Including Examiners comments

RHS
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R2113

UNDERSTANDING THE PRODUCTION OF OUTDOOR VEGETABLES & FRUIT

Level 2

Tuesday 11 February 2020

13:30 – 14:20

Written Examination

Candidate Number: .....

Candidate Name: .....

Centre Name: .....

IMPORTANT – Please read carefully before commencing:

i) The duration of this paper is **50** minutes;
ii) **ALL** questions should be attempted;
iii) **EACH** question carries **10 marks**;
iv) Write your answers legibly in the spaces provided. It is **NOT** necessary that all lined space is used in answering the questions;
v) Use **METRIC** measurements only;
vi) Use black or blue ink only. Pencil can be used for drawing purposes only. Ensure that all diagrams are labelled accurately with the line touching the named object;
vii) Where plant names are required, they should include genus, species and where appropriate, cultivar;
viii) Where a question requires a specific number of answers; only the first answers given that meet the question requirement will be accepted, regardless of the number of answers offered;
ix) Please note, when the word **'distinct'** is used within a question, it means that the items have different characteristics or features.

ANSWER ALL QUESTIONS

MARKS

Q1 a) Describe how **EACH** of the following factors affect the suitability of a site for outdoor food production:

i) area of land available **2**

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ii) soil texture **2**

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iii) drainage **2**

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iv) susceptibility to wind **2**

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b) Name **FOUR** types of non-living permeable windbreak. **2**

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Total Mark

Please see over/…..

MARKS

Q2 a) Describe the soil cultivation technique of double digging. **6**

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b) Name **TWO** benefits and **TWO** limitations of rotary cultivation by completing the table below.

Benefits of rotary cultivation	**Limitations of rotary cultivation**
1.	**1.**
2.	**2.**

2

2

Total Mark

Please turn over/…..

MARKS

Q3 a) Name **ONE** pest and **ONE** disease of lettuce. **2**

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b) Describe **TWO** symptoms and **TWO** control methods for **EACH** pest and disease named above, by completing the table below.

	Lettuce pest	**Lettuce disease**	
Symptoms	**1.** **2.**	**1.** **2.**	**4**
Control method	**1.** **2.**	**1.** **2.**	**4**

Total Mark

Please see over/…..

MARKS

Q4 Describe the production of a **NAMED** crop of beetroot under the following headings:

i) named cultivar **1**
ii) sowing **4**
iii) thinning **2**
iv) harvest **3**

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ii)……

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Total Mark

Please turn over/…..

MARKS

Q5 Name **ONE** distinct disease and state **ONE** symptom of the disease for **EACH** of the following fruits by completing the table below.

	Disease	**Symptom**	
Raspberries			**2**
Strawberries			**2**
Blackcurrants			**2**
Apples			**2**
Plums			**2**

Total Mark

Please see over/…..

MARKS

Q6 Describe how to harvest and store a **NAMED** cultivar of **EACH** of the following fruit crops by completing the table below.

	Blackcurrants	**Plums**	
Named Cultivar			**2**
Harvesting			**4**
Storage			**4**

Total Mark

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Charity Registration Number: 222879/SC038262

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Level 2

Tuesday 11 February 2020

Candidates Registered	**491**		**Total Candidates Passed**	**334**	**82%**
Candidates Entered	407	83%	Passed with Commendation	176	43%
Candidates Absent/Withdrawn	76	15%	Passed	158	39%
Candidates Deferred	8	2%	Failed	73	18%

Senior Examiner's Comments:

1 Candidates should be able to demonstrate a good range of plant knowledge and be able to give accurately named plant examples where appropriate. Common names and generic names are often too vague and cannot be rewarded in the positive manner that genus, species and where appropriate, variety/cultivar can. This is particularly important when answering questions relating to particular (named) plant(s). Marks can only be awarded for these narratives where the example(s) are correctly and fully identified.

2 Candidates must be able to display accurate knowledge of the technical terms and concepts detailed in the syllabus, in the context of horticulture and also be aware that wider interpretation will not be rewarded. The examination should be regarded as a possible introduction to higher level studies, which will only be open to those who are in possession of a clear understanding of the horticultural terms and concepts which are current.

3 The introductory rubric given on the first page of each question paper should be read carefully by candidates. At each examination there are a significant number of candidates who ignore or misread the instructions given and consequently may not perform as well as they could have done.

4 Candidates should pace themselves during each paper. The most successful candidates allow sufficient time to read the question thoroughly before answering it and also take time to read through their answers. They should take care to write as legibly as possible, so that the examiner is in no doubt about what is intended.

5 Candidates need to interpret key words within questions, particularly those such as ‘state’, ‘list’ and ‘describe’. Questions requiring descriptions or explanations obviously require a more detailed answer than those requiring a list.

6 It is important to ensure that responses to questions are to the point. Candidates should bear in mind that small sketches might be used to convey information more succinctly than words.

7 Successful candidates ensure that their answers are focused and to the point. It is disappointing when they cannot be rewarded for their efforts because the answer is irrelevant to the particular question. Candidates should take note of the mark allocation for specific sections and allocate their time and efforts accordingly.

8 Diagrams can enhance an answer and where appropriate can replace detailed descriptions. They should be large, clear and well annotated, ensuring that labels are properly attached to the features they describe. Diagrams should preferably be in pencil. Colour may be used successfully but only where it is relevant to the answer.

9 In each examination it is clear that some candidates are ill prepared to answer papers of the type set. It is essential that candidates have the opportunity to practice questions. Ideally some papers should be answered in a time constrained situation. Appropriate feedback must, in any case be provided.

MARKS

Q1 *a) Describe how **EACH** of the following factors affect the suitability of a site for outdoor food production:*

i) area of land available ***2***

ii) soil texture ***2***

iii) drainage ***2***

iv) susceptibility to wind ***2***

*b) Name **FOUR** types of non-living permeable windbreak.* ***2***

Q1a) Candidates who described how specific factors affect the suitability of a site for outdoor food production achieved full marks. Acceptable answers included:

i) **Area of Land Available** – a large area of land is suitable for widely spaced crops e.g. Brussels sprouts, potatoes, asparagus and fruit trees whereas a small area of land is more suited to salad crops, carrots, beetroot. It is more difficult to rotate crops on a small piece of land and to use machinery.

ii) **Soil Texture** – Sandy soils are light, easy to cultivate, warm up quickly in spring but do not hold moisture as they are free draining. They are suitable for growing root and salad crops. Heavy soils e.g. clay are cultivated in the autumn to allow weathering to break down the clods, do not warm up very quickly in the spring which delays sowing and are suitable to grow brassicas, blackcurrants, plums.

iii) **Drainage** – It is preferable to have a site with soil which is moisture retentive and free draining as poor drainage reduces yield and the quality of crops. It leads to anaerobic conditions, root rots, shallow rooting and drying out of crops. Poor drainage can lead to acidic conditions causing clubroot on brassicas. Some crops are more tolerant of poor drainage e.g. blackcurrants.

iv) **Susceptibility to Wind** - causes a reduction in the quality and yield of crops. This is due to wind rock, desiccation and wind scorch, reduced transpiration, fruit blown from trees, crops blown over e.g. runner beans and poor pollination as bees do not fly in windy conditions.

Q1b) The majority of candidates were able to name a suitable range of non-living permeable windbreak and were awarded maximum marks. These included:

Netlon, trellis, hit and miss fencing, open patterned brick wall, willow/hazel screens, Paraweb.

MARKS

Q2 *a) Describe the soil cultivation technique of double digging.* ***6***

*b) Name **TWO** benefits and **TWO** limitations of rotary cultivation by completing the table below.*

Benefits of rotary cultivation	***Limitations of rotary cultivation***	
1.	***1.***	***2***
2.	***2.***	***2***

Q2a) Good descriptions of double digging were provided by many candidates who achieved full marks. These included:

The area to be dug is marked out and a trench 30cm deep (one spit) is dug and the soil is placed at the end of the area. The base of the trench is forked to 30cm deep into which bulky organic matter is incorporated. The next trench is dug, inverting the soil into the previous one. This continues until the final trench is dug. This trench is filled with the soil from the first trench.

Q2b) Most candidates provided appropriate benefits and limitations of rotary cultivation and gained maximum marks. Suitable answers included:

Benefits

- Less labour intensive than digging
- Easier for large areas
- Buries annual weeds
- Incorporates organic matter and fertiliser
- Creates a tilth on uncultivated land

Limitations

- Chops up and distributes roots of perennial weeds
- Creates a rotavation pan
- Destroys structure of top soil
- Unsuitable for raised or narrow beds
- Some machines can be heavy and difficult to use in small areas

MARKS

Q3 *a) Name **ONE** pest and **ONE** disease of lettuce.* ***2***

*b) Describe **TWO** symptoms and **TWO** control methods for **EACH** pest and disease named above, by completing the table below.*

	Lettuce pest	***Lettuce disease***	
Symptoms	***1.*** ***2.***	***1.*** ***2.***	***4***
Control method	***1.*** ***2.***	***1.*** ***2.***	***4***

Q3a) A good knowledge of pests and diseases of lettuce was shown by most candidates who were awarded full marks. Acceptable answers included:

Pests e.g. slugs/snails, lettuce aphid, lettuce root aphid, rabbits, pigeons.

Diseases e.g. grey mould/botrytis, lettuce downy mildew, lettuce powdery mildew, bacterial soft rot.

Q3b) Candidates who clearly understood the specific details of lettuce pests and diseases achieved full marks. Suitable answers included:

Lettuce Pest

Symptoms of Lettuce Root Aphid – plants wilt and grow slowly in sunny weather while the roots are covered in a white, powdery wax. Creamy/yellow coloured aphids are found on the roots.

Control Method for Lettuce Root Aphid – Grow crop of resistant cultivars on a new site each year and keep them well watered. Do not grow lettuce in the proximity of Lombardy Poplars as they are an over wintering host for lettuce root aphid.

Lettuce Disease

Symptoms of Grey Mould/Botrytis on Lettuce – Fluffy grey fungal growth appears on leaves and the stem will rot if the infection starts near the base of the plant. The plant will wilt and death can occur.

Control Method for Grey Mould/Botrytis – Remove all plant debris which may harbour the fungus and all infected leaves. Improve ventilation between plants and water in the early evening to allow time for the leaves to dry.

MARKS

Q4 *Describe the production of a **NAMED** crop of beetroot under the following headings:*

i)	*named cultivar*	***1***
ii)	*sowing*	***4***
iii)	*thinning*	***2***
iv)	*harvest*	***3***

Q4) Many candidates provided good descriptions of the production of a crop of beetroot and gained maximum marks. Suitable answers included:

i) **Named Cultivar** - 'Boltardy', 'Crimson Globe', 'Bullsblood', 'Detroit Red Globe'.

ii) **Sowing** – Outside from April to June in drills 2-3cm deep and 20-30cm apart. The drill can be watered before sowing the seed thinly or individually placed 2.5cm apart. Successional sowings can be made every two weeks or the seeds can be sown in modules in a greenhouse in March and transplanted when small.

iii) **Thinning** – Seedlings should be thinned as soon as possible. If mini beets are required (golf ball size) thin to 2.5 – 4cm apart. If regular beets are required (tennis ball size) thin to 7 – 8cm apart.

iv) **Harvest** – Beetroot are harvested 10 – 12 weeks after sowing when they are golf ball or tennis ball size. They are lifted carefully with a fork to avoid damaging the root and the leaves are twisted off to avoid bleeding. The roots should not be left in the soil too long or they will become woody.

MARKS

Q5 *Name **ONE** distinct disease and state **ONE** symptom of the disease for **EACH** of the following fruits by completing the table below.*

	Disease	***Symptom***	
Raspberries			***2***
Strawberries			***2***
Blackcurrants			***2***
Apples			***2***
Plums			***2***

Q5) The best candidates were able to provide the symptoms of specific diseases for the named fruits and achieved full marks. These included:

Raspberries - are affected by grey mould/botrytis which produces grey/off white or grey/brown fuzzy fungal growth on all of the above ground parts of the plant.

Strawberries – are affected by strawberry powdery mildew which appears as grey/white patches on the underside of the leaves and red blotches on the upper surfaces of the leaf. The flowers become distorted and fail to open.

Blackcurrants – are affected by blackcurrant reversion virus which causes the flowers to appear shiny, a reduced yield and a reduction in the size and shape of the leaves.

Apples – are affected by apple scab which causes the development of blackish/brown scabby patches on the fruits, greenish/grey spots on the foliage and the fruits become cracked or split in extreme cases.

Plums – are affected by bacterial canker where clearly defined areas of bark flatten and sink inwards and amber-coloured resin-like ooze may appear. The buds at the tips of branches may fail to open and the leaves may appear but wither and die back. The foliage on affected branches are small and yellow in colour.

MARKS

Q6 *Describe how to harvest and store a **NAMED** cultivar of **EACH** of the following fruit crops by completing the table below.*

	Blackcurrants	***Plums***	
Named Cultivar			***2***
Harvesting			***4***
Storage			***4***

Q6) Most candidates provided good descriptions of the harvesting and storage of named cultivars of specific fruits and were awarded full marks. Acceptable answers included:

Blackcurrants e.g. 'Ben Connan', 'Ben Hope', 'Ebony', 'Titania' are harvested by hand when the fruits are dry, black and plump. Whole strings are removed and any diseased or damaged fruit is discarded. The fruits can be stored in a refrigerator for a short period of time and frozen or bottled for longer term storage.

Plums e.g. 'Victoria', 'Czar', 'Blue Tit', 'Marjorie's Seedling' are harvested in dry weather when they are fully ripe and just soft to the touch. They are carefully lifted with the stalk intact. Do not twist the fruits as this can damage the fragile skin and cause rot. The tree must be checked regularly for ripening fruit. The fruits can be stored in a refrigerator for a short period of time and bottled, frozen or dried for longer term storage.

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