



Stage 5 Agricultural Technology

Year 9 Unit 5: Summer crops (Forage sorghum)

Description: Summer crops are an essential part of successful animal production in this area. This unit will introduce students to a range of summer crop related issues including: soil (structure, texture, pH, profiles), land degradation, Aboriginal/European land use, sustainability, experimental design and analysis (first hand investigation: fertiliser trial) and OHS. Students will be involved in numerous practical activities including: preparing soil for sowing of summer crop, determining pH, temperature, texture and structure of soil, conducting experiments: fertiliser trial and density trial, identifying hazards and assessing risk of tractor and machinery, examining photos and pictures of land degradation. Excursion: local degradation sites.

Why does this learning matter? Providing feed for livestock over summer is an important part of successful management. The study of forage sorghum will allow students to investigate historical aspects of agricultural production in Australia, a wide range of sustainability issues as well as developing skills in different methods of plant propagation.

Suggested duration: 20 periods of 1-hr duration (15 periods in Year 9 and 5 periods in Year 10) spread over the end of Year 9 to start of Year 10.

Targeted outcomes

A student:

- 5.3.3 explains and evaluates the impact of management decisions on plant production enterprises
- 5.4.1 evaluates the impact of past and current agricultural practices on agricultural sustainability
- 5.4.2 evaluates management practices in terms of profitability, technology, sustainability, social issues and ethics
- 5.5.1 designs, undertakes, analyses and evaluates experiments and investigates problems in agricultural contexts
- 5.6.1 applies Occupational Health and Safety requirements when using, maintaining and storing chemicals, tools and agricultural machinery

Resources

Text books

Bannerman et al, *Enterprising Agriculture*.

Dynamic Agriculture 1 and 2 (2nd ed.)

Senior Australian Agriculture (SAA)

Sutherland, *Introduction to Agriculture*

Other books

Pacific Seeds' *North West NSW Summer Crop Planting Guide*

Pacific Seeds' *Summer Forage* booklet

Dryland Farming: A Systems Approach

Guide to Fodder Crops for Livestock

Internet

NSW Agriculture: www.agric.nsw.gov.au

Victorian Dept of Sustainability and Environment:

www.dse.vic.gov.au/dse

Dept. Land and Water Conservation:

www.dipnr.nsw.gov.au/

www.farmwide.com.au

www.csiro.au

Assessment

A number of tasks have been listed for this unit, both theory and practical based (see assessment column). Tasks have been listed in the grid (on the last page) indicating where each outcome is addressed and enabling the tracking of students in meeting these outcomes.

Evaluation

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Students learn about:	Students learn to:	Teaching and learning strategies:	Assessment	Reg
<p>b. relationships between resource usage and sustainability of agricultural practices (5.4.1)</p> <p>c. the impact of agricultural practices on sustainability (5.4.1)</p> <p>a. the impact of community demands and attitudes on sustainable agriculture (5.4.2)</p> <p>a. the impact of European and Aboriginal practices on the development of Australian agriculture (5.4.1)</p>	<p>c. compare a range of sustainable and unsustainable agricultural practices (5.4.1)</p> <p>a. compare agricultural systems of today with Aboriginal land management practices (5.4.1)</p> <p>b. discuss the effect of European and Aboriginal agricultural practices on agricultural production and sustainability (5.4.1)</p>	<p>Sustainability</p> <p>Ref: SAA, pp. 15–16.</p> <p>Revise sustainability and compare a range of sustainable and unsustainable agricultural practices.</p> <p>Examine photos and pictures of land degradation.</p> <p>Excursion: local degradation sites.</p> <p>Discuss the importance of resource usage and sustainability of agricultural practices today. Ref: <i>Dryland Farming: A Systems Approach</i>, pp. 146–161.</p> <p>Investigate the impact of agricultural practices on sustainability. Ref: <i>Dryland Farming: A Systems Approach</i>, pp. 76–101.</p> <p>Discuss the changes in community demands and attitudes on sustainable agriculture and the impact this has had on farming methods.</p> <p>Revise Aboriginal land management practices compared to farming methods of today. Ref: SAA, pp. 9–10.</p> <p>Revise the effect of Aboriginal agricultural practices on agricultural production and sustainability.</p> <p>Revise European land management practices and the effect it had on early agricultural farming methods in Australia (production and sustainability).</p> <p>(Empathise with early Australians – they were doing ‘the best they could’ with the knowledge they had at the time – using European farming methods unsuited to the shallow, relatively infertile soils of Australia.)</p>	<p>Excursion report: local degradation sites</p> <p>Comprehension questions</p>	



Students learn about:	Students learn to:	Teaching and learning strategies:	Assessment	Reg
	f. examine soil texture, structure, pH and profiles (5.3.3)	Soils Revise the components of a soil – inorganic material (sand, silt and clay), organic matter, water, air and living organisms. Ref: SAA, p. 58; <i>Dynamic Agriculture 2</i> , pp. 33–44. Revise the physical characteristics of a soil including: profile, structure, texture, pH. Ref: SAA, p. 58; <i>Dynamic Agriculture 2</i> , pp. 33–40. Pracs: <ul style="list-style-type: none"> • Measure the texture of a soil (feel and ribboning). • Measure pH and temperature. Discuss the importance of maintaining and improving the physical properties of the soil with specific reference to sustainability. Ref: <i>Dryland Farming: A Systems Approach</i> , pp. 76–101.	Prac reports	
a. planning and conducting first-hand investigations in agricultural situations (5.5.1)	a. investigate an agricultural problem and develop possible solutions (5.5.1) b. conduct a controlled experiment to investigate an enterprise-related problem (5.5.1) c. gather data using a range of technologies (5.5.1) d. interpret results from graphs and tables of agricultural data (5.5.1)	Experimental design and analysis Ref: <i>Dynamic Agriculture 2</i> , pp. 33–60. Revise reasons why experiments are carried out in Agriculture. List examples. Investigate an agricultural problem related to forage sorghum and develop possible solutions. Revise the importance of incorporating randomisation, replication, standardisation and a control in the design of every experiment. Design an experiment to investigate the effects of fertiliser and/or density on plant growth. Conduct the above experiment. Prepare a report including: aim, method, results (tables and graphs), conclusion and recommendations. Using the Pacific Seeds North West NSW Summer Crop Planting Guide booklet interpret results from graphs and tables of agricultural data, related to different varieties of forage sorghum.	Experimental report	

Student name	All prac reports: booklet	OHS: hazard identification and risk assessment	Excursion report: local degradation sites	Comprehension questions	Experimental report	Unit test
Outcomes	5.6.1 5.3.3	5.6.1	5.4.1 5.4.2	5.4.1 5.4.2	5.5.1	5.3.3 5.4.1 5.4.2 5.5.1 5.6.1