

## Unit 3 Controlled Assessment: Task 2

The purpose of this guidance document is to provide some advice on:

- how the primary data could be collected in absence of a farm visit; and
- the construction of questions for Task 2 to gather primary data that can be presented in a range of graphical forms.

It will support teachers and enable candidates to achieve Mark Band 4 in the Data Collection and Presentation of Findings section (see page 4), in the unlikely event that they have only set of interview/survey answers to analyse.

In place of a farm visit, primary data can be collected for the questionnaire/survey or interview using a variety of methods including, but not limited to:

- email;
- telephone interview;
- live video-conferencing;
- recorded interview;
- online survey;
- post; or
- via farming relative of class member.

If candidates are able to gather data from more than source safely, this will allow the collection of more data to process and draw conclusions from.

### **Task 2: Research Project: Data Collection and Presentation of Findings assessment criteria for Mark Band 4** marking criteria:

Candidates may:

- Collect relevant data from a wide range of relevant primary and secondary sources that are appropriate;
- Record detailed findings in a format they devised including appropriate headings; and
- Present findings using highly detailed graphical forms.

***Additional Supplementary guidance /Comments and Elaboration for Teachers*** indicate that:

- Candidates should have gathered and presented information from at least one primary source and three secondary sources.
- Candidates should have recorded their (primary) results in a table they have drawn up and presented them in more than one graphical form with appropriate labelling and units (in both tables and graphs).

*It should be appreciated that it is not merely the presentation of any data in two graphical forms that merits a Mark Band 4 but rather the gathering of and presentation of detailed data.*

## Gathering Information and Data

The aim of the secondary research is to give a thorough understanding of the topic and identify an area of focus for the Task. Quality secondary research will identify the key topics for investigation and also identify appropriate and relevant typical/bench mark values and hence allow survey/interview questions to be devised that require a *quantified* response from the respondent.

Questions that need a quantified response from the respondent will be appropriate for graphical presentation. The nature of the information gathered will determine the relevant form of graphical presentation i.e. which type of graph should be used to present the data.

Typically the main types of questions that are used are:

- Closed-ended questions. Eg. Yes/No response
- Open-ended questions/free response questions.
- Rating questions.

A range of question types should be employed to gain a detailed insight into the farm enterprise or topic under investigation.

The number and type of questions generated are therefore central to the gathering of quality information and will be based on the level of understanding of the topic obtained from the review of secondary sources in the planning section.

Thought should be given to how the data gathered will be presented in the devising of the questions i.e. will they enable data to be collected that can be presented in more than one graphical form (Mark Band 4).

## Presenting Information and Data

Typically the main graph types employed to present data in a biological context are bar charts, pie charts and line graphs, but may also include other forms of graphical presentation such as scatter graphs and histograms for example.

### Examples of using three types of graph to display a variety of information linked to agricultural topics.

- **Bar chart** to show numbers that are independent of each other. For example: The birthweight of bull calves v heifer calves; the daily live weight gain of bull calves v steers v heifers; the carcass weight of steers and heifers at slaughter; the milk yield of a cow and lactation number.
- **Pie chart** to show you how a whole is divided into different parts. For example the relative proportions of inputs to the cost of production eg. Livestock enterprise: Food, fertiliser, medicines etc. Crops enterprise: seed, fertiliser, sprays etc.
- **Line graph** to show you how numbers have changed over time, weekly, monthly or annually etc. They are used when you have data that are connected, to show trends. Example data might include things like the kg of N fertiliser (kg/ha) applied to grazing ground each month. The number of lame sheep in the flock each month. Change in milk quality, compositional analysis or hygienic quality with month of lactation. The milk yield of a cow and days in milk.

### Questionnaire Design: Example topics for questioning

It is not the purpose of this guidance to be exhaustive or comprehensive in relation to the range of questions that can be asked or types of graphs that may be used but rather, to exemplify how with careful thought, questions can be asked that derive **quantitative data** that can be plotted on more than one graph type.

The following are example questions that would allow the collection of primary data from **one source**, which can be presented in various graphical forms.

#### Q1 How many of each of the following type of animals do you have on your farm?

Cattle \_\_\_\_\_

Sheep \_\_\_\_\_

Goats \_\_\_\_\_

Poultry \_\_\_\_\_

Horses \_\_\_\_\_

Pigs \_\_\_\_\_

Other \_\_\_\_\_

This information could be plotted on a bar chart or on a pie-chart.

#### Q2a How much fertiliser do you apply in each of the following periods?

March \_\_\_\_\_

April \_\_\_\_\_

May \_\_\_\_\_

June \_\_\_\_\_

July \_\_\_\_\_

August \_\_\_\_\_

September \_\_\_\_\_

This information could be plotted on line graph to show the change in fertiliser application over time.

**Q2b What is the % nutrient composition of the main fertiliser you use?**

N \_\_\_\_\_

P \_\_\_\_\_

K \_\_\_\_\_

This information could be plotted on a bar chart or on a pie-chart.

**Q3 What was the average milk yield on your farm on each of the following months in 2019?**

Jan \_\_\_\_\_

March \_\_\_\_\_

May \_\_\_\_\_

July \_\_\_\_\_

September \_\_\_\_\_

November \_\_\_\_\_

This information could be plotted on line graph to show how the milk yield changed over time.

**Q4 a How many acres of the following crops do you grow on your farm?**

Grass \_\_\_\_\_

Vegetables \_\_\_\_\_

Fruit \_\_\_\_\_

Oats \_\_\_\_\_

Wheat \_\_\_\_\_

Maize \_\_\_\_\_

Barley \_\_\_\_\_

Other \_\_\_\_\_ please specify \_\_\_\_\_

This information could be plotted on a bar chart or on a pie-chart.

**Q5 What was the total crop yield on your farm in the following years?**

2019 \_\_\_\_

2018 \_\_\_\_

2017 \_\_\_\_

2016 \_\_\_\_

2015 \_\_\_\_

This information could be plotted on a line graph to show change in yield over time. Alternatively, the question could focus on the yields of individual crops, allowing several plot lines on the one graph.

**Q5 a Do you vaccinate your cattle against any of the following diseases? (circle your response)**

- Ringworm Y/N
- Pneumonia Y/N
- Blackleg Y/N
- BVD Y/N

**Q5 b What is the yearly cost of vaccinating your cattle against each of the following diseases?**

Ringworm \_\_\_\_\_

Pneumonia \_\_\_\_\_

Blackleg \_\_\_\_\_

BVD \_\_\_\_\_

This information could be plotted on a bar chart.

The questions used should be written in light of the candidates own secondary research. They should be related to area of focus and tailored to the farm enterprise type being examined.

The **Appendix** at the end of the document gives some example areas of focus in Task 2s that would enable presentation of data in various graphical forms. These could be used by the teacher as a basis of discussion when candidates come to think about how they will approach their questions for future titles.

## Appendix

The following section gives examples of question areas that could have been used with **previous** Task 2 titles, to allow the collection of primary data and presentation using appropriate graphical techniques.

### **1. Research the conversion requirements for organic farming. Assess the challenges of organic farming including costs, yields and profits.**

Questions to examine (with suitable graph type listed):

Comparative costs of organic v conventional production pre conversion (Bar graph)

Product receipts (£/kg; p/litre ) of organic v conventional production pre conversion (Bar graph)

Stocking rates of organic v conventional production pre conversion (Line graph)

Annual totals and monthly output appropriate to enterprises being examined. (Bar graph)

Antibiotic use, health problems of organic v conventional production pre conversion (Bar graph)

Monthly sales of produce, monthly price of produce, monthly production or output (Line graph)

Contribution of different components to costs of production (Pie chart)

### **2. Investigate disease prevention strategies on a livestock farm.**

Questions to examine:

Dosing regimes, vaccination protocols and associated costs of health

Monthly incidence of disease/livestock mortality

### **3. Investigate the effect of grassland management on farm productivity.**

Questions to examine:

Annual reseeding rate, soil analysis, use of lime, fertiliser regime (total inputs and time of application, associated costs, stocking rates (annual and monthly); grazing system used

### **4. Investigate reseeding practices on livestock farms including composition of grass seed mixtures.**

Questions to examine:

Annual reseeding rate, grass seed mixture composition, soil analysis, use of lime, fertiliser regime (total inputs and time of application), associated costs

### **5. Task Title: Research and compare costs associated with growing spring and winter crops.**

Seeding rate, soil analysis, use of lime, fertiliser regime, weed and pest control, associated costs