### BUSINESS IN THE COMMUNITY



**Seedbank Project** Food for Thought Programme – collaboration between BITC Scotland and SASA

Session 1 – Seeds

Session 2 – Soil

Session 3 – Disease

Session 4 – Seedbank

Session 5 – Seedbank Instructions

Glossary & Appendixes





Aims of the Seedbank Project: Food & Science Project - via one vegetable project – pea, to discuss and explore the importance of protecting the varieties of seeds to protect biodiversity.

Learning outcomes – Curriculum for Excellence

Global Citizenship – sustainability: fostering informed decisions, take thoughtful responsible action,

think globally act locally. Understand interdependence, think critically and participate

Health & Wellbeing – Planning for choices and changes: Through taking part in a variety of events and activities,

I am learning to recognise my own skills and abilities as well as those of others. HWB 1-19a

I can describe some of the kinds of work that people do and

I am finding out about the wider world of work. HWB 0-20a / HWB 1-20a

Opportunities to carry out different activities and roles in a variety of settings have enabled me to identify my achievements,

skills and areas for development. This will help me to prepare for the next stage in my life and learning. HWB 2-19a





Learning outcomes – Curriculum for Excellence

Cooperation and competition - While working and learning with others, I improve my range of skills, demonstrate tactics and achieve identified goals. HWB 2-23a

I can recognise progress and achievement by discussing my thoughts and feelings and giving and accepting feedback. HWB 1-24a

Science – Biodiversity - I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food. SCN 1-02a.

I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them. SCN 0-03a.

I can help to design experiments to find out what plants need in order to grow and develop. I can observe and record my findings and from what I have learned I can grow healthy plants in school. SCN 1-03a

Inheritance - By comparing generations of families of humans, plants and animals,

I can begin to understand how characteristics are inherited. SCN 1-14a

By investigating the lifecycles of plants and animals, I can recognise the different stages of their development. SCN 2-14a





## Pea Seed Bank Project

Are you ready to learn about seeds, plants and seed banks?

Would you like to be part of making your schools very own seed bank for Peas ?







## Seeds

A seed has all the information needed to make a plant and all the energy it needs to grow.

There are million types of seeds, can you tell us some of the seeds you know? Apple seeds, tomato seeds, sunflower seeds, pepper seeds, coffee beans, sweetcorn.



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Parsnip



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Onion



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Beetroot



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Tomato

### BUSINESS IN THE COMMUNITY

#### THE PRINCE'S RESPONSIBLE BUSINESS NETWORK

# Plants

What are the basic parts of the Pea plant? Picture shows;

- Tendrils these help the plant hook on to other structures so it can pull itself up.
- Leaflet this is where the plant makes food for itself with the help of the sun.
- Stipule this is also where food is made but acts as protection and a growing area for flowers and pods.
- Pod/Flower this is where the seeds are produces.
- Stem this is where nutrients from the soil and water travels up the plant.







# How seeds are made - Pollination

### **Cross pollination**

Bees go from plant to plant feeding off the **nectar** found inside the flower. While the bees are feeding they are also being covering in **pollen**. When pollen is transferred from flower to flower this causes **fertilization** and the flower produces seeds.

### **Self pollination**

This is when a flower doesn't need bees or any other pollinators to help it. It can simple fertilize itself and this usually occurs before the flower is even open. This is how peas are pollinated.





Some plants like these oats use the wind to carry their pollen from flower to flower



{Pea flower}

# Transport of seeds

Once the plant has made seeds the seeds need to move to where the next plant will grow.

• Wind

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Seed can be carried on a breeze like the dandelion.

• Water

Seeds can be carried by ocean currents to beaches but the outside layer of the seed has to be tough and strong so that seed and its store of food is not damaged by the ocean.

• Animal

Seeds can be carried on the outside of animals by the seed sticking to their fur and then dropping off later. Some even travel inside the animal by being eaten! They wrap themselves in tasty fruit like berry's that the animals eat and then deposit in another location later when they go to the toilet. That way the seed also has some fertiliser to grow in.

Pea's use a method sometimes called 'explosive' to move their seed around. The pods on the plant will dry out then when dry enough the pod bursts sending the seed flying out.













### Facts about varieties

Seeds are different, even if from the same family. These differences between plants are sometimes called plant varieties.

- Some varieties grow faster than others
- Some varieties survive hot weather whilst others struggle
- Some varieties are more likely to become ill than others
- Different varieties also taste different (some could be sweeter or stronger in taste)

Within the pea family there are different groups like mange tout (you eat the entire flat pod), sugar snap (you eat the whole swollen pod) and petit pois (only the juicy small seeds inside are eaten).



Mange tout varieties;

Oregon Sugar Pod

Delikata



Sugar snap varieties;

Sugar Ann



Petit pois varieties;

Oracle

Waverex





## Soil

Different plants like different soils.

Here are the main 3 different types of soils



Peas prefer nutrient rich soils like loam, but don't worry peas are pretty flexible and they tend to grow in any soil you give them. Lets check the type of soil you have in the school?

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#### What texture of soil do you have?

#### **Soil Texture Test Instructions**

Take a golf ball sized amount of soil. Knead this, whilst adding a small amount of water until the soil feels like putty/play dough.



## Soil texture test





## Germinate a pea ...

Shoot – this will become the plant

This is the remainder of the seed which is a food storage to get the plant started off.

Roots – this gives stability to the plant and transport for water and nutrients.







# Pea plant Wellbeing – can pea plants get ill?

Yep, any plant can get sick sometimes,

- Powdery Mildew is a fungus that travels through the air looking for plants to infect and some pea varieties can get this disease very easily.
- It looks like a white powdery dotting on the plants and eventually becomes a coating on various area's of the pea plant.
- The disease reduces functions in the leaves of the plant making it grow slower and damages the seed produced.

There's 2 ways to prevent powdery mildew;

- by choosing varieties that are tough and can resist this disease
- or spraying medicine on the crops (a fungicide)

Usually farmers need to do both .







## Seedbank – oh interesting word, what is seed bank?

- Exactly a bank full of seeds, a storage space, where you can store lots and lots of seeds.
- Normally they have small samples for each variety of seed, so they are super special.
- If you have a collection, like stamps, cars, you need to be organised, right? So seedbank needs to be organised too.
  They have labels on each sample, they have the date the sample was collected.
  They need to keep a constant low temperature.
- Ah, forgot to mention from time to time they test the seeds to make sure they germinate. Interesting word... What does germinate mean again?









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# Science and Advice for Scottish Agriculture (SASA)

• A part of the Scottish Government

• SASA provides scientific services and advice for Scottish agriculture

• SASA has a gene bank of over 19,000 samples of seeds.







SASA has **3500** varieties of Peas! The oldest variety is from the **1880's** Can you name a varieties of Pea you know?

•The Latin name for peas is Pisum sativum

•The world record for eating peas is held by Janet Harris of Sussex who, in 1984, ate 7175 peas one by one in 60 minutes using chopsticks!

•There are 35,000 hectares of peas grown in the UK each year, equivalent to about 70,000 football pitches

•A 100 calorie serving of peas contains more protein than a whole egg or tablespoon of peanut butter

•Peas are a good source of vitamin A, vitamin C, folate, thiamine (B1), iron and phosphorus.

•Just one serving of peas contains as much vitamin C as two large apples!





### BUSINESS IN THE COMMUNITY

#### THE PRINCE'S RESPONSIBLE BUSINESS NETWORK

## Seedbanks are important because...

- Conserving species that would otherwise go extinct in the wild e.g. the avocado.
- The avocado transported its seed by large animals like the giant ground sloth eating the avocado whole.
- This animal had the height to reach the avocados on an avocado tree and a suitable digestive system to eat the avocado and deposit the big seed in a different area.
- These animals are now extinct and there are no animals that can do this job nowadays. So it is up to humans to farm the avocado and conserve its seeds.







# So fancy being part of this mission and creating your own seedbank?

### Here are the instructions ....



### We need a team to do this:

- 1) Plant the peas
- 2) Monitor the peas in the garden
- 3) Take pictures
- 4) Write down anything unusual
- 5) Check the temperature
- 6) Water the pea plants



