PIL306A Coordinate use of weedy plants in a permaculture system

This competency standard covers the process of controlling and making use of weedy plants in a permaculture system. Implementation is likely to be under limited supervision from others with checking only related to overall progress. Responsibility for and limited organisation of the work of others may be involved. Implementation requires the application of knowledge in areas such as weed recognition, permaculture and the lifecycles of weed predators and hosts. It also includes, permaculture design methods, such as use of succession in a permaculture system and the use of harvest as a means of control.

Element		Performance Criteria	
1	Assess the implications of **weedy plants** in the system infestation	1.1	Scope and size of the infestation weedy plant population is assessed.
		1.2	The landform, soil properties, water availability of the affected areas of infestation is are investigated.
		1.3	History of the previous land use and management strategies of the property is gathered and recorded.
		1.2	**Weedy plants and beneficial organisms** are identified and reported or recorded in field notes.
		1.3	Weedy plant populations tolerated by the client, market or environment are identified from the integrated pest management (IPM) strategy.
		1.4	Weedy plant population levels above which plant health or growth objectives are compromised, are identified.
		1.5	Professional advice is obtained as required according to enterprise guidelines.
2	Plan the implementation of control measures	2.1	**Control measures** suitable for the infestation are selected from IPM strategy.
		2.2	**Tools, equipment and machinery, and useful plant and animal species** are selected for each work activity according to enterprise

			work procedures.
		2.3	**OHS hazards** are identified, risks assessed, controls implemented and reported to the supervisor.
		2.4	Suitable safety equipment and **personal protective equipment (PPE)** are selected, used, maintained and stored.
		2.5	Control measures selected need to be in full consideration of **environmental implications**.
3	Implement control measures	3.1	Enterprise work team, contractors and IPM product suppliers are coordinated in a sequential, timely and effective manner in consultation with the supervisor.
		3.2	Control measures are implemented according to the **integrated pest management (IPM) standards** or industry Code of Practice.
		3.3	Implementation of IPM activities is undertaken according to **OHS requirements**.
		3.4	A **clean and safe work area** is maintained throughout and on completion of each work activity.
		3.5	**Records** are maintained as required by legislation and enterprise guidelines.
4	Monitor control methods	4.1	Control methods are monitored to identify side effects to other plants, animals or external environment.
		4.2	Effectiveness of control methods are assessed in reference to specified industry and enterprise standards.
		4.3	Adjustments to IPM control methods are implemented where necessary to meet enterprise specifications.
		4.4	The problem of seed dispersal from mechanical elimination is addressed using permaculture strategies.

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available.

What **weedy plants** may be relevant to this standard?	These may include weedys plants which: • have the potential to be a threat to the permaculture system or to the natural environment • present a potential risk for the enterprise, industry or environment. • are notifiable to authorities. • are part of a local, regional, State or national strategy. • reduce the target products of the designed system
What **beneficial organisms** may be relevant to this standard?	These may include volunteer or cultivated plants that out-compete the weed, insects and other non-vertebrates, and microorganisms that attack the weed. The weedy plants may be reassessed as a source of food or fibre source for other animals (goats, cattle, pigs, chickens)and, in some cases for humans, as part of an integrated designed system.
What **control measures** may be employed as part of an IPM program?	These may include the application of non-chemical controls including sprays with organic or natural ingredients-based sprays, controlled release of predatory organisms, or the application of cultural control methods including removal and disposal of weeds, incorporating an animal system to control the undesired plants. (use of chicken or pig tractors, cell grazing, cows followed by pigs, followed by chickens and re seeded), shading out infested areas by forest, performing earthworks to create changed conditions not beneficial to the targeted weed and follow-up strategies to be used after weed removal.
What **tools, equipment and machinery** may be required?	Standard horticultural tools such as gardening implements, mechanised and manually operated spray applicators (for organic and biodynamic application only)and cultivators, tractors and trailed equipment may be required. Monitoring equipment for the implementation of an IPM program may include insect traps, soil, fertiliser and plant tissue test kits and

	sampling equipment, steam treatment, flamethrowers, animal enclosures both fixed and moveable, earthmoving equipment, selected plant species as competitors, composting, worm farms and biodynamic treatments.
What **OHS hazards** may be associated with this standard?	Hazards may include chemicals, materials or treatments hazardous to human or animal health, manual handling, operating machinery tools and equipment, noise, dust, solar radiation, falls and tripping.
What **PPE** may be included?	PPE may include hat, boots, overalls, gloves, goggles, respirator or face mask, hearing protection, sunscreen lotion.
What **environmental implications** may be associated with controlling weeds?	Beneficial environmental impacts may occur where reduced and informed targeting of organic chemicals, appropriate fertilisers and water to the site and recycling within the system, result in minimal escape of contaminants to the external environment. Beneficial impacts may also result from improved production, healthier ecosystems, more efficient water and nutrient utilisation and reduced weed numbers. The minerals mined by the weeds can be composted and applied for soil health and improved production. Detrimental environmental impacts may arise where IPM activities produce excess noise, dust or water, or the systems do not function effectively because of inadequate implementation techniques.and/or poor design In some regions, EPA and council authority must be given for any weed removal on steep slopes (>20 degrees). Weed removal may lead to the destabilisation of land on a slope or across which water will flow in heavy rain. Weedy plants, if killed and left without correct follow-up strategies, may be a fire hazard.
What **IPM Standards** may be specified?	Standards may include those established by registered industry associations, clients or markets of the enterprise, land management agencies or quality assurance program.

What **OHS requirements** may be relevant to this standard?	OHS requirements may include identifying hazards, assessing risks and implementing controls, cleaning, maintaining and storing tools, equipment and machinery, appropriate use, maintenance and storage of PPE including sun protection, safe operation of tools, equipment and machinery, safe handling, use and storage of chemicals and materials which may be hazardous to human or animal health, organically based materials correct manual handling, basic first aid, safety procedures for protection of others, personal hygiene, and reporting problems to supervisors.
How may a **clean and safe work area** be maintained?	Tasks may include disabling unused tools, equipment and machinery and storing neatly out of the way of IPM activities, correct storage of personal protective equipment, safely storing materials on site, and swiftly and efficiently removing and processing debris and waste material not for immediate use from the work area. Disposal of the weeds in a manner that uses the nutrient in the system on site and prevents any nutrient moving beyond the system to other properties , natural bushland or waterways.
What **records** may apply to controlling weeds?	Records may include types of weeds and beneficial organisms present, numbers of weeds and beneficials present, treatments applied, date of application, application rates, success of treatments, economic thresholds, species to compete, time of growth to point of competition, measured effectiveness and number of animals required to control the undesired plant.

Evidence Guide

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

Competence in coordinating the use of weeds in a permaculture sytem requires evidence that weed control measures have been successfully planned, implemented and monitored according to enterprise guidelines and industry best practice. The skills and knowledge required to control weeds must be **transferable** to a different work environment. For example, this could include different weed species, enterprise situations and control methods.

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: • Permaculture principles and ethics • Weedy plant recognition. • Economic, aesthetic or environmental thresholds for a range of weeds. • Organic chemical, biological and cultural control methods and treatments available to the enterprise within the parameters of an IPM program. • Range and use of tools, equipment and machinery available to the enterprise for implementing the control measures. • Range of animal systems to use the weed as a food source. • Range of plants and planting strategies to out compete weed or to be used as a follow up to successful treatment. • Range of site monitoring and analysis techniques that may be used to implement an IPM program. • Association of IPM methods with site limitations, environmental implications, end market and horticultural objectives for the site. • OHS issues and legislative requirements associated wth hazardous sunbstancesmaterials and treatments which may be hazardous to human and animal health. • OHS responsibilities of employers and employees. • Correct wearing/fit of personal protective equipment.
What specific skills are needed to achieve the performance criteria?	To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to: • Recognise of a range of weedy plants and beneficial organisms within a particular enterprise. • Communicate with work team members, supervisors, contractors and consultants. • Utilise proforma reporting, analysis and work procedure documents. • Understand IPM symbols and information. • Interpret and apply IPM program spatial and logistical

specifications.

- Interpret and apply test results and calculate the quantities and applications rates of control materials.
- Coordinate work group, contractors and own activities to sequentially and effectively complete IPM activities in a timely and cost effective manner.

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 and 3 = perform, administer and design the process.

1. How can **communication of ideas and information (2)** be applied?	Written, oral and telecommunication of ideas and information relating to IPM implementation, activities and problems encountered will be required with the supervisor, work group, contractors or consultants.
2. How can **information be collected, analysed and organised (2)**?	Enterprise work procedures and IPM program should be consulted, interpreted and applied to coordinate weed control activities with further clarification sought from the supervisor, contractors or consultants where necessary.
3. How are **activities planned and organised (3)**?	Work activities for the work group, contractors and self will be planned prior to and adjusted during implementation of the IPM program.
4. How can **team work (2)** be applied?	Implementation of the IPM program will involve facilitating and leading members of a team to complete IPM activities, and meet IPM standards and specifications on time and budget.
5. How can the use of **mathematical ideas and techniques (2)** be applied?	Mathematical application will be required to implement the spatial and logistical and quantitative requirements of the IPM program.
6. How can **problem-solving skills (3)** be applied?	The whole issue of weed control is a problem solving event. The identification of the weed, knowing its favoured parameters and then altering those parameters to throw the system to a new

	successive stage is a giant exercise in problem solving. Then solving the problem of what that stage should be and how many stages should follow are further problem solving activities.
7. How can the **use of technology (3)** be applied?	Technological understanding will be required to access and apply IPM specifications to work activities, undertake IPM activities, communicate and keep records. The use of old technologies such as cell grazing and crop rotation should be employed as well as the new technologies of organic substances, biological solutions and machinery.

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

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

For information about assessing this competency standard for consistent performance and where and how it may be assessed, refer to the **Permaculture International Ltd Course Documentation.**

