

MARCH 2022

THE ST HELENA AMBASSADOR



Editorial

Hi, welcome to the St Helena Ambassador!

In this month's edition you can find out about an Open Day that was held at Harpers where 18 students showcased their agricultural work, find out about the studies that six scientists undertook whilst on-Island and, lastly, you can find out about the Forestry Section and how they sustainably produce firewood and timber.

If you'd like to contribute a story to the St Helena Ambassador or have any suggestions on what you'd like to see included, please feel free to contact me on tel: 22470 or via email: jodie.s-constantine@sainthelena.gov.sh.

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Eighteen agriculture students celebrated at Harpers Open Day

Prince Andrew School (PAS) hosted an Open Day at Harpers to showcase and celebrate the work achieved and progress being made by year 10 and 11 students (18 in total) in their Agriculture lessons, on Tuesday, 22 March 2022.

During her welcome speech, Portfolio Director of Education, Skills & Employment, Wendy Benjamin, commended the work undertaken at Harpers and thanked and celebrated students for their progress and interest in agriculture. Wendy also thanked a number of organisations and individuals for their support to the agriculture curriculum.

The Open Day allowed visitors to view Harpers classroom, the surrounding gardens and shade house, and to gain an insight into the theory and practical studies that students are currently undertaking.



Agriculture Students



Students' plots used to produce vegetable



Plants grown in the shade house



Harford Primary School Teacher and pupils viewing the plots

Year 10 and 11 students are currently studying towards an AQA Unit Award Scheme, which covers various aspects of agriculture, including the different types of agriculture, pests and diseases, soils, fertilisers, growing healthy plants, growing potatoes, irrigation, fruit tree cuttings, seed germination and integrated management techniques. Year 10 students spend three hours per week at Harpers whilst Year 11 students spend six hours per week. Students are guided by Tutor for Agriculture, Barbara Osborne, and Agricultural Assistant, Barry Benjamin.

At Harpers, each student is allocated a plot where they produce their own vegetables, including beans, carrots, broccoli, and onions. In the shade house, students are taught how to grow strawberries, cucumbers, and other plants such as Poinsettia, Roses, Busy Lizzie, and Petunias. As part of their learning, the students also undertake site visits to both arable, coffee and livestock production units. The Agriculture & Natural Resources Division also supports the students' theory and practical learning by delivering presentations on pesticides spraying and allowing students to participate in biosecurity checks of imported fruit and vegetable.

Team of scientists visit St Helena to study plant health



A team of scientists - plant pathologists, Dr Rob Reeder and Phil Taylor, and entomologist, Dr Norbert Maczey, from the Centre for Agriculture and Bioscience International (CABI), as well as molecular microbiologist, Professor Rob Jackson, and PhD student, Amy Webster, from the University of Birmingham Institute of Forest Research (BIFoR) - were on-Island in February 2022 to conduct a study on the health of plants. The team is working in collaboration with on-Island partners - Environment, Natural Resources & Planning Portfolio and the St Helena Research Institute - to deliver a DEFRA Darwin Plus project DPLUS157. This visit was the first visit for the team under the project. The team were able to meet up with their on-Island colleagues at the Environment, Natural Resources & Planning Portfolio and St Helena Research Institute and get to know the environment and on-Island issues associated with plant diseases. The team visited areas across the Island to see and find out more about the range of plants showing disease symptoms. This included visits to local farmers and areas of fruit and vegetable production, forestry trees, and the Peaks National Park where the endemic Cabbage Trees are showing

The Scientists and partner colleagues



a range of symptoms of disease. The team collected various samples and were able to start the identification process by initially culturing the diseased tissue on sterile agar plates (see photo below). The laboratory at Scotland has been upgraded through the project and the new equipment that has been purchased under the project will increase local capacity for processing and identification of plant pathogens. The team carried out initial training with Martina Leo, Freddie Green and Rosie Peters in the use of the new equipment.

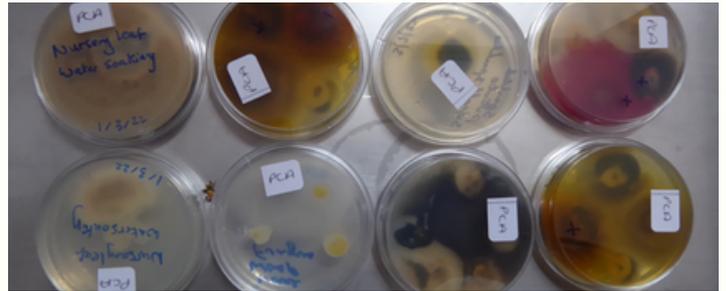


Photo credit: Centre for Agriculture and Bioscience International (CABI)

Forestry trees

The team were shown examples of forest trees that were showing signs of disease or insect attack. At the Moat in Jamestown it was discovered that the Silky Oak trees are being attacked by an insect.

The photos below shows the tree's response to the insect attack, likely to be a recently introduced powder-post beetle – the tree produces resinous lumps on the outside and if scraped off you can find insect holes where the insect has exited.



Photo credit: Centre for Agriculture and Bioscience International (CABI)

Samples of the Silky Oak has been sent to CABI and are currently being investigated. A fungus was found inside the Silky Oak, but whether the fungus is causing the problem is still being investigated.

At Thompsons Wood 'cankers' were seen on the Silky Oak trees (see photos below). The trees appeared to be healthy and were tested for various pathogens, but they came back negative. The cause of the cankers is still to be determined.



Photo credit: Centre for Agriculture and Bioscience International (CABI)

A wood wasp (Sirex) has coevolved with a fungus and is now working together to spread a fungus through the Pine trees at Plantation. The wood wasp carries the fungus around, the fungus softens the tissue and weakens the tree, which allows the grubs to eat and feed of it. The photo below shows the fungus oozing out of the tree around the bark. Samples have been taken back to the UK for further investigation to determine which fungus it is.



Photo credit: Centre for Agriculture and Bioscience International (CABI)

Entomopathogenic fungi

It is possible that there are both introduced and endemic (naturally found on St Helena and nowhere else) entomopathogenic fungi (fungi that attack insects) on St Helena. There is a concern that introduced species maybe attacking some of the endemic insects. Entomologist, Dr Norbert Maczey, was on the look out to identify insects that have been attacked by fungi.

The photo below shows a leaf hopper that has been killed by the fungus.



Photo credit: Centre for Agriculture and Bioscience International (CABI)

Other interesting finds are an unidentified possibly endemic Entomopathogenic fungi on the endemic leafhopper (*Sanctahelenia decellei*), found on the Gumwood (*Commidendrum robustum*), and an unidentified possibly endemic Aschersonia fungi on a possibly endemic unidentified whitefly on Whitewood (see photo below).



Photo credit: Centre for Agriculture and Bioscience International (CABI)

Endemic trees

The team also had a look at the endemic cabbage trees of the Peaks. The black cabbage tree (see photos below) has tip dieback, but some tips are healthy. The scientists split them open to see whether the pathogens are entering the plant from the top or whether they are entering from the base. In this case, the pathogens, possibly a fungus, came in from the top because the tissue further down the stem is healthy, but the tip has disease.



Photo credit: Centre for Agriculture and Bioscience International (CABI)

Not all endemic trees have diseases however, often other factors can be mistaken for disease, such as insect attack, snail damage, natural senescence, and abiotic factors (temperature, light, and water).

If you have crops that show signs of disease that you are concerned about, please contact Martina Leo on tel: 24724 or Rebecca Cairns-Wicks via email: rebecca.cairns-wicks@sainthelena.gov.sh.

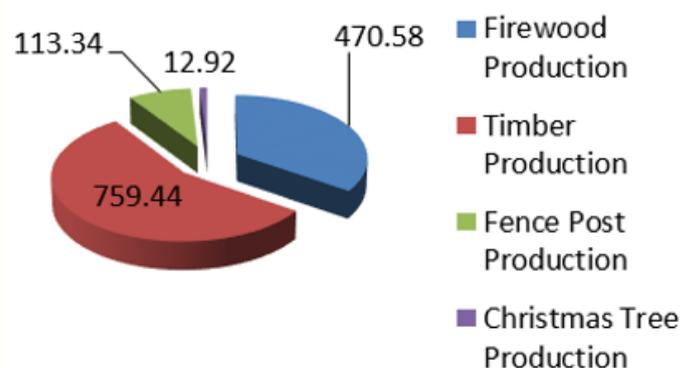
International Day of the Forest - an introduction to the Forestry Section's sustainable production of timber and firewood

International Day of the Forest was celebrated on 21 March 2022. This year's theme was '*Forests and Sustainable Production and Consumption*'.

The Forestry Section of the Environment, Natural Resources & Planning Portfolio is responsible for the sustainable management and development of both the National and Dedicated Forest Estates; the National Forest Estate, following conclusion of a rationalisation exercise in 2021, now encompasses approximately 1,400 acres of land belonging to the Crown, whereas the Dedicated Forest Estate encompasses 93 acres of land that is privately owned, but managed by St Helena Government (SHG).

The current 1,400 acres of forest land is land used for productive end uses, primarily as dedicated firewood and timber plantations although other products and benefits are derived from the estate for community

Figure 1 - Forest Produce per Acre



enjoyment, a breakdown of which per acre is indicated in Figure 1; of the products supplied, the product with the highest supply rate is firewood.

In order to ensure sustainable production and consumption of firewood, an annual allowable cut of 440 tonnes is adhered to. This allowable cut ensures that existing firewood stocks are not depleted before newly planted plantations become established thus ensuring a continuous supply of raw firewood material for the future.

Approximately 10 acres of plantations are cleared annually to provide adequate firewood material to sustain the current Island demand; restocking of cleared plantations occurs in two cycles, the first being undertaken during the winter months (June – October) where plantations cleared from Q4 of the previous financial year and Q1 of the current financial year are restocked (approximately six acres) and then during the second cycle which occurs during the earlier annual rains (January, March-April) where plantations cleared during Q2 and 3 of the current financial year are restocked (remaining four acres); this is a continuous cycle that occurs year-on-year to ensure that firewood and/or timber stocks are replenished and available for future use.

The production of firewood and indeed all forest products starts from the Forestry Tree Nursery. All forestry tree species produced on-Island are produced from tree seed collected locally with the exception of Pinus Pinester which is imported through a reputable UK organisation from southern Spain, and Cedar which is transplanted directly from one field site to another.

A breakdown of forestry tree species produced for the period 2021/22 can be seen in [Figure 2](#).

Once seed has been collected, it is dried in two stages, firstly it is air dried for a period of one to two weeks followed by a period of drying using a sealed drying drum which absorbs all access moisture from the seed through the use of silica gel. Once completely dried, all seed is catalogued and stored under refrigerated conditions until it is required for use. On requirement the seed is removed from the fridge and left overnight to re-hydrate before being sown.

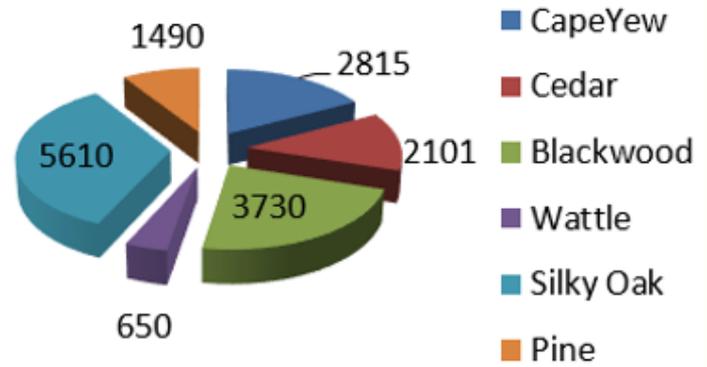
On sowing, seeds are disseminated into seed beds by species and allowed to germinate. During the time seed takes from germination to pricking out, which is the process from which they are removed from the seed bed and placed in growing bags, young seedlings are cared for through nursery practices such as pest and disease monitoring and control, irrigation, weeding and supplementary nutrition if needed.

Pricking out of seedlings occurs generally when the seedlings are approximately six to eight weeks old, but is dependent on species as some are faster growing than others. At this stage they are removed from the seed beds and transplanted into growing bags. These bags are then placed into holding dams which structures are designed to hold water, until they are planted out into the field.

All trees, irrespective of the final intended use are planted at a spacing of 2m x 2m; this ensures that once planted the trees are no longer disturbed until harvested. This spacing also ensures that adequate room for tree growth and development is provided throughout the trees' life span without negatively impacting the individual tree and others in the plantation.

Once planted all young trees are cared for until

Figure 2 - Number of Tree Seedlings produced by Species, Financial Year 2020/2021



Photos 1, 2, and 3 - young seedlings being removed from seed beds, transplanting into growing bags and placed in holding dams

they are fully established and able to outcompete all weed species; this involves ensuring that for the first five to six years of

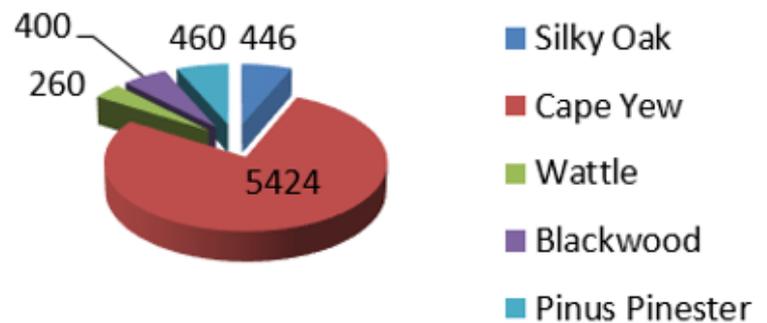
their life, newly planted plantations are cleared of all invasive and alien plant species that, by nature, can outcompete tree seedlings for nutrients, water and sunlight which are vital for tree growth and development.

Should a dual purpose tree species be used, i.e. a tree that has end uses as both firewood and timber, pruning at years three and seven also occurs. **Figure 3** shows the number of trees planted per species for Financial Year 2020/2021.

When harvested, the raw material is cut into lengths and delivered to the firewood contractor for processing and distribution across the Island. To ensure optimum use of the trees harvested, the material not used as raw firewood material is trimmed out and placed into windrows for collection by the public, this reduces the volume of cut flammable material left on site that could constitute a fire risk; the smaller limbs are chipped and transported to the Horse Point Landfill Site to be recycled into compost to reduce wastage of this valuable resource.



Figure 3 - Trees Planted per Species, Financial Year 2020/2021



Photos - Firewood harvesting at Levelwood