**Plant Experiment Trials**

1. Students visit the Hart Field day site to investigate how scientific trials on broadacre crops are set up. On their return to school students are given a problem related to crop growth to explore. They work in small groups (2 or 3 people) to design an experiment to test the effect of one factor on the growth of a plant, such as wheat, oats, beans, peas or barley, which is grown as a broadacre crop. Students deconstruct the problem and decide on the hypothesis to be tested and explore the factors that need to be considered that could affect the results.

2. Students then individually write a design proposal, including the procedure for the experiment, a list of all materials required and the number of samples to be used. An explanation of why this design was chosen must be included.

The design proposal is then submitted for feedback before the trial begins.

3. As a group, students select a final procedure and conduct the experiment and collect the results.

4. Each student will then prepare their own report on the trial and present this to the class an oral presentation supported by visual or written evidence of the trial. The report should include the following:

* introduction with relevant agricultural concepts, a hypothesis and variables
* materials/apparatus, method/procedure outlining steps to be taken\*
* identification and management of safety and/or ethical risks\*
* results\*
* analysis of results, identifying trends, and linking results to concepts
* evaluation of procedures and data, identifying sources of uncertainty
* conclusion and recommendations to farmers that may help improve the yield from their crops

The report should be a maximum of 1000 words if written, or a maximum of 6 minutes for an oral presentation, or the equivalent in multimodal form.

\*The materials/apparatus, method/procedure outlining steps to be taken, identification and management of safety and/or ethical risks, and results sections are excluded from the word count.

Draft due date:

Final copy due date:

**Assessing evidence in a practical task**

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| **Section** | **Evidence** | **Specific features** |
| **Design proposal** | An investigable question or hypothesis is formulated that relates to the purpose of the investigation. It links the independent and dependent variables and is a prediction.  A procedure is designed that includes a list of all equipment required (with details of sizes and quantities), describes how the independent variable is varied, describes how the dependent variable is measured and states the number of trials to be conducted. Procedures to keep other factors constant should be identified. Safety and/or ethical risks should be identified.  A rationale for the details in the procedure, based on theoretical considerations, safety considerations, student pre-trials or other considerations, should be included. | **IAE1** |
| **Introduction** | The purpose of the task, the hypothesis or investigable question, the independent and dependent variables are identified.  Explanation of relevant concepts, skills or practices that relate specifically to the question or hypothesis may be required. | **IAE1**  **KA1** |
| **Skills, Practices** | Practical demonstration of relevant skills. Application of practices. Management of safety and/or ethical risks. | **KA2** |
| **Results** | Data is represented using appropriate conventions and formats.  Tables have relevant column headings and include units.  The number of significant figures used is appropriate.  Graphs have labelled axes (with units), appropriate scales, an appropriate size, and use a format to suit the type of data. | **IAE2** |
| **Discussion** | Trends in the data are identified and an explanation of these trends in terms of relevant agricultural concepts is provided.  Reasoning based on the data for supporting or rejecting the hypothesis is provided.  An evaluation of the procedure is included. The effects of factors that could not be kept constant on the data obtained are discussed. Sources of random and systematic error that could have affected the data may be identified and their significance on the validity of the data can be discussed.  Improvements to the design of the procedure could be suggested if they would improve the quality of the data obtained. | **IAE3**  **IAE4** |
| **Conclusion** | Indicates whether the hypothesis is supported or rejected, or answers the question posed, and states the overall trend indicated by the data. | **IAE3** |
| **Communication** | The correct format for the structure of a report is used.  Information is communicated clearly.  Appropriate agricultural terms, conventions and representations are used.  External references are acknowledged appropriately. | **KA4** |

**Performance Standards for Stage 1 Agriculture**

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|  | | **A** | **B** | **C** | **D** | **E** |
| **Investigation, Analysis and Evaluation** | **1**  **2**  **3**  **4** | Designs a logical, coherent, and detailed agricultural investigation.  Obtains records, and represents data, using appropriate conventions and formats accurately and highly effectively.  Systematically analyses and interprets data and evidence to formulate logical conclusions with detailed justification.  Critically and logically evaluates procedures and their effects on data. | Designs a well-considered and clear agricultural investigation.  Obtains, records, and represents data, using appropriate conventions and formats mostly accurately and effectively.  Logically analyses and interprets data and evidence to formulate suitable conclusions with reasonable justification.  Logically evaluates procedures and their effects on data. | Designs a considered and generally clear agricultural investigation.  Obtains, records, and represents data, using generally appropriate conventions and formats with some errors but generally accurately and effectively.  Undertakes some analysis and interpretation of data and evidence to formulate generally appropriate conclusions with some justification.  Evaluates procedures and some of their effects on data. | Prepares the outline of an agricultural investigation.  Obtains, records, and represents data, using conventions and formats inconsistently, with occasional accuracy and effectiveness.  Describes data and undertakes some basic interpretation to formulate a basic conclusion.  Attempts to evaluate procedures or suggest an effect on data. | Identifies a simple procedure for an agricultural investigation.  Attempts to record and represent some data, with limited accuracy or effectiveness.  Attempts to describe results and/or interpret data to formulate a basic conclusion.  Acknowledges that procedures affect data. |
| **Knowledge and Application** | **1**  **2**  **3**  **4** | Demonstrates deep and broad knowledge and understanding of a range of agricultural concepts and practices.  Develops and applies agricultural concepts, skills, and practices highly effectively in new and familiar contexts.  Critically explores and understands in depth the interaction between agricultural science and society.  Communicates knowledge and understanding of agriculture coherently with highly effective use of appropriate terms, conventions and representations. | Demonstrates some depth and breadth of knowledge and understanding of a range of agricultural concepts and practices.  Develops and applies agricultural concepts, skills, and practices mostly effectively in new and familiar contexts.  Logically explores and understands in some depth the interaction between agricultural science and society.  Communicates knowledge and understanding of agriculture mostly coherently with effective use of appropriate terms, conventions, and representations. | Demonstrates knowledge and understanding of a general range of agricultural concepts and practices.  Develops and applies agricultural concepts, skills, and practices generally effectively in new or familiar contexts.  Explores and understands aspects of the interaction between agricultural science and society.  Communicates knowledge and understanding of agriculture generally effectively using some appropriate terms, conventions, and representations. | Demonstrates some basic knowledge and partial understanding of agricultural concepts and practices.  Develops and applies basic agricultural concepts, skills, and practices in familiar contexts.  Partially explores and recognises aspects of the interaction between agricultural science and society  Communicates basic information about agriculture, using some appropriate terms, conventions, and/or representations. | Demonstrates some limited recognition and awareness of agricultural concepts and practices.  Attempts to develop and apply one or more basic agricultural concepts, skills, and/or practices in familiar contexts.  Attempts to explore and identify an aspect of the interaction between agricultural science and society.  Attempts to communicate information about agriculture. |