Title | Treat plant pests, diseases and disorders

Unit code | RTC2404A

This competency standard covers the process of treating plant pests, diseases and disorders using cultural, biological and chemical methods. Treatment will follow strict work instructions and will be under supervision. Competency involves the application of knowledge and skills in recognising common plant pests, diseases and disorders, monitoring and recording the severity of the plant pest or disease problem, applying a range of treatments, and recording relevant information.

HSC Indicative Hours | 15

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in treating plant pests, diseases and disorders requires evidence that the common plant pests, diseases and disorders have been recognised and appropriately treated. The skills and knowledge required to treat plant pests, diseases and disorders must be transferable to a different work environment. For example, this could include different plant pest and diseases, locations and treatment techniques.

What specific knowledge is needed to achieve the performance criteria?

Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:
- recognition of common plant pests, diseases and disorders for a particular enterprise/situation
- different types of control measures and their principles
- modes of action of different chemicals
- legislation relation to the use of chemicals for plant pest, disease and disorder control
- OHS responsibilities of employees
- environmental considerations

To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complimentary skills are required. These include the ability to:
- read and interpret chemical labels, Material Safety Data Sheets (MSDSs), manufacturers specifications for setting up equipment, and maintain spray records
- prepare to treat plant pests and diseases
- apply plant pest, disease and disorder treatments
- carry out post treatment operations
- wear personal protective equipment appropriate to task.

What specific skills are needed to achieve the performance criteria?

This competency standard could be assessed on its own or in combination with other competencies relevant to the job function.

Are there other competency standards that could be assessed with this one?

There is critical information about assessing this competency standard for consistent performance and where and how it may be assessed, in the Assessment Guidelines for this Training Package. All users of these competency standards must have access to both the Assessment Guidelines and the relevant Sector Booklet.

Key Terms and Concepts
- biological treatments
- chemical treatments
- cleaning and decontamination
- control measures
- cross-contamination
- cultural treatments
- environmental impacts
- equipment
- hazard identification
- manufacturer’s specifications
- Material Safety Data Sheets (MSDS)
- non-target damage
- occupational health and safety (OHS)
- personal protective equipment (PPE)
- plant diseases
- plant disorders
- plant pests
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<th>What specific knowledge is needed to achieve the performance criteria?</th>
<th>What specific skills are needed to achieve the performance criteria?</th>
<th>Are there other competency standards that could be assessed with this one?</th>
<th>Assessment guide</th>
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| when using chemicals for plant pest, disease and disorder control  
* OHS legislative requirements and Codes of Practice  
* correct wearing/fit of personal protective equipment. |  |  |  
* post-treatment operations  
* resistance  
* risk assessment  
* safe work practices  
* Standard Operating Procedures (SOP)  
* toxicity  
* treatment methods  
* waste disposal  
* workplace records |
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<td>1</td>
<td>Prepare to treat plant pests, diseases and disorders</td>
<td>The Range of Variables explains the range of context within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment may depend on the work situations available. For more information on contexts, environment and variables for training and assessment refer to the Sector Booklet. What may be included under plant pests, diseases and disorders? Plant pests and diseases may include chewing, sucking and boring invertebrates, nematode, fungi, viruses, and bacteria. Disorders include toxic soil, air and water. This unit excludes vertebrate pests, nutrient deficiencies and extreme environmental conditions.</td>
<td>Learning experiences for the HSC must address: An awareness of common pests which impact on commercial crops including: • invertebrates that cause damage by chewing, sucking and boring • nematodes. Causes of plant diseases and disorders including: • fungi • viruses • bacteria • plant disorders caused by • toxic soil • air and water pollution. An understanding of the impacts of plant pest, diseases and disorders including: • reduced yield • crop death • poor quality produce • poor growth and development • unmarketable product • unpalatable produce • further transmission of pest or disease.</td>
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<tr>
<td>1.1</td>
<td>Plant pests, diseases and disorders which impact on commercial crops, gardens and turf, and natural areas are recognised by common name.</td>
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<td>1.2</td>
<td>Details of the plant pest, disease and disorder occurrence are recorded and reported to the supervisor.</td>
<td>What type of details about the plant pest or disease might be required? Details might include location and occurrence of plant pests, diseases and disorders, possibility of off target damage and potential threats that the plant pest or disease may present to surrounding areas.</td>
<td>Learning experiences for the HSC must address: Details to be recorded including: • identification of pest, disease or disorder • location • occurrence including numbers affected • target damage • potential threats. Appropriate records of occurrences of pest, disease or disorder including: • files • hard copy • electronic.</td>
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| 1.3     | **Treatment methods** are selected in consultation with the supervisor. | What **treatments** might be applied? Treatments may include use of fertilisers, foliar nutrients, insecticides, fungicides, dips, release of biological agents, pheromone traps, baits, hormones, cultivation, slashing, cutting, burning and ripping. | **Learning experiences for the HSC must address:** An awareness of different types of treatment and control methods and their principles including:  
  • cultural  
    - tolerant or biological cultivars  
    - choice of location  
    - time of planting  
    - plant rotation  
    - sanitation  
  • mechanical  
    - hoeing and chipping  
    - soil tillage  
    - slashing and cutting  
    - chaining or scrubbing  
    - ripping  
    - cultivation  
  • physical  
    - pulling  
    - drainage  
    - temperature  
    - light  
    - burning  
  • biological  
    - disease-resistant varieties  
    - using natural predators  
    - companion planting  
    - release of biological agents  
    - pheromone traps  
  • chemical  
    - fertilisers  
    - foliar nutrients  
    - insecticides  
    - fungicides  
    - dips  
    - baits  
    - hormones  
    - pre-prepared sprays, dusts and granules to suit.  
  Appropriate selection of treatment methods considering the following:  
  • cost  
  • environmental implications  
  • ease of application |
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| 1.4     | **Equipment** is selected and prepared for use according to enterprise guidelines and manufacturers specifications. | What **equipment** is appropriate for treatment application? Equipment may include backpack sprayers, spray tanks, fertiliser spreaders, ladders, rippers, pesticide applicators and handsaws. | • personal protective equipment (PPE)  
• resistance of pest or disease  
• organic status  
• availability of treatment  
• time  
• toxicity  
• residues. |
| 1.5     | **OHS hazards** are identified, risks assessed and reported to the supervisor. | What **OHS hazards** might apply to this standard? OHS hazards may include use of hazardous chemicals, use of tractors and machinery, solar radiation, and working from ladders. What or who may be at **risk** from OHS hazards? Hazard may cause risk to workers, equipment, | Learning experiences for the HSC must address: Awareness of potential hazards that may cause risk to workers, equipment, people and animals external to the work place and the environment including:  
• machinery and equipment  
• solar radiation  
• hazardous chemicals  
• manual handling. |
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| 2       | Apply treatments to plant pests, diseases and disorders | people and animals external to the workplace (such as members of the public, wildlife, pets, bees, fish, birds), and the environment. | A basic understanding of risk assessment including:  
- identify hazards  
- assess associated risks  
- strategies to control/eliminate risks.  
An awareness of appropriate OHS strategies including:  
- cleaning  
- maintenance and storage of tools and equipment  
- safe chemical handling and use  
- safety procedures for the protection of others  
- select, use and maintain appropriate PPE  
- basic first aid training  
- access to first aid kits  
- safe work practices and procedures  
- access to appropriate communication devices  
- emergency plan  
- safety signs  
- environmental policies. |
| 2.1     | Suitable **personal protective equipment** (PPE) is selected, used, maintained and stored. | What personal **protective equipment** (PPE) may be required to apply treatments?  
Personal protective equipment may include hat, rubber boots, chemical resistant overalls, gloves, goggles, respirator or facemask, sunscreen lotion. | **Learning experiences for the HSC must address:**  
The selection, use, maintenance and storage of PPE appropriate to the work task including:  
- footwear  
- head protection – hard hat, sun hat and helmet  
- overalls  
- gloves  
- apron  
- respirator  
- face mask  
- hearing protection  
- eye protection – goggles, safety glasses and face guard  
- sunscreen  
- waterproof clothing.  
Maintenance of PPE according to manufacturer’s instructions and enterprise Standard Operating Procedures (SOP) including:  
- cleaning and decontamination  
- correct storage  
- regular checks for damage |
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<td>• repair/replacement of worn, malfunctioning or damaged equipment/parts</td>
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<td>• disposal of single-use equipment.</td>
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<td>2.2</td>
<td>Treatments are prepared according to supervisor’s instructions and manufacturers guidelines.</td>
<td>treatments might be applied?</td>
<td>Learning experiences for the HSC must address:</td>
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<tr>
<td></td>
<td>Treatments may include use of fertilisers, foliar nutrients, insecticides, fungicides, dips, release of biological agents, pheromone traps, baits, hormones, cultivation, slashing, cutting, burning and ripping.</td>
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<td>An understanding of the safe preparation of treatments according to:</td>
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<td></td>
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<td>• Material Safety Data Sheet (MSDS)</td>
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<td>• manufacturer’s specifications</td>
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<td>• operator’s manual</td>
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<td>• enterprise operating procedures</td>
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<td>• supervisor’s instructions.</td>
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<td>Knowledge of the impact of incorrect preparation of treatments including:</td>
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<td>• environmental implications</td>
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<td>• crop damage</td>
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<td>• toxicity to handler</td>
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<td>• inefficiency or ineffectiveness.</td>
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<td>2.3</td>
<td>Treatments are applied in such a way that non-target damage is minimised.</td>
<td>OHS and regulatory requirements.</td>
<td>Learning experiences for the HSC must address:</td>
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<td></td>
<td></td>
<td>What OHS requirements might apply to this standard?</td>
<td>An understanding of procedures to minimise non-target damage including:</td>
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<td>OHS requirements may include identifying hazards, assessing and reporting risks, cleaning, maintaining and storing tools and equipment, appropriate use of personal protective equipment including sun protection and drinking to avoid dehydration, safe operation of tools and equipment, personal hygiene and reporting problems to supervisors, appropriate use, maintenance and storage of personal protective equipment, safety procedures in chemical</td>
<td>• environmental considerations</td>
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<td>• climatic conditions</td>
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<td>• attention to mixing, handling and application of treatments</td>
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<td>• cross-contamination.</td>
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<tr>
<td>2.4</td>
<td>Treatments are applied according to OHS and regulatory requirements.</td>
<td></td>
<td>Learning experiences for the HSC must address:</td>
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<td></td>
<td>What OHS requirements might apply to this standard?</td>
<td>An awareness of appropriate OHS strategies including:</td>
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<td>OHS requirements may include identifying hazards, assessing and reporting risks, cleaning, maintaining and storing tools and equipment, appropriate use of personal protective equipment including sun protection and drinking to avoid dehydration, safe operation of tools and equipment, personal hygiene and reporting problems to supervisors, appropriate use, maintenance and storage of personal protective equipment, safety procedures in chemical</td>
<td>• practices for safe handling, storage and transport of plant and other substances</td>
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<td>• information, instruction, training and supervision</td>
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<td>• safe work practices and procedures.</td>
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<td>3</td>
<td>Carry out post treatment operations</td>
<td>3.1 Equipment is shut down and cleaned with full consideration of environmental impacts.</td>
<td>What regulatory requirements might apply to this standard? Regulatory requirements may include the use and disposal of chemicals, record keeping, transport of chemicals, and access to area. Learning experiences for the HSC must address: An awareness of environmental impacts from shutting down and cleaning equipment including: • leaching and contamination of the water table • soil contamination • spray drift • damage to off-target organisms • contaminated produce • surface run-off • changes in soil structure.</td>
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<td>3.2 Treatment waste is disposed of causing minimal environmental damage.</td>
<td>Learning experiences for the HSC must address: Treatment waste including: • used chemical containers • unused chemicals • rinsate. Safe disposal of waste in an environmentally sound manner including: • instructions on labels and MSDS • approved disposal site • evaporation pits • legislation.</td>
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<td>3.3 Records are maintained according to enterprise guidelines.</td>
<td>What records need to be kept when treating plant pests, diseases and disorders? Records may include name of operator, treatments applied, rate, date, settings of equipment, plant pest’s numbers, numbers of beneficial organisms. Learning experiences for the HSC must address: Information to be recorded including: • name of operator • treatments applied • rate • date • calibration of equipment • plant pests numbers.</td>
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What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the key competencies, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where:

0 = not required 1 = perform the process 2 = perform and administer the process 3 = perform, administer and design the process

1. How can communication of ideas and information (1) be applied?
   Ideas and information relating to applying plant pest, disease and disorder treatments should be discussed with other members of the work team and the supervisor.

2. How can information be collected, analysed and organised (1)?
   Information will be collected by inspecting the plant pest or disease and the information gained will be recorded and discussed with the work team and supervisor. Enterprise work procedures and control programs should be consulted, interpreted and applied with clarification from the supervisor where necessary.

3. How are activities planned and organised (1)?
   Equipment, materials and work procedures for applying treatments will need to be arranged before and between work periods, and there may be some responsibility for coordinating work with others.

4. How can team work (1) be applied?
   The application of treatments may involve working with other members of a team to complete the program and ensuring other activities are scheduled around the application of plant pest or disease treatments.

5. How can the use of mathematical ideas and techniques (1) be applied?
   Mathematical ideas in relation to calculating rates, and areas, will be required.

6. How can problem-solving skills (1) be applied?
   Problems solving may be demonstrated in cases of machinery malfunctions or chemical spillage.

7. How can the use of technology (1) be applied?
   Technology may be applied in the preparation, use and maintenance of spray equipment.