R2113
UNDERSTANDING THE PRODUCTION OF OUTDOOR VEGETABLES & FRUIT

Level 2
Tuesday 25 June 2019
13:30 – 14:20

Written Examination

Candidate Number: ..............................................................................................................

Candidate Name: ...................................................................................................................

Centre Number/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 lined space 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;

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.
Q1 a) Describe THREE benefits of providing shelter for trees in an apple orchard.

b) Name TWO distinct plants suitable for use as a living windbreak in a fruit garden.

c) Name TWO types of non-living permeable windbreaks suitable for use in a vegetable garden.

Please see over/…..
Q2 a) Describe how soil texture and structure influence the timing of soil cultivation.

b) Describe what is meant by EACH of the following terms:
   i) single digging

ii) tilth production
Q3 a) Describe the effect of plant spacing on a **NAMED** root vegetable crop.

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b) Describe what is meant by **EACH** of the following terms:

i) intercropping

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ii) successional cropping

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Please see over/.....
Q4 Describe the production of a crop of leeks under EACH of the following headings:

i) soil preparation

ii) sowing

iii) transplanting

Please turn over/.....
Q5  

a) Name TWO plum cultivars.

b) State the optimum time for pruning plum trees.

c) Describe ONE NAMED training system for plums.
Q6 a) State what is meant by the following terms giving TWO NAMED cultivars for EACH:

i) top fruit

ii) soft fruit

b) List FOUR factors to be considered when selecting cultivars of soft fruit.
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.
Q1

a) Describe THREE benefits of providing shelter for trees in an apple orchard.

b) Name TWO distinct plants suitable for use as a living windbreak in a fruit garden.

c) Name TWO types of non-living permeable windbreaks suitable for use in a vegetable garden.

Q1a) Candidates who described suitable benefits of providing shelter in an apple orchard were awarded full marks. Acceptable answers included:

- Reduced wind speed resulting in less physical damage to trees i.e. broken branches, fallen fruit and wind scorch
- Improved pollination as bees do not fly in windy conditions
- Reduced wind speed reduces excess transpiration and water loss
- Provides warmer temperatures for ripening fruit
- Reduced wind speed may reduce damage from wind frost
- Encourages beneficial wildlife

Q1b) The majority of candidates were able to name plants suitable for use as a living windbreak and achieved maximum marks. These included:

*Fagus sylvatica, Crataegus monogyna, Carpinus betulus, x Cuprocyparis leylandii, Taxus baccata.*

Q1c) A range of types of non-living permeable windbreaks were provided by the best candidates who gained full marks. Suitable answers included:

Paraweb, hurdles, hit and miss fencing, trellis, open brickwork
Q2
a) Describe how soil texture and structure influence the timing of soil cultivation.

b) Describe what is meant by EACH of the following terms:

i) single digging
ii) tilth production

Q2a) Candidates who clearly understood the difference between soil texture and soil structure and their influence on the timing of soil cultivation gained full marks. Acceptable answers included:

Soil texture
Sandy soils can be cultivated throughout the year but spring is preferable to avoid the leaching of nutrients.
Clay soils are best cultivated in late summer/early autumn to enable the frosts to break down clods. Clay soils should not be cultivated when wet, waterlogged or frozen to avoid damage to the soil structure.

Soil Structure
Sandy soils are very free draining and therefore compaction is less of a problem in winter. Tilth production may result in soil surface capping after heavy rain or the use of irrigation.
The structure of a clay soil is easily damaged by poorly timed cultivations and so should be cultivated in late summer/early autumn. When clay soils are wet or waterlogged the clay particles smear easily and compaction occurs.

Q2b) The best candidates were able to clearly describe the meaning of the specific terms and were awarded full marks. These included:

i) **Single digging** – is a primary cultivation technique which involves digging to one spade (spit) deep. The soil is inverted to bury the weeds and allow organic matter to be incorporated. It is carried out in the autumn on heavy clay soils to allow the frost to break down the aggregates (clods).

ii) **Tilth production** – is a secondary cultivation technique to create a fine crumb structure for seed sowing or planting. It involves the soil being roughly levelled by raking in two directions to break down the large aggregates. The soil is then consolidated (firmed) using feet or a roller to remove large air pockets prior to finally raking in two directions to create a fine level surface. The soil should not be worked when it is wet.
Q3 a) Describe the effect of plant spacing on a **NAMED** root vegetable crop.

b) Describe what is meant by **EACH** of the following terms:

   i) intercropping
   ii) successional cropping

Q3a) Good descriptions of the effect of plant spacing on root vegetable crops were provided by many candidates who achieved maximum marks. Suitable answers for named root vegetables e.g. carrot, beetroot, parsnip, radish included:

   - Optimum plant spacing is critical to achieve uniform growth and maximum yield
   - Close spacing results in competition for light, water and nutrients
   - Plants are more susceptible to attack by pests and diseases when planted too close
   - Excessive plant spacing wastes potential cropping area

Q3b) Full marks were awarded to those candidates who were able to describe the meaning of specific terms. Acceptable answers included:

   i) **Intercropping** – is the growing of a quick maturing crop between rows of a slower maturing crop e.g. radish growing between parsnip to make the most of the cropping area. The fast maturing crop is harvested before the slower crop matures.

   ii) **Successional cropping** – is the sowing of crops e.g. lettuce, radish, spinach at intervals of two to three weeks to ensure a regular supply of the crop. This also extends the cropping season and prevents gluts.
Q4 Describe the production of a crop of leeks under EACH of the following headings:

i) soil preparation
ii) sowing
iii) transplanting

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

i) **Soil preparation** – The soil is single or double dug in the autumn/winter prior to sowing/planting to relieve any soil compaction. Bulky organic matter is incorporated and fertiliser with a high nitrogen content can be applied one month prior to transplanting the leeks at a rate of 70-100g/m². Secondary cultivation is carried out prior to transplanting and includes; levelling the soil, consolidation and the creation of the final tilth by raking.

ii) **Sowing** – Seeds can be sown under cover from mid to late winter in a greenhouse. The seeds can be sown 1-2cm deep in seed trays or 3-4 seeds per module using a seed sowing or multi-purpose compost. The seeds are covered with compost and watered. Outdoors, seeds can be sown from early to mid-spring in a prepared seed bed. The seeds are sown thinly in drills 1-2cm deep and 15cm apart. The seeds are covered with soil and watered.

iii) **Transplanting** – Leeks can be transplanted individually when they are pencil thick and 20cm in height. The tops of the plants and the roots can be trimmed before planting. Holes are made using a dibber 15-23cm apart and 15-20cm deep with rows 30-40cm apart. A single leek is dropped into each hole which is then filled with water. The soil is allowed to back fill naturally around the transplant to create a blanched stem. The bed is irrigated/watered prior to transplanting.

Modules are watered well before planting. The modules containing 3-4 leeks are planted deeply by digging a hole with a trowel. They are planted 30cm apart in the row and 30cm between the rows. The leeks are watered well after planting.
Q5 a) Name **TWO** plum cultivars.

b) State the optimum time for pruning plum trees.

c) Describe **ONE NAMED** training system for plums.

**Q5a)** The majority of candidates were able to name specific plum cultivars and were awarded full marks. Acceptable answers included:


Marks could not be awarded to candidates who named damsons and greengages as these are subspecies of plum and not cultivars.

**Q5b)** Candidates who clearly understood that plums are pruned during late spring/summer to avoid infection from the fungal disease silver leaf achieved full marks.

**Q5c)** Most candidates described the fan training system for plums and gained maximum marks. Suitable answers included:

A maiden whip or feathered maiden is planted 15-23cm away from a wall or fence which is fitted with horizontal wires 15cm apart. The aim is to create a fan shape which is achieved by removing the central leader to concentrate vigour on both sides of the tree. The laterals are cut back to strong buds to encourage side shoots (‘ribs’) which are tied in at an angle of 45° and gradually lowered to the horizontal.

Candidates who described cordon and pyramid training systems were also awarded marks. Annotated diagrams were also accepted.
Q6 a) State what is meant by the following terms giving TWO NAMED cultivars for EACH:

   i) top fruit
   ii) soft fruit

b) List FOUR factors to be considered when selecting cultivars of soft fruit.

Q6a) Maximum marks were awarded to candidates who were able to state the meaning of the specific terms and give examples. Acceptable answers included:

   i) Top fruit – is fruit that grows on a tree e.g. Apple ‘Discovery’, Apple ‘Blenheim Orange, Plum ‘Victoria, Plum ‘Marjorie’s Seedling’.


Q6b) Candidates provided a wide range of factors to be considered when selecting cultivars of soft fruit and achieved full marks. Suitable answers included:

   • Selection of early, mid or late season cultivars
   • Flavour
   • Storage capability
   • Pest and disease resistance
   • Culinary or dessert cultivars
   • Certified stock
   • Yield
   • Vigour/ultimate size of plant