Friendly Fungal Fertilisers

Key Stage 4 Programme

Pupil Name	
Handbook Designed by	Dr. L. Edwards

Timetable and Assignment Submission

Timetable – Tutorials

Tutorial	Date	Time	Location
1			
2			
3			
4			
5			
6 (Feedback)			

Timetable – Homework Assignments

Homework Assignment	Description	Due Date
Tutorial 1	Questions & comprehension on biofertilisers	
Tutorial 2	Research & summary report on biofertiliser products	
Tutorial 3	Practical skills questions & mycorrhizal structures	
Tutorial 4	Academic writing practice – discussion piece	
Tutorial 5	Final Assignment – Are biofertilisers the future?	

Assignment Submission – Lateness and Plagiarism

Lateness	
Submission after midnight on 9th August	10 marks deducted
Plagiarism	
Some plagiarism	10 marks deducted
Moderate plagiarism	20 marks deducted
Extreme plagiarism	Automatic fail

The Brilliant Club KS4 Programme – Pupil Feedback Report

Grade	Marks	What this means
1st	70+	Performing to an excellent standard at A level
2:1	60-69	Performing to a good standard at A level
2:2	50-59	Performing to an excellent standard at GCSE
3rd	40-49	Performing to a good standard at GCSE
Working towards a pass	0-39	Performing below a good standard at GCSE
Did not submit	DNS	No assignment received by The Brilliant Club

Lateness	
Any lateness	10 marks deducted
Plagiarism	
Some plagiarism	10 marks deducted
Moderate plagiarism	20 marks deducted
Extreme plagiarism	Automatic fail

Name of PhD Tutor			
Title of Assignment	Are biofertilisers the future?		
Name of Pupil			
Name of School	Harris Academy Orpington		
ORIGINAL MARK / 100		FINAL MARK / 100	
DEDUCTED MARKS		FINAL GRADE	

If marks have been deducted (e.g. late submission, plagiarism) the PhD tutor should give an explanation in this section:

Learning Feedback Comment 1 - *Subject Knowledge*	
What you did in relation to this Key Learning Priority	How you could improve in the future
Learning Feedback Comment 2 – *Critical Thinking*	
What you did in relation to this Key Learning Priority	How you could improve in the future
Learning Feedback Comment 3 – *Written Communication*	
What you did in relation to this Key Learning Priority	How you could improve in the future
Resilience Comment	
How you showed learning resilience during the course	How you could build learning resilience in the future

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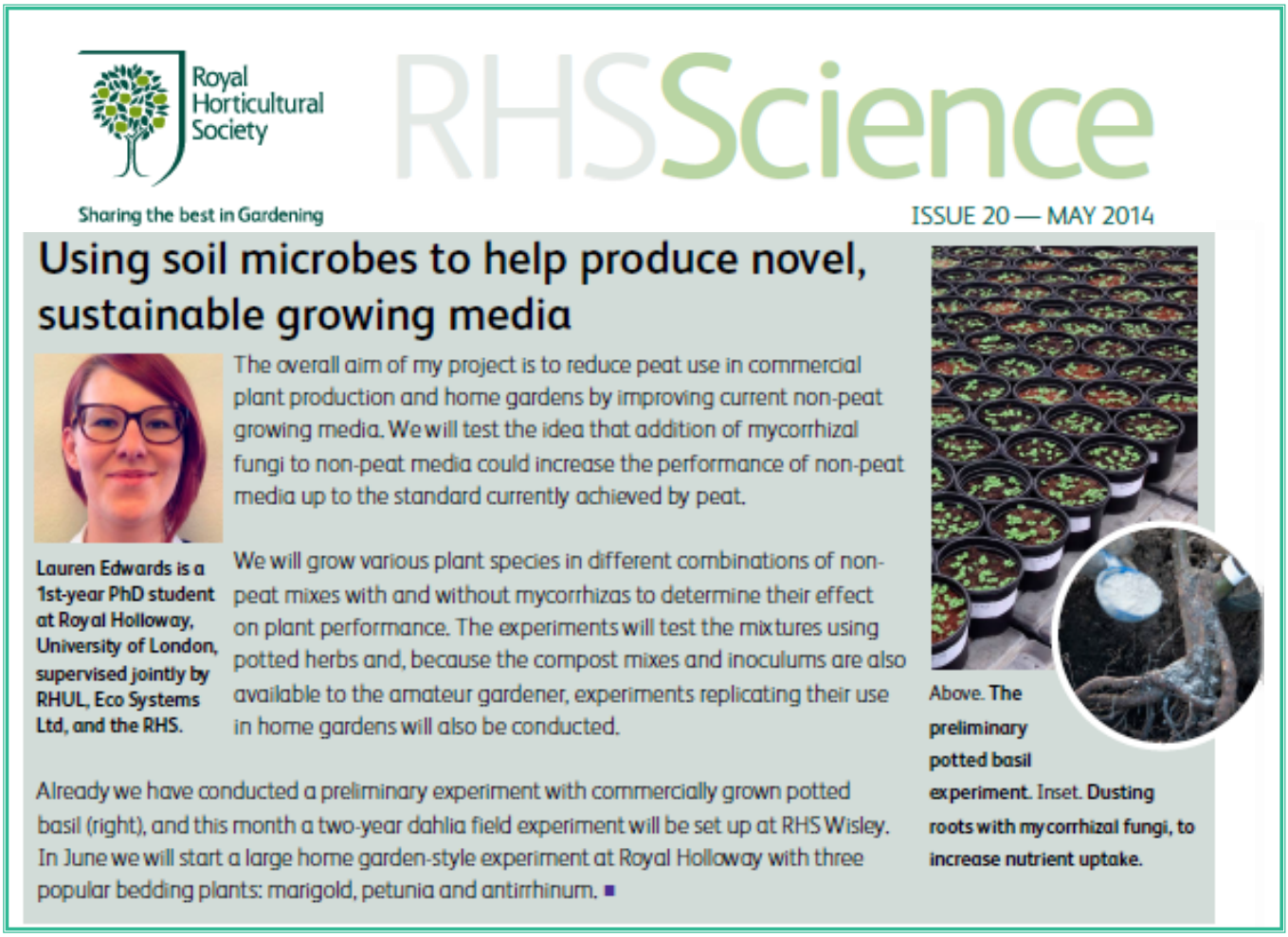
Course Rationale

The importance of environmental impact and finding "green" or "environmentally friendly" alternatives for fundamental processes is at the forefront of scientific research in many areas but particularly the area of food security. It is now necessary to find ways to continue growing plants for food in a sustainable, environmentally friendly way to satisfy an ever-growing population. Around the world, more low nutrient and unsuitable soils are being used to grow food in many areas which are also going through significant climatic changes. In greenhouses companies are under pressure from governments to use less water, fertiliser and unsustainable materials to grow food and ornamental potted plants.

This course is designed to allow students to focus and explore the use of microorganisms as a replacement for inorganic, chemical fertilisers in agricultural and horticultural practice. Using practical techniques, you will be introduced and gain an understanding of how different microorganisms interact with plants and be able to link this to their use as fertiliser replacements.

The final assessment will allow you to study experimental research on biofertilisers and critically evaluate their effectiveness compared to traditional methods. Throughout the course, you will gain the skills you need to write an academic review of their findings and arguments in the style of a research journal article.

This course was designed as it was the basis for a Royal Horticultural Society funded research project which used biofertilisers to improve the sustainability in the horticultural industry.



Royal Horticultural Society

RHS Science

Sharing the best in Gardening

ISSUE 20 — MAY 2014

Using soil microbes to help produce novel, sustainable growing media

The overall aim of my project is to reduce peat use in commercial plant production and home gardens by improving current non-peat growing media. We will test the idea that addition of mycorrhizal fungi to non-peat media could increase the performance of non-peat media up to the standard currently achieved by peat.

Lauren Edwards is a 1st-year PhD student at Royal Holloway, University of London, supervised jointly by RHUL, Eco Systems Ltd, and the RHS.

We will grow various plant species in different combinations of non-peat mixes with and without mycorrhizas to determine their effect on plant performance. The experiments will test the mixtures using potted herbs and, because the compost mixes and inoculums are also available to the amateur gardener, experiments replicating their use in home gardens will also be conducted.

Already we have conducted a preliminary experiment with commercially grown potted basil (right), and this month a two-year dahlia field experiment will be set up at RHS Wisley. In June we will start a large home garden-style experiment at Royal Holloway with three popular bedding plants: marigold, petunia and antirrhinum. ■

Above. The preliminary potted basil experiment. Inset. Dusting roots with mycorrhizal fungi, to increase nutrient uptake.

Mark Scheme Table

	Skills	1st (70-100)	2:1 (60-69)	2:2 (50-59)
Subject knowledge	Knowledge and Understanding	○ All content included is relevant to the general topic and to the specific question/title ○ Good understanding of all the relevant topics. ○ Scientific terms are defined and used accurately throughout ○ Clear justification on how the content included is related to the specific issues that are the focus of the assignment	○ Most of the content included is relevant to the general topic and to the specific question/title ○ Good understanding of most the relevant topics ○ Scientific terms are used accurately but not always clearly defined. ○ Adequate justification on how the content included is related to the specific issues that are the focus of the assignment	○ Some of the content included is relevant to the general topic and to the specific question/title ○ Good understanding on some of the relevant topics but occasional confusion on others. ○ Scientific terms are used mostly accurately with occasional confusion and often not defined. ○ Some justification on how the content included is related to the specific issues that are the focus of the assignment
Critical thinking	Research and Evidence	○ Inclusion of rich sources of research findings, data, quotations or other sourced material as evidence for the claims/ ideas ○ Use evidence/calculations to support claims/assertions/ideas, consistently clearly and convincingly ○ Evidence of further reading which were used in an appropriate context	○ Inclusion of adequate sources of research findings, data, quotations or other sourced material as evidence for the claims/ ideas ○ Use evidence/calculations to support claims/assertions/ideas, mostly clearly and convincingly ○ Evidence of further reading	○ Inclusion of some sources of research findings, data, quotations or other sourced material as evidence for the claims/ ideas ○ Use evidence/calculations to support claims/assertions/ideas, at times clearly and convincingly ○ Limited evidence of further reading
	Developing an Argument	○ A point of view or position in relation to the title or question is consistently clear ○ Argument/proof exceptionally well-developed and well-justified ○ A position is clearly established in relation to the question, and is developed effectively and consistently throughout the essay ○ Makes links	○ A point of view or position in relation to the title or question is adequately clear ○ Argument/proof clear and well-developed and position justified ○ A position is established in relation to the question, and is well-developed in most of the essay ○ Some evidence of linking subjects that	○ A point of view or position in relation to the title or question is somewhat clear ○ Argument/proof clear but not well-developed ○ A position is established in relation to the question, and is well-developed in parts of the essay ○ Limited evidence of linking subjects that

		effectively between subjects that have not previously been associated ○ Uses concepts from the tutorials in an unfamiliar context, and does so accurately and confidently. ○ Content is analysed effectively to support the argument	have not previously been associated ○ Use some concepts from the tutorials in an unfamiliar context, but not always accurate ○ Analysis of content to support the argument	have not previously been associated ○ Limited use of concepts from the tutorials in other contexts ○ Some analysis of content to support the argument
	Critical Evaluation	○ Moved beyond description to an assessment of the value or significance of what is described ○ Evaluative points are consistently explicit/systematic/reasoned/justified ○ Effective critiques on the reliability of sources provided	○ Mostly description but some assessment of the value or significance of what is described ○ Evaluative points are mostly explicit/systematic/reasoned/justified ○ Some evidence of critiques on the reliability of sources provided	○ Only description with minimal assessment of the value or significance of what is described ○ Evaluative points are at times explicit/systematic/reasoned/justified ○ Limited evidence of critiques on the reliability of sources provided
Written communication	Structure and Presentation	○ Ideas are presented in paragraphs and arranged in a logical structure that is appropriate for the assignment ○ The introduction clearly outlines how the essay/report will deal with the issues ○ The conclusion summarises all the main points clearly and concisely ○ All sources are referenced correctly in an agreed format	○ Ideas are presented in paragraphs and arranged in a structure that is mostly appropriate for the assignment ○ The introduction adequately describes how the essay/report will deal with the issues ○ The conclusion summarises most of the main points clearly ○ Most sources are referenced correctly in an agreed format	○ Ideas are presented in paragraphs and arranged in a structure ○ The introduction mentions how the essay/report will deal with the issues ○ The conclusion summarises some of the main points clearly ○ Some sources are referenced correctly in the agreed format with occasional errors
	Language and Style	○ No spelling, grammar or punctuation errors ○ Writing style consistently clear, appropriate for scientific documents and easy to follow ○ Accurate and consistent use of technical language and vocabulary	○ Minimal spelling, grammar or punctuation errors ○ Writing style mostly clear, appropriate for scientific documents and easy to follow ○ Some attempts of using technical language and vocabulary, but not always accurate	○ Some spelling, grammar or punctuation errors ○ Writing style moderately clear, appropriate for scientific documents and easy to follow ○ Use of simple language and vocabulary effectively but struggles to use technical language

Tutorial 1 – What are microorganisms and how can they help plants?

What is the Purpose of Tutorial 1?

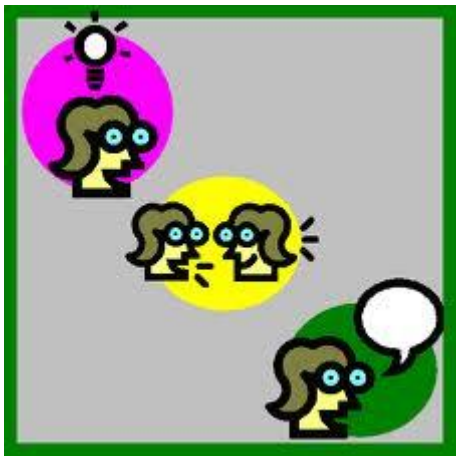
This tutorial will introduce some background into what microorganisms are and how they function in natural soil communities which includes their interaction with plants. We will cover fungal and bacterial cell structure along with how these physical features help them function as decomposers. We will briefly discuss how some of these organisms came to depend on living plants for their nutrition.

By the end of this tutorial you should be able to:

- Give examples of some soil microorganisms from bacteria and fungi
- Give examples of the functions of those organisms in soil
- Know how these microorganisms interact with plants and each other

These skills and knowledge will help prepare you for the next tutorial where we will study in more detail how microorganisms and plants work together.

Activity 1 – Think-Pair-Share



- What are microorganisms?
- Are all microorganisms bad?
- Can you think of any examples?

Activity 2 – Match-up Exercise

Fill out the table with your answers

Microorganism:	Type: Fungi or Bacteria	Role in soil:	Associates with:

Homework Assignment: Tutorial 1

There will be two parts to this homework:

Section A

These questions are designed to test the new knowledge you have gained from Tutorial 1 about microorganisms.

Section B

These reading comprehension style questions are designed to be hard in order to test your ability to gain information from high level, academic style writings and articles. You will need to be able to read, understand and refer to similar articles when researching for your final assignment. Please do your best to answer them but do not worry if you find it difficult.

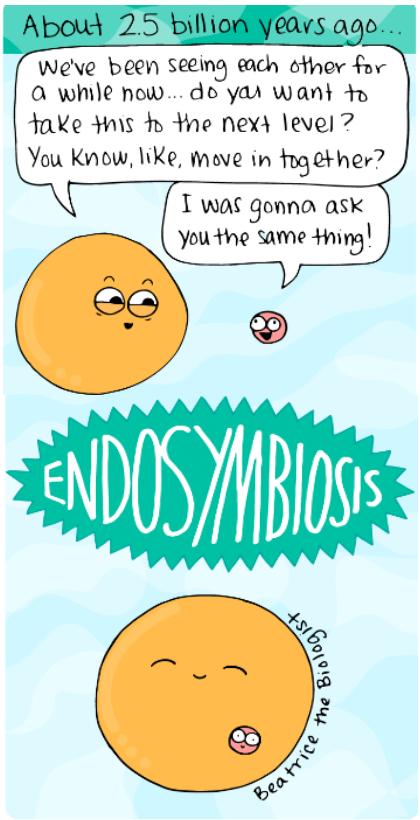
In addition to the questions, please make notes and highlight your resources with questions or comments, especially if there is anything you don't understand so that we can go through these together before your final assignment.

This part of the assignment will help you to gain some extra knowledge and resources you will need to reference when you write your final assignment. This will also allow your tutor to identify areas you may need support with before you write your final assignment.

Glossary of Keywords

Word	Definition	In a sentence
Cell	Basic unit of life. Unicellular organisms only have one cell. Multicellular organisms have many cells.	
Chitin	Hard and tough natural material made from glucose molecules joined together. Chitin is found in cell walls of fungi.	
Chloroplast	Contains the green pigment chlorophyll; the site of photosynthesis.	
Chlorophyll	The green chemical inside the chloroplasts of plant cells. It enables photosynthesis to take place.	
Hyphae	Fine, branching, thread-like filaments produced by fungi.	
Mycelium	The network of hyphae produced by a fungus.	
Parasite	An organism that lives in or on another organism and benefits by taking nutrients from its host.	
Pathogen	Microorganism that causes disease.	
Photosynthesis	A chemical process used by plants and algae to make glucose and oxygen from carbon dioxide and water, using light energy.	
Rhizosphere	The volume of soil surrounding roots in which bacterial growth is stimulated. The rhizosphere is approximately 1 mm thick around the root tissues.	

Tutorial 2 – Symbiotic Relationships



What is the Purpose of Tutorial 2?

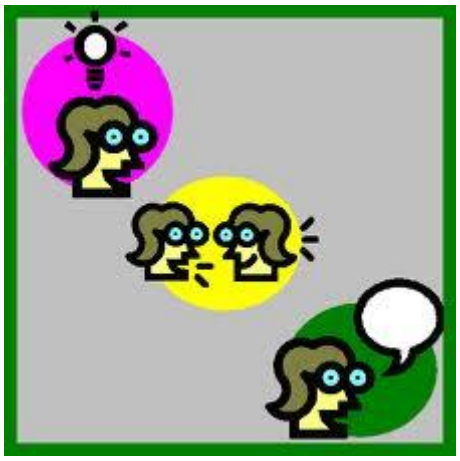
This tutorial will introduce what symbiotic relationships are and the different types that occur in nature. We will focus on some examples which involve the bacteria and fungi we have already learned about in Tutorial 1 and plants as these are some of the most common and fundamental relationships which have been a part of the evolution of plants as we know them today.

By the end of this tutorial you should be able to:

- Give examples of symbiotic relationships between microorganisms and plants
- Describe how plants can benefit from these relationships
- Understand why these relationships could have a negative effect on plants

The work in this tutorial will link to Tutorial 5 and help you with your homework for this tutorial where you will do some active research into how symbiotic microorganisms are being used and sold to gardeners and farmers. This will help you discuss the for and against argument to answer the question of the final assignment.

Activity 1 – Think-Pair-Share



- What do you think symbiosis means?
- Do they always involve microorganisms?
- Do we (humans) have any symbionts?

Activity 2 – Video task

Watch the video clips and example photos and note down the symbiotic relationships you see. Decide which organisms are benefiting and decide which type of symbiosis each example represents. Use your glossary to help you.

Example	Organism 1	Organism 2	Who benefits?	Symbiosis type

Homework Assignment: Tutorial 2

Task 1

Fill in the glossary of key words table for this tutorial on page 14. Some spaces have been left blank for you to fill in with any words mentioned in the tutorial or from the research you conduct in Task 2 which you feel maybe useful to know for your final assignment.

Task 2

Research into commercial products for sale in garden centres and online which contain plant growth promoting microorganisms or arbuscular mycorrhizal fungi.

Here are some brand names to get you started:

- Rootgrow
- Symbio
- Xtreme Gardening

Use the questions below as a guide to get you thinking and write a maximum 500 word summary of what you have discovered including interesting facts, questions and concerns you have about these products.

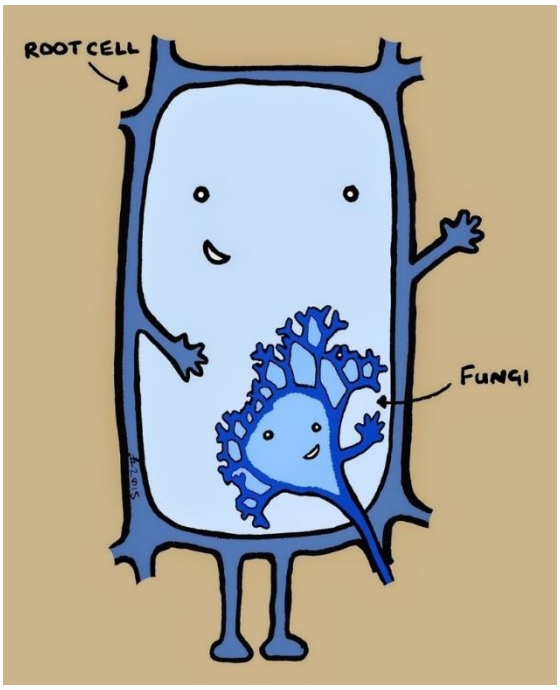
- What do these products claim to be able to do?
- How would customers know if they have or haven't worked?
- Is it clear from the website or packaging that they contain living organisms?
- What do you think makes gardeners want to buy them?
- Given what you know about their biology (from tutorials 1 and 2) what concerns or questions do you have about using living organisms in this way?

Don't forget to add any words to the glossary which you come across and have to look up definitions of.

Glossary of Keywords

Word	Definition	In a sentence
Arbuscular Mycorrhizal Fungi		
Commensalism		
Inoculum		
Mutualism		
Parasitism		
Propagules		
Root Nodules		
Symbiosis		

Tutorial 3 – Practical: Visualising a Symbiosis



What is the Purpose of Tutorial 3?

This tutorial will be based around a practical exercise where we will prepare and stain some root tissue to allow us to visualise the structures of arbuscular mycorrhizal fungi inside a root cell using a microscope.

By the end of this tutorial you should be able to:

- Name the three main structures of arbuscular mycorrhizal fungi and be able to identify these in plant root tissue
- Describe how these structures facilitate a symbiotic relationship
- Describe the staining method and its steps

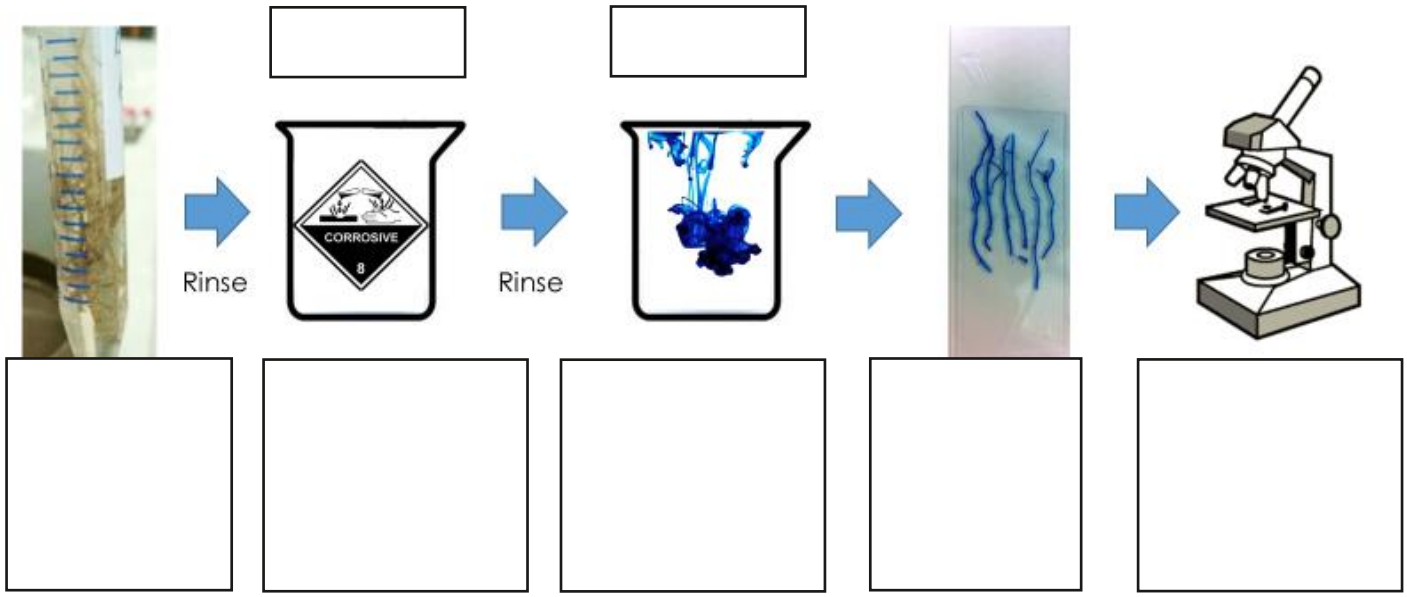
This tutorial and the homework will help you understand how AMF work and this will be reinforced through the practical. You will need to understand this in order to discuss their function for your final assignment. You can describe and explain (using diagrams) how the structures can help plants.

Activity 1 – Practical Risk Assessment

Risks	Hazards	Precaution
70% Ethanol		
Hot Liquid		
10% Potassium Hydroxide (KOH)		
1% Hydrochloric Acid (HCl)		
Ink Stain		

Homework Assignment – Tutorial 3

1. Label the diagram of the staining protocol and answer the questions below:

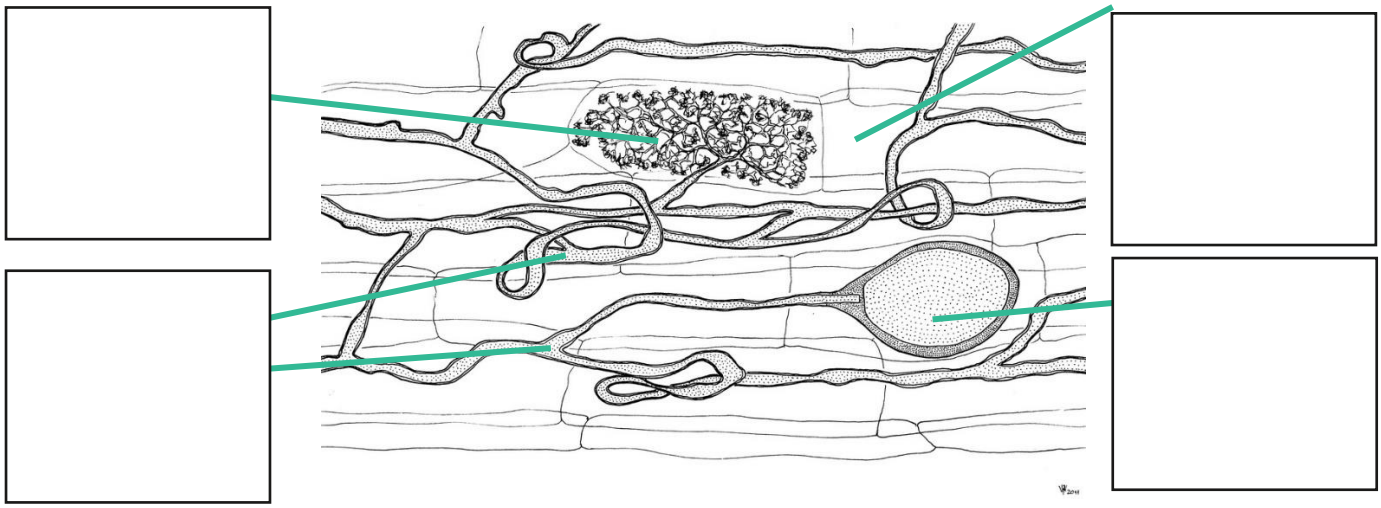


a) Explain the role of potassium hydroxide (KOH) in the staining process:

b) Why is it necessary to bleach and stain the roots at high temperature?

c) What could happen if roots were left in the stain for longer than suggested?

2. Label the mycorrhizal structures in the picture of root cells with their name AND function:



Tutorial 4 – Nutrients and Horticultural Practice

"That plant food really works!"

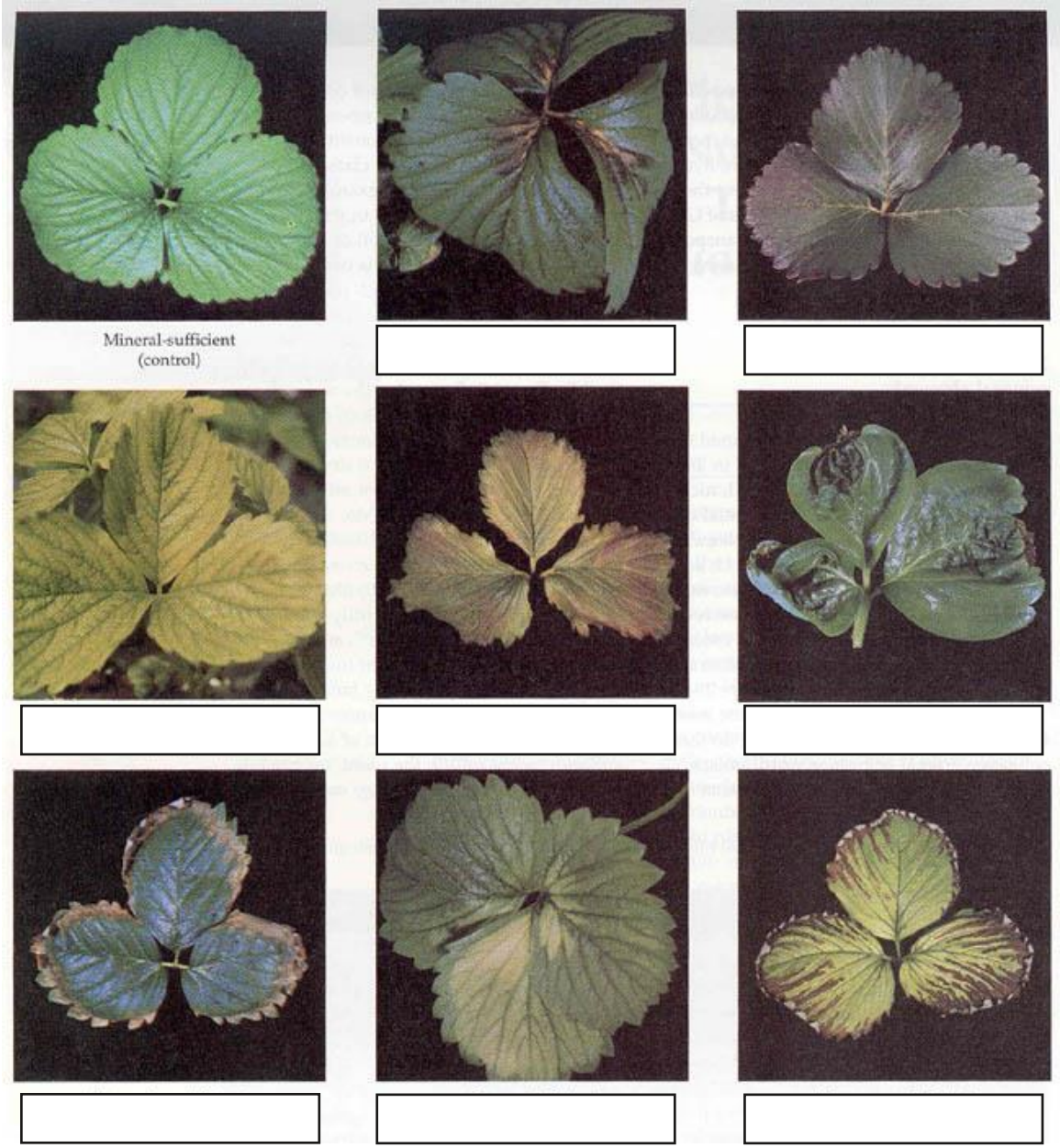
What is the Purpose of Tutorial 4?

This tutorial will introduce the concept of fertilisers, why plants need them and why they are necessary for farmers and growers to use when growing crops and other plants. We will look at different types of fertilisers and what they contain, as well as why each nutrient is important for plant growth. This session will also cover some of the negative impacts the creation and use of fertilisers can have on the environment.

- Give examples of organic and inorganic fertilisers and their role in plant growth
- Understand why fertilisers are used
- Identify benefits and problems of inorganic fertiliser use

Activity 1 – Nutrient Deficiency Symptoms

Which mineral nutrient deficiency are these strawberry plants suffering from?



- Calcium – Leaves become crinkled
- Iron – Leaves turn yellow with green veins
- Magnesium – Leaves starting to die at the edges
- Manganese – Leaves turn pale with stripes of dead patches
- Phosphorus – Leaves turn dark green with purple veins
- Potassium – Leaves show brown scorch marks and yellowing on veins
- Zinc – Leaves are smaller and start to yellow and die.
- Copper – Leaves turn pale green with yellowing

Homework Assignment: Tutorial 4

Title: How to write academically

Scientific reports and essays are often written differently from essays you may have written in arts and humanities subjects like English and history. This homework task will help you create a short piece of academic writing based on what you have learned so far and it could form part of your final assignment. You will receive constructive feedback on this homework in your next tutorial session similar to what scientists receive from review committees when they submit work for publication, this will help you to improve your writing ready for your final assignment task. You may use resources from the handbook or find your own, websites and books will be useful but remember to note down the details of all the sources that you use.

Assignment

Write a 500 (minimum 450, maximum 550) word report discussing either:

- The use of inorganic fertilisers in agriculture

OR

- The symbiotic relationship between plants and arbuscular mycorrhizal fungi

Your report should have the following structure:

- Introduction
    - This should include a 'what' section where you give background and describe what the main focus of your report is about. You are introducing your reader to the topic. *For example: what is a symbiotic relationship and what are the different types of symbioses.*
    - It should also include your rationale or "why" section where you explain, **using examples** why your topic is important. *For example: why are fertilisers important in agriculture?*
    - Your introduction should outline the purpose of your report and what it will contain. *For example: "This report will outline the benefits and drawbacks of ……"*
- Discussion
    - This is your argument where you outline both the positives and negatives of your topic, you must provide evidence for both sides, good and bad.
    - Any evidence or explanations that you use which you learned from extra sources of material (i.e anything that you did not get told in a tutorial) should be referenced correctly. There is a referencing guide in Appendix 1 of this handbook to help you with that.
- Conclusion
    - This is where you summarise your findings and go over the main points from your discussion.
    - This is the part where you can choose which side of the argument you support and explain why you made your decision using the evidence/examples you have presented. It often ends with a closing statement which reviews the outcome of the discussion.

Glossary of Keywords

Word	Definition	In a sentence
Active Transport	The transport of molecules against their concentration gradient from a region of low concentration to a region of high concentration.	
Agriculture	The science or practice of farming, including the cultivation of soil for the growing of crops to provide food	
Diffuse	When particles spread out from a region of higher concentration to a region of lower concentration.	
Denitrifying bacteria	The bacteria that convert nitrates in the soil into nitrogen gas which is released into the atmosphere.	
Eutrophication	Otherwise known as: 'Hyper-nutrition'. It is caused by fertiliser pollution of aquatic ecosystems. Results in oxygen depletion and reduced ability of the water to support life.	
Haber process	The industrial chemical process that makes ammonia by reacting nitrogen and hydrogen together.	
Horticulture	The science of growing intensively produced plants for human food and non-food uses. It does not involve large scale crop production.	
Inorganic fertiliser	These can be synthetic, artificial forms of plant nutrients or naturally occurring mined minerals.	
Nitrifying bacteria	The bacteria that produce nitrate which is released into soil.	
Nitrogen-fixing bacteria	The bacteria found free-living in the soil or in the root nodules of some plants such as peas and clover that convert nitrogen gas into nitrate.	
Organic	Grown without the use of artificial pesticides and fertilisers, or relating to or coming from living matter.	
Organic Fertiliser	These contain plant nutrients in organic form because they have come from plant or animal matter.	

Tutorial 5 – Benefits and Drawbacks of using Biofertilisers

What is the Purpose of Tutorial 5?

We have looked at how bacteria and fungi come together to help plants grow in natural environments and we have investigated how fertilisers are currently used to grow plants in fields and in pots. In tutorials and through your own research we have discussed the positives and negatives of symbiotic relationships and using chemicals as fertilisers. In this tutorial, we will be combining everything we have learned to look at the use of microorganisms to grow plants in the future instead of chemical fertilisers. Discussing this will be the topic of your final assignment so we will look at a few things that you should be thinking about when researching and writing your report.

There will also be time to review feedback from your final homework and go over any questions you might have before you undertake your final assignment.

By the end of this tutorial you should have thought about:

- The benefits and drawbacks of using microorganisms as fertilisers
- Why growers and customers may not like the idea of using microorganisms as fertilisers
- What benefits microorganisms could bring other than increased access to nutrients
- Why research into this area is important for the future

This session will allow some active discussion of various resources which will give you more evidence and ideas for your final assignment argument. The tables and linear mind maps we will create will help you start to plan your assignment and the resources you will use.

Tutorial 4 Homework feedback

What I did well…	What I could have improved on…
• • •	• • •

My target for future work is…

Top Tips for Essay Writing

- Check your punctuation
- Check for spelling and grammar errors
- Make sure the tense you use is consistent
- Avoid the use of: slang words or contractions (e.g don't or can't)
- Make sure your formatting is consistent e.g font, line spacing, paragraph spacing etc
- Check that your references in your bibliography all contain the appropriate information and that the formatting for each one is the same.
- Make a bullet point/note based plan of each section and then build your essay around it
- Use the mark scheme as a guide to make sure your work shows that you meet the criteria
- Build your reference list as you go and don't leave it until the last minute!

Homework Tutorial 5 – Final Assignment

Title: Are biofertilisers the future?

For your final assignment, you will use the information you have learned in your tutorials and your homework assignments to write a scientific report critically evaluating the use of biofertilisers.

Your **maximum 2500 word** report should include:

- Title
- Introduction
  - Background
  - Rationale
  - This should be about half the length of the discussion
- Discussion/Evaluation
  - References to evidence and examples
  - This section can include data from research papers
  - This should be the largest section of your report (at least half the word count)
- Conclusion
  - Review the main points and answer the question with your final thoughts
  - This should be the smallest section of your report
- Bibliography
  - A list of all the referenced resources
  - This list should be presented in the order that these sources were referenced in the report.

The four main bullet points here (Introduction, Discussion, Conclusion and Bibliography) should be the headings of each section in your report. The sub-points are just a guide to remind you what that section should include, you do not need to have sub-headings within sections unless you think they are necessary for clarity.

<u>Formatting of the report:</u>

Please use size 12 Calibri font with 1.5 or double line spacing.

You may include pictures or diagrams but these must each have a caption or figure legend which explain it underneath. Without reading the report the picture or diagram should be clearly understood by the reader from its caption.

Tutorial 6 – Feedback tutorial

What is the Purpose of Tutorial 6?

- To receive feedback on final assignments.
- To share examples of best practice with the other pupils in your group.
- To write targets for improvement in school lessons.
- To reflect on the programme including what was enjoyed and what was challenging.

Final assignment feedback

What I did well…	What I could have improved on…
•	•
•	•
•	•

My target for future work is…

Reflecting on Uni Pathways

What did you most enjoy about Uni Pathways?
•   •   •

What did you find challenging about the programme?	How did you overcome these challenges?
• • •	• • •

Appendix 1 – Referencing correctly

When you get to university, you will need to include references in the assignments that you write, so we would like you to start getting into the habit of referencing in your Brilliant Club assignment. This is really important, because it will help you to avoid plagiarism. Plagiarism is when you take someone else's work or ideas and pass them off as your own. Whether plagiarism is deliberate or accidental, the consequences can be severe. In order to avoid losing marks in your final assignment, or even failing, you must be careful to reference your sources correctly.

What is a reference?

A reference is just a note in your assignment which says if you have referred to or been influenced by another source such as book, website or article. For example, if you use the internet to research a particular subject, and you want to include a specific piece of information from this website, you will need to reference it.

Why should I reference?

Referencing is important in your work for the following reasons:

- It gives credit to the authors of any sources you have referred to or been influenced by.
- It supports the arguments you make in your assignments.
- It demonstrates the variety of sources you have used.
- It helps to prevent you losing marks, or failing, due to plagiarism.

When should I use a reference?

You should use a reference when you:

- Quote directly from another source.
- Summarise or rephrase another piece of work.
- Include a specific statistic or fact from a source.

How do I reference?

There are a number of different ways of referencing, and these often vary depending on what subject you are studying. The most important to thing is to be consistent. This means that you need to stick to the same system throughout your whole assignment. Here is a basic system of referencing that you can use, which consists of the following two parts:

1. A marker in your assignment: After you have used a reference in your assignment (you have read something and included it in your work as a quote, or re-written it your own words) you should mark this is in your text with a number, e.g. [1]. The next time you use a reference you should use the next number, e.g. [2].

2. Bibliography: This is just a list of the references you have used in your assignment. In the bibliography, you list your references by the numbers you have used, and include as much information as you have about the reference. The list below gives what should be included for different sources.

    a. Websites – Author (if possible), title of the web page, website address, [date you accessed it, in square brackets].

    E.g. Dan Snow, 'How did so many soldiers survive the trenches?', http://www.bbc.co.uk/guides/z3kgjxs#zg2dtfr [11 July 2014].

    b. Books – Author, date published, title of book (in italics), pages where the information came from.

    E.g. S. Dubner and S. Levitt, (2006) *Freakonomics*, 7-9.

    c. Articles – Author, 'title of the article' (with quotation marks), *where the article comes from* (newspaper, journal etc.), date of the article.

    E.g. Maev Kennedy, 'The lights to go out across the UK to mark First World War's centenary', Guardian, 10 July 2014.

Appendix 2 – Using the VLE

VLE username	
VLE password	

Please remember the following key details…

- You are able log into the VLE either through the link on our website (www.thebrilliantclub.org) or going directly to the VLE site at (https://portal.thebrilliantclub.org/sign-in).
- Please update your profile with your full name and email address- this will allow you to retrieve forgotten passwords or usernames
- If you forget your log-in details you can request them to be emailed to you by clicking the link on the VLE home page. (If you are still having problems you can email: schools@thebrilliantclub.org)

What is the VLE?

The VLE is a virtual learning environment for all pupils on Uni Pathways it is used for:

- messaging your tutor
- submitting homework
- submitting your final assignment
- accessing resources for your tutorials
- finding out more information about university and careers

How should I use the VLE?

The VLE is a professional academic environment in which pupils are able to message their PhD Tutor. Here are a few things to consider:

- Ensure you keep a professional tone in the messages you send to your tutors.
- Ensure you always reply to your tutors in a timely manner.
- Thank your tutor for the effort they are putting in to give you your feedback etc.
- Submit all homework to your tutor on time.

IMPORTANT: Final assignment

- When you submit your final assignment, please remember that you need to do so through the 'My Activities' tab and not as an attachment to a message.

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