

A vibrant botanical illustration featuring various tropical plants. In the upper left, a large, elongated, pinkish-orange flower hangs from a stem. To its right, a large, green, deeply lobed leaf with characteristic holes (Monstera) is prominent. The background is filled with various green leaves, including ferns and palm fronds. In the lower right, a green cactus with a small red flower and several green buds is visible. The overall style is detailed and colorful, set against a white background.

Investigating Plants and Environments at Birmingham Botanical Gardens

Teacher Introduction

Birmingham Botanical Gardens lends itself to the study of plants and environments with four glasshouses representing different climatic regions: tropical, sub-tropical, desert and Mediterranean. In addition, other environments such as Alpine can be found outdoors. You may wish to use these activities in the context of looking at plants and climates representative of a particular country or region.

Description of Activities

What is each environment like? Pupils can compare each climate using their senses and describe what each environment feels like. They can also measure and record environmental factors such as temperature, humidity, rainfall and soil moisture, using a range of scientific equipment. Worksheets A and B can be used to record observations and measurements. (Print off multiple copies if you want to study/experience more than one climate.) The data can then be presented and compared in a variety of ways back at school (links to maths and computing). Where in the world can we see these environments? For each environment, pupils can plot onto a map of the world the countries of origin they find on the plant labels. Worksheet C has a map of the world that can be used, which also shows the location of the Equator and the Tropics of Cancer and Capricorn.

How are the plants adapted to their environment?

Basic understanding of plant adaptations can be developed through fun activities such as pupils imagining they are explorers. Observational awareness is heightened by pupils being allowed hands-on experience of plants in the glasshouses. Worksheet D can be used for pupils to sketch a plant from each glasshouse, which has a described adaptation. Another activity involves pupils filling in a Plant Passport so that the plant can be moved from one country to another (Worksheet E).

How are plants used by people?

Worksheet F can be used for pupils to record food and other economic plants that they find in the glasshouses. They can record not only the plant's name, but also the part of the plant used, country of origin and climate required. The location of these plants can be used to develop map skills. An interesting exercise is to ask pupils to imagine that they are marooned in a certain environment such as a desert. For example, can they find anything to eat or drink or materials to build a shelter? They could create a Survivor's Diary to record their ideas. Another activity, called 'Starting the Day' (Worksheet G), takes everyday items used in the morning, examines their plant ingredients and where they come from.

Resources

The following scientific instruments are located in each glasshouse: thermometer, hygrometer (to measure percentage humidity) and soil moisture meter. Please ask members of the Education or Gardening teams if you cannot find them.

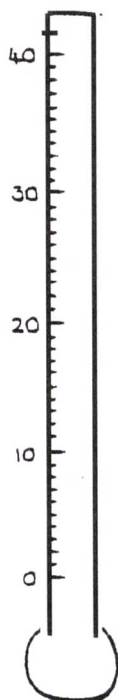
In the glasshouses

It feels

it smells

the colours are

the temperature



the plants

Worksheet B

Name: _____

Ring the words which could be used to describe the place you are in:

The climate is:

tropical sub-tropical Mediterranean desert

I think that it is:

hot cold sticky crowded empty
green colourful dry wet damp
comfortable uncomfortable noisy quiet
beautiful ugly friendly unfriendly
bright dark interesting boring

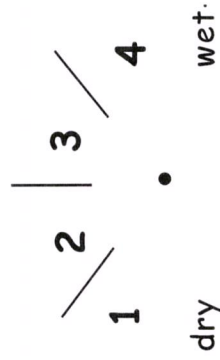
Can you think of any other describing words?

temperature (°C)

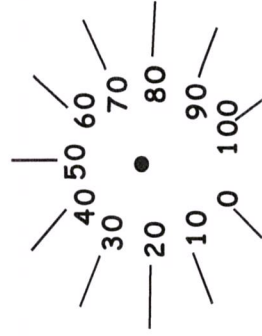


Write the temperature here or mark it on the thermometer:

soil moisture

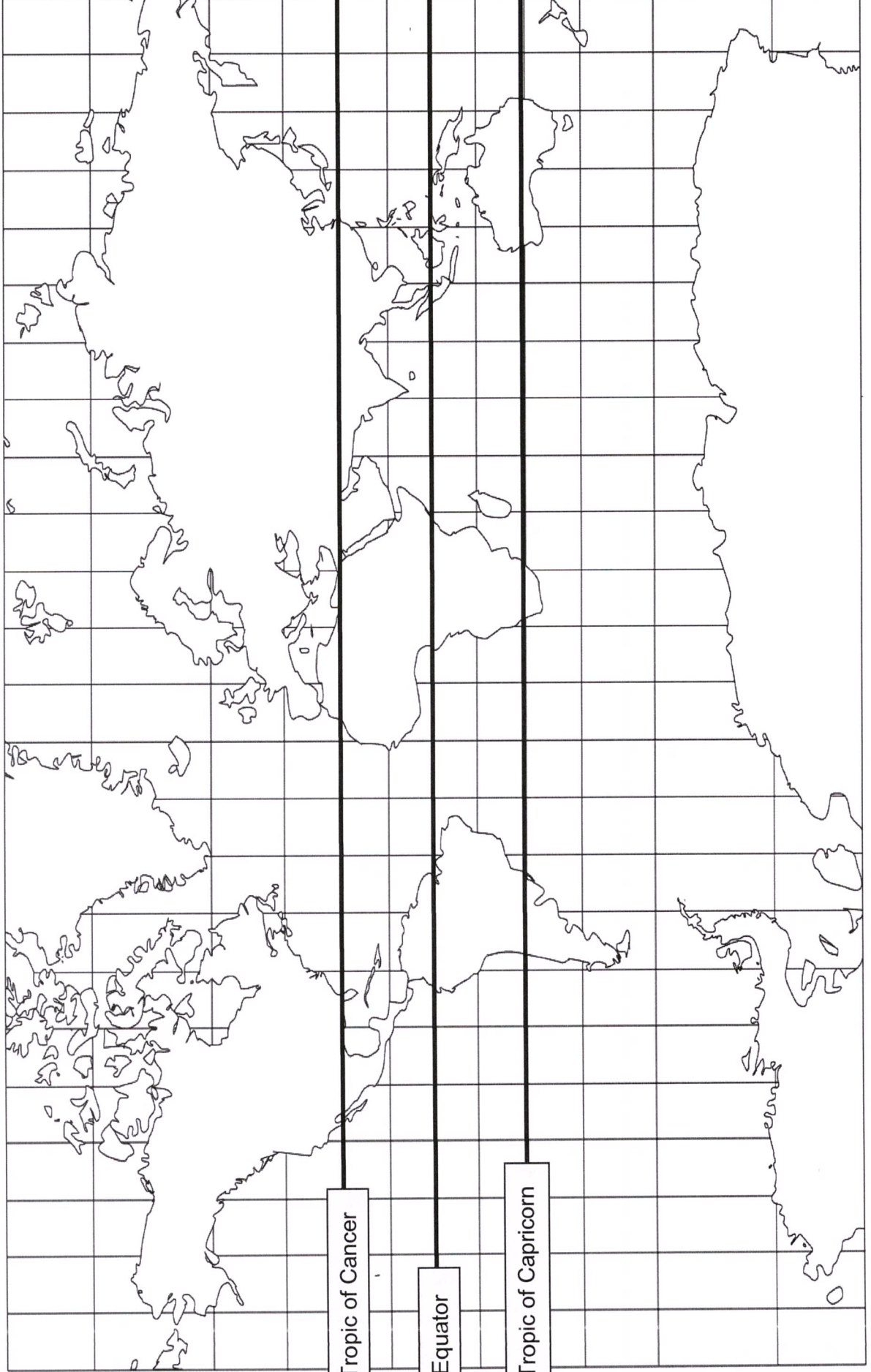


humidity (%)



Name: _____

Worksheet C



Tropic of Cancer

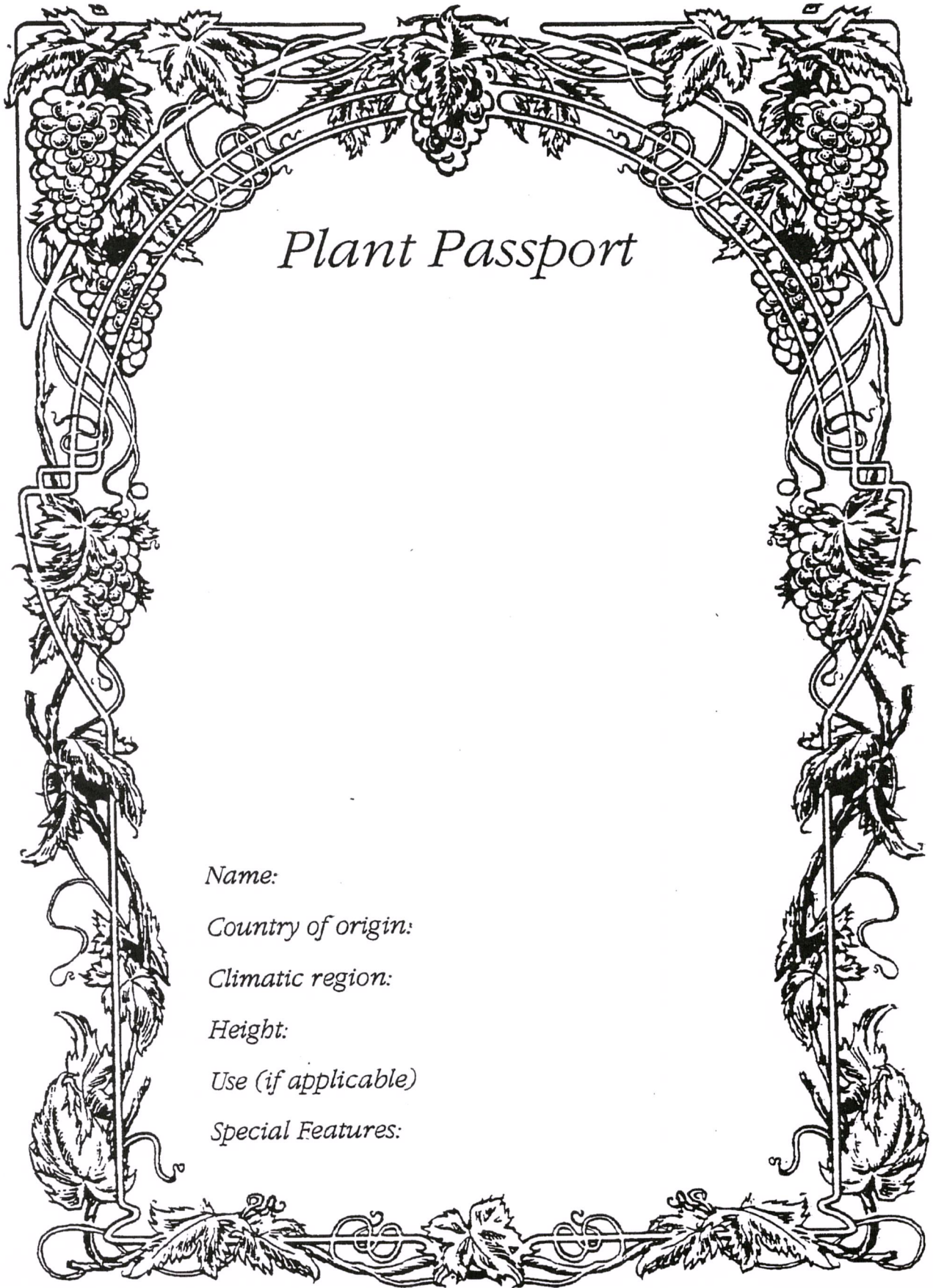
Equator

Tropic of Capricorn

Worksheet D

Name: _____

<p style="text-align: center;"><u>Tropical House</u></p> <p>Draw a plant with coloured leaves to absorb sunlight, or a drip tip to funnel rainwater towards the roots.</p>	<p style="text-align: center;"><u>Sub-tropical House</u></p> <p>Draw a plant with large leaves to absorb lots of sunlight. (Remember to show the veins!)</p>
<p>Name of plant:</p>	<p>Name of plant:</p>
<p style="text-align: center;"><u>Mediterranean House</u></p> <p>Draw a citrus fruit with a thick, rough, bumpy skin to protect it from the heat of the sun.</p>	<p style="text-align: center;"><u>Arid House</u></p> <p>Draw a cactus with a fat stem to store water, and spikes to protect it from being eaten by animals.</p>
<p>Name of plant:</p>	<p>Name of plant:</p>



Plant Passport

Name:

Country of origin:

Climatic region:

Height:




Use (if applicable)

Special Features:

Worksheet F

Name: _____

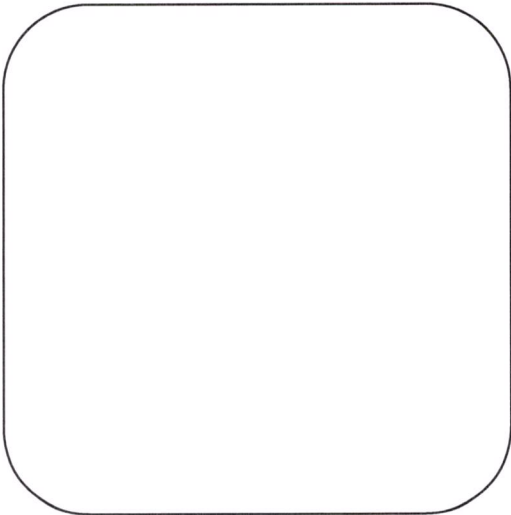
Write the names of any useful plants that you find in the glasshouses. Next to the name of the plant, add information such as: the country of origin (check the black labels), the climate in which it grows (e.g. tropical) and the part of the plant used (e.g. stem, leaf, roots).

 Food and Drink	 Medicine	 House & Home

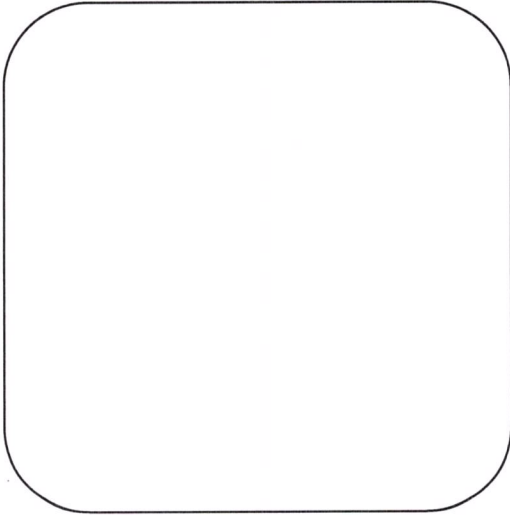
Starting the Day the Botanical Way

Did you know that in the time between getting up and going to school you use many plants without even knowing it?

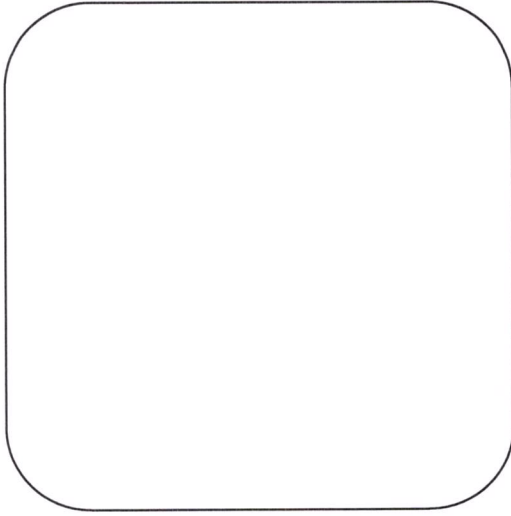
Explore the glasshouses to find and draw these useful plants. Read the information on the white labels and look out for these symbols:



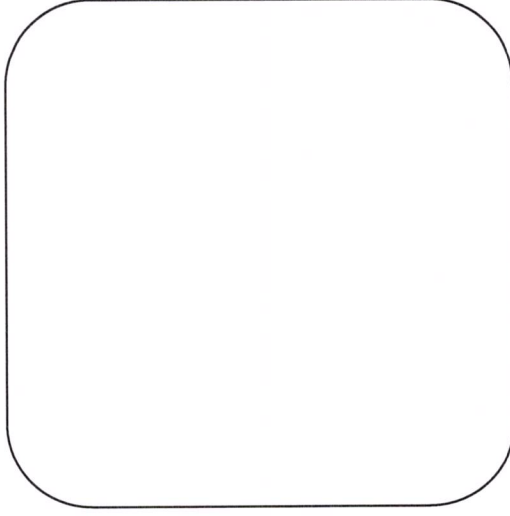
A plant we use in the bathroom



A plant we eat for breakfast



A plant we drink for breakfast



A plant we wear to school

Starting the Day the Botanical Way

SUGGESTED ANSWERS

Toiletries:

Soap	Citrus fruit oils (Mediterranean House)
Shampoo	Olive oil (Mediterranean House)
Shower/bath gel	<i>Aloe vera</i> (Arid House)

Toothpaste	Cinnamon (Sub-tropical House)
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Breakfast:

Spreads	Olive oil (Mediterranean House)
	Yellow colour using dye from annatto (Tropical House)

Marmalade	Orange, lemon and lime (Mediterranean House)
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Grapefruit	Grapefruit (Mediterranean House)
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Drinks	Citrus juice, e.g. orange (Mediterranean House)
	Tropical juice, e.g. pineapple (Sub-tropical House)
	Coffee (Sub-tropical House)
	Tea (Sub-tropical House)

Cereals (e.g. Cocos) pops)	Rice (Sub-tropical House)
	Cocoa (Tropical House)
	Sugar from sugar cane (Sub-tropical House)

Getting dressed:

Shirt or blouse	Fabric from cotton (Sub-tropical House)
	Starch from taro or cassava (Tropical House)

Shoes	Rubber soles (Tropical House)
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