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Understanding and teaching crop rotation

All the children at the new schools I have been working with during the past year are now becoming quite little gardening experts so I am starting to go into a little bit more depth. I think this is the time to do the same with your new or established projects. So here goes.

At the start of the session I go round the class getting the children to name as many fruits or vegetables they can grow at their school or project. I then hand seed packets out for them to pass around so they can put a picture to all the names.

I then give each member of the class or group a vegetable to be ie. cabbage, onion, pea etc and write them all on the board. They then shout 'calling all vegetables' and one person gets the game underway by saying their vegetable's name to someone else's e.g. 'cabbage to carrot.' The person who is a carrot then says 'carrot to...' But there is a catch to the game: - The children have to say their phrases whilst covering their teeth with their lips. Anyone who shows their teeth is out and you cross their vegetable name



off the board. The last vegetable left is the winner. This gives a real fun start to the session and teaches the children so many vegetable names.

I then have two other learning games that the children love to do.

www.steve-thorpe.co.uk gardening@steve-thorpe.co.uk Tel. 01535 647496 I have twelve seed packets from different vegetables that have totally different sized, shaped and coloured seeds. I put the packets onto the table and then give the children twelve plastic tubes with each vegatable's seeds in it. The children have to match the seeds with the vegetables. I then go over them teaching the children about different seeds in a fun way. The seeds include

Pumpkin, peas, beans, sweet corn, beetroot, carrots, cabbage, parsnips and onions.

The other game involves putting about 8 different vegetables into a pump bag. These might include an onion. carrot. leek. turnip. potato. cabbage, Brussels sprout and tomato. I pick a different child each time to put their hand into the bag without looking. They have to tell the rest of the group how big the vegetable is, if it's round or long, smooth or rough etc. As a group they then have to guess what the vegetable is. When it is revealed they pass the vegetable around the room, getting to know the feel and texture of different vegetables.

We then slowly work our way into crop rotation without going into too much depth that the children glaze over and go to sleep.

We talk about how vegetables are divided into families. Some might look like other members of their family, or some might not particularly



look the same, but might have a characteristic of the other.

It works just the same as our families. You might have an Auntie or Uncle with a nose or chin like yours, but otherwise they don't look the same. Potatoes, tomatoes and peppers are in the same family and you might think why? They don't look anything like one another, but when the plants flower you will notice they all have small flowers that are very similar to one another.

I usually split vegetables into seven families.

1) The potato family which includes potatoes, tomatoes, chilli, peppers, and aubergines. This family likes a good rich soil but not one that has had lime recently added to it. So try and avoid planting them straight after the cabbage family.

2) The peas and beans family which include all vegetables that form a pod. This is a good family to plant the year between two families that take a lot of nutrients out of the soil. This is because the pea and bean family put nitrogen back into the soil.

3) The cabbage family which includes cabbage, broccoli, cauliflower, Brussels sprout, turnip, swede and rocket. These are the brasicas and are a really greedy family that takes lots of nutrients out of the soil. They like a soil with a high pH so lime is sometimes needed to make the soil alkaline.

4) The carrot family which includes carrots, celery, parsnips and parsley. This family like a soil with a good depth that they can easily grow down into, so raised beds are ideal. Growing this family in a very rich soil encourages lots of leaf growth, but not much length underground. This family can be planted the year after a greedy family like the cabbage family.

5) The marrow family which includes marrows, pumpkins, cucumbers, squash, courgettes and melons. This family likes very rich soil with plenty of compost or well rotted manure added. We grew our seven stone pumpkin in our compost heap, which can be an ideal area for this family.

6) The onion family which includes onions, leeks, garlic and shallots. This family also likes a good rich soil with plenty of goodness added. They like a soil with a high pH.

7) Finally we have the beet family which includes beetroot, swiss chard, spinach and leaf beet. This family is not really too fussy as long as it is given plenty of moisture.

We then usually plant things like lettuce in any of the beds in between the rows of vegetables. Now you have got your plant families the idea is to not grow the same vegetable family in the same soil year after year. This is called a crop rotation system. Our growing area is divided up into seven areas or seven raised beds and the crops move on one place every year, but don't forget to keep a record!

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Bed 1	Potato	Beet	Onion	Marrow	Carrot	Cabbage	Peas and Beans
Bed 2	Peas and Beans	Potato	Beet	Onion	Marrow	Carrot	Cabbage
Bed 3	Cabbage	Peas and Beans	Potato	Beet	Onion	Marrow	Carrot
Bed 4	Carrot	Cabbage	Peas and Beans	Potato	Beet	Onion	Marrow
Bed 5	Marrow	Carrot	Cabbage	Peas and Beans	Potato	Beet	Onion
Bed 6	Onion	Marrow	Carrot	Cabbage	Peas and Beans	Potato	Beet
Bed 7	Beet	Onion	Marrow	Carrot	Cabbage	Peas and Beans	Potato

A really good way to explain a crop rotation system to a group of children is to get seven seed trays or boxes which represent your seven growing areas or raised beds. Put a card in each one numbered 1 to 7 and pass the boxes with the cards inside around the group in numerical order. Then put your seven vegetable families in the boxes for the first year i.e. potato in bed 1, peas and beans in bed 2, cabbage in bed 3 etc, etc. Then explain to the children that the beds stay where they are; it is the crops inside them that move on the following year. So for the second year of the growing system get the children to pass their vegetable family onto the next box, explaining that this is how a crop rotation system works. Carry this on until year 7 and then the process starts all over again.

The two main reasons for having a crop rotation system are:-

- 1) The continuous planting of the same crop year after year in the same soil or bed can encourage a build up of certain pests or diseases. Pests will then make their home in a certain area knowing that one particular crop will always be there, or insects will always know where to go. The idea is to try and trick them by rotating the crop. If members of the cabbage family are planted in the same soil year after year 'Club Root' can develop and you will know about that when you get it. Potatoes can get a disease called 'Blight' when planted in the same soil year after year.
- 2) Different vegetables take different nutrients from the soil so by planting different vegetable families we create a balance in the soil. If we planted a greedy family like the cabbage family year after year we would be left with a soil with no nutrients or goodness left in it. For this reason it is a good idea to plant a nitrogen giving family like the peas and beans family the year before the cabbage family.