



**R3103**

**THE MANAGEMENT OF PLANT HEALTH**

**Level 3**

**Wednesday 29 June 2011**

**11:30 – 12:30**

**Written Examination**

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

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

**Centre Number/Name:**.....

**IMPORTANT – Please read carefully before commencing.**

- i) The duration of this paper is **60 minutes**.
- ii) **ALL** questions should be attempted.
- iii) **EACH** question carries **10 marks**.
- iv) Write your answers legibly in the spaces provided.
- v) Use **METRIC** measurements only.
- vi) Where plant names are required, they should include genus, species and where appropriate, cultivar.
- vii) Please note, sufficient lined space is provided. It is not necessary that all lined space is used in answering the questions.

## ANSWER ALL QUESTIONS

### MARKS

**Q1** a) State how pests can develop resistance to chemical control.

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b) Explain how this resistance can be managed by the grower.

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Total Mark
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[illegible]

- b) Outline an integrated control method suitable for **ONE** of the pests named in a).

4

This image shows a full page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

Total Mark

- i) disease symptoms;
- ii) development and spread;
- iii) control and management.

3  
3  
4



**Q4** a) Describe the symptoms of plant disorders in outdoor areas caused by:

- i) high temperature;
- ii) low temperature.

2

2

**Please turn over/.....**

Total Mark

8



**Q5** a) Identify the statutory responsibilities of the operator when applying pesticides.

4

b) Identify **SIX** important items of information for the safe and effective use of a pesticide which are recorded on the product label and/or an accompanying leaflet.

6

**Please turn over/.....**

## MARKS

Total Mark

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**Q6** a) Describe the life-cycle of a vine weevil.

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b) Describe, with reference to the life-cycle, **THREE** methods of control for the vine weevil.

**6**

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## **RHS LEVEL 3 CERTIFICATE IN THE PRINCIPLES OF PLANT GROWTH, HEALTH AND APPLIED PROPAGATION WRITTEN EXAMINATION**

**11:30am Wednesday 29 June 2011**

**R3103**

### **THE MANAGEMENT OF PLANT HEALTH**

<b>Candidates Registered</b>	<b>64</b>		<b>Total Candidates Passed</b>	<b>41</b>	<b>85.42%</b>
Candidates Entered	48	75.0%	Passed with Commendation	23	47.92%
Candidates Absent	7	10.94%	Passed	18	37.5%
Candidates Deferred	6	9.38%	Failed	7	14.58%
Candidates Withdrawn	3	4.69%			

- Q1**    a)    State how pests can develop resistance to chemical control.
- b)    Explain how this resistance can be managed by the grower..

Candidates were able to describe how frequent application of the same or similar chemicals promoted the development of resistance. A fuller explanation should have included examples of pest where there was known resistance to pesticide and identifying some of the many pests that have rapid reproduction and many generation per year, allowing the resistance to be passed on quickly. Also how poor distribution of pesticides can allow future generations to develop more resistance.

Information required for a comprehensive answer to the second part of the question should have included information about pesticide resistance found on the chemical pesticide label (and other sources), identifying pesticides modes of action, describing how rotating pesticides with different modes of action reduces the incidence of resistance and applying pesticides at the recommended rate and interval. Restricting the number of pesticide applications by using non-chemical alternatives, such as biological controls, barriers, hygiene, weed control and the use of resistant varieties should also have been mentioned.

- Q2** a) Describe the symptoms and damage caused by **EACH** of the following pests:
- i) glasshouse whitefly;
  - ii) lily beetle;
  - iii) thrips.
- b) Outline an integrated control method suitable for **ONE** of the pests named in a).

**Glasshouse whitefly:**

Candidates needed to identify that both adult and larval stages of this pest were damaging, adults predominantly found in the growing tips and higher light areas, larvae found on underside of leaves. Sugary excreta from larvae and adults would be colonised by sooty moulds. Heavy infestation reduced plant vigour and impacted on plant/fruit quality including infecting plants with viruses.

**Lily beetle;**

This was generally well described, including descriptions of adult and larvae. Many candidates stated that larvae and adults can be found feeding on plant foliage between May & September. Answers also should have included identification of genera other than *Lilium* that were attacked by this pest.

**Thrips.**

Candidates put forward a number of descriptions of the symptoms caused by thrips including silvery, streaks and speckles seen on the upper surface of leaves, & flowers. A fuller answer would have included the loss of chlorophyll from the areas of the leaf fed on by thrips, and the potential spread of harmful plant viruses.

Many candidates put forward a name of a biological control for their selected pest; some candidates mentioned how these controls worked. However what was required was information about how biological controls together with other strategies are integrated into the pest management programme. A more detailed answer would have included cultural and chemical methods of managing pests.

**Q3** Describe *Phytophthora ramorum* under **EACH** the following headings:

- i) disease symptoms;
- ii) development and spread;
- iii) control and management.

Many candidates described the symptoms as wilting shoots and die back. The disease symptoms are variable between species, better descriptions included symptoms such as leaf blight blackening from the leaf petiole, stem lesions and bleeding cankers.

The development and spread of the disease was better understood and answers which included description of spread by spores through rain splash, infected material removed from site, carrying of infected material and spores on tools and equipment would gain high marks.

Some candidates correctly stated that suspected cases of this disease need to be reported to a relevant Plant Health Authority. There were good descriptions of control measures including burning infected material and the sanitization of tools & equipment.

**Q4** a) Describe the symptoms of plant disorders in outdoor areas caused by:

- i) high temperature;
- ii) low temperature.

b) Describe **THREE** methods of preventing high and/or low temperature damage in **NAMED** outdoor plant situations.

**i) High temperature**

Many candidates limited their answers to general references to heat stress such as wilting. Higher marks were awarded to answers which referenced specific crops/plants and stages of growth where high temperatures impacted on them, examples such as high temperature dormancy of seeds, sun scald to fruits, the development of transplants and seedlings.

**ii) Low temperature**

Frost damage was generally mentioned; some answers had more detail and included examples such as frost heaving soils, persistent cold causing bark splitting, late spring frosts damage to flowers and shoots of trees and shrubs.

Candidates wrote about a range of practical considerations to mitigate high & low temperature damage such as providing shade, plant selection, avoiding frost pockets, variety selection, temporary covers etc.

- Q5**
- a) Identify the statutory responsibilities of the operator when applying pesticides.
  - b) Identify **SIX** important items of information for the safe and effective use of a pesticide which are recorded on the product label and/or an accompanying leaflet.

Answers to the first part of the question must include references to the statutory responsibilities governing the use of pesticides including various assessments, training, & codes of practice for the safe use of chemicals.

The second part of the question was generally well answered candidates were able to list the most important elements set out in the product label i.e. particularly important would have been the statutory information relating to application rates and number of applications, environmental statements, active ingredients and mode of action and operator protection.

- Q6**
- a) Describe the life-cycle of a vine weevil.
  - b) Describe, with reference to the life-cycle, **THREE** methods of control for the vine weevil.

The life-cycle was generally well understood, the more complete answers were able to identify the seasons of the year for each stage of its life-cycle.

The use of nematodes to control larval stages in late summer, trapping and hand picking adults in the spring, chemical insecticides added or drenched into the potted plants were examples of control put forward by candidates. Fuller answers contained details of when and how these methods were implemented.

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