se ka hola ho fihlela bolelele ba 40 cm.

4.2.1 Fumana khontribushene ya additive alele ka bongwe ho bolelele ba sejalo. (2)

4.2.2 Ha o ka crosa sejalo sa 100 cm le sa 40 cm ho fumana jenereisheneng ya F_1 e tla ba efe? (1)

4.2.3 Khalekhuleitha bolelele ba sejalo se nang le jenothaepe ya AaBBCc. (3)

4.2.4 Hlophisa matshwao a amanang le polygenic inheritance. (1)

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4.3 Hlwaya mekhanisimo ya inheritance polelong ka nngwe ho tse latelang.

4.3.1 Ho hlaha ha jini ho angwa ke ho hlaha ha jini e le nngwe kapa tse ngata tse futswang ka boikemelo. (1)

4.3.2 Alele tse pedi tsa jini e le nngwe di hlahella ka ho arohana ho fumana dithereiti tse fapaneng tsa indivijuale. (1)

4.3.3 Mofuta ya jini intharekshene moo alele tse pedi tsa jini e le nngwe ho locus di hlahang ha nyane hore ho hlahe fenothaepe e mahareng. (1)

4.3.4 Mefuta e meraro kapa e mengata ya dijni tse dutseng ho locus e le nngwe. (1)

4.4 Poho le tsheadi di tlolelane ho hlaisa dithojana tse pedi **A** le **B**. Le hoja dithojana tsena di hodiseditswe maemong a tshwanang, sethojana sa **A** se hotse ya ba kgomo e ntshang lebese haholo ha sethojana sa **B** sona se ne se ntsha lebese le lekaneng feela. Ka hoo rapolasi o ile a kgetha sethojana sa **A** ho se sebedisa ho tswela pele ho tswala.

4.4.1 Hlwaya mokgwa wa kgetho o hlalositsweng seratswaneng se ka hodimo. (1)

4.4.2 Bolela mabaka a MABEDI a ka bakang phapano ho dithojana tsena. (2)

4.4.3 Bolela mesebetsi e MMEDI ya kgetho ntlafatsong ya diphoofolo. (2)

4.5 Hlwaya sistimo ya ho brida e amanang le dipolelo tse fanweng ka tlase.

4.5.1 E tlisa jenethiki matheriale e ntjha empa e ntse e le ka hara meedi ya mofuta wa bridi. (1)

4.5.2 E sebediswa ho matlafatsa matshwao a batlehang. (1)

4.5.3 E hlahisa dibridi tse ntjha (1)

4.5.4 Projeni e dula e amana haufiufi ka hohle kamoo ho ka kgonehang le moholoholo ya hlahelletseng. (1)

4.6 Ka tlase ke tse ding tsa dikotsi tsa tikoloho tse ka amanang le tshebediso ya dijenethikhale modifaete oganisimse. Hlalosa hanyane hore tshebediso ya jenethikhale modifaete oganisimo di ka baka dikotsi tse fanweng ka tlase jwang potsong ka nngwe ho tse fanweng, POTSO 4.6.1 ho ya ho 4.6.2.

4.6.1 Ketsahalo ya lehola le sa tshabeng meriana e bolayang dimela. (2)

4.6.2 Tshilafatsa ya mobu le metsi. (2)

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MATSHWAO KAOFELA A KAROLO YA B: 105
MATSHWAO KAOFELA: 150

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