Green Schools Network

ACTIVITY SHEET

October 2011

Why talk about hybrid crops?

When you visit a vegetable or a fruit shop in the neighbourhood market and ask for a Kg of tomatoes. The shop keeper asks you whether you want local ('Desi') tomatoes or the foreign ('Vilayati') ones. Most other vegetables and fruits you see in the store also have the same differentiation. The foreign ('Vilayati') ones are also of two types, few are hybrids while a few are genetically modified. Most farmers these days grow hybrids and genetically modified crops since they give a higher yield which means more profit. The 'Desi' varieties are disappearing from the farms and the market weakening the gene pool of the crops. People often confuse Hybrid crops with Genetically modified crops. Have you ever wondered what is the difference between the two types?

Name.....

School Name .....

Class..... **Date** .....

Gobar Gyan

Hybrid crops are crops that are produced by cross-pollinating two inbred plants. Most all plants have both male and female parts and therefore fertilize themselves. A hybrid however is produced by taking the pollen from one plant and pollinating a different plant. The seeds from this cross-pollinated plant are hybrid seeds and thus produce a 'hybrid' crop. Hybrid crops are developed because they produce more grain, fruit, or flowers than they would if they were left as an inbred. Not all crops however experience this genetic phenomen. Corn for instance is grown from hybrid seed while soybeans and other legumes are not.

It is important to remember that hybrid plants ARE NOT genetically modified. Genetic engineering is a completely different process where DNA molecules are created and inserted into a plant to acquire a desired trait. While hybrid crops CAN be genetically modified, hybrids and GMO's are two COMPLETELY different things but are commonly confused as being one-in-the-same. Plant breeding to create hybrids has been around for over 150 years while genetically modified crops have only been around for close to 20 years.

Varieties of Hybrid

Celebrity

Celebrity, one of the most popular hybrid tomatoes, are uniform, rounded fruits, each weighing up to 170 gms. The taste is classic and they are perfect for sandwiches and salads. The Celebrity plant is resistant to many common tomato pests, making it a favourite for those who like a hardy tomato. Prolific fruiting. Indeterminate. 70-75 days.

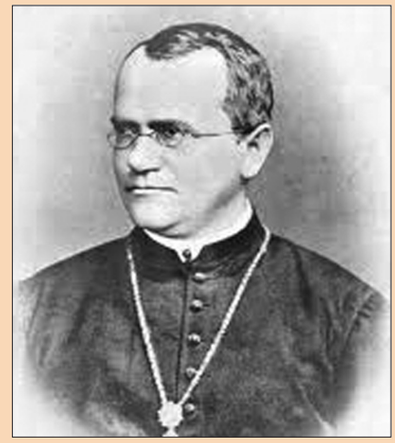
Glacier

An excellent early-type tomato variety, the hybrid produces 1 1/2-2" fruits in as early as 55 days. Fruits have a nice tangy-tomato flavour and are excellent for slicing and salads. Plants produce in cooler climates as well as hot areas, and unlike many early-season tomatoes, glacier plants can produce for the whole season.

Hi! I am Pandit Gobar Ganesh. You will find me in Gobar Times—a magazine that tells you how your everyday life is linked to the world around you. Hooked, huh? If you want to know more about me and GobarTimes visit us at:

www.gobartimes.org

Gregor Johann Mendel was born on July 22, 1822 to peasant parents in a small agrarian town in Czechoslovakia. During his childhood he worked as a gardener, and as a young man attended the Olmutz Philosophical Institute. In 1843 he entered an Augustinian monastery in Brunn, Czechoslovakia. Soon afterward, his natural interest in science and specifically hereditary science led him to start experiments with the pea plant. Mendel's attraction for scientific research was based on his love of nature in general. He was not only interested in plants, but also in meteorology and theories of evolution. However, it is his work with the pea plant that changed the world of science forever.



His beautifully designed experiments with pea plants were the first to focus on the numerical relationships among traits appearing in the progeny of hybrids. His interpretation for this phenomenon was that material and unchanging hereditary elements undergo segregation and independent assortment. These elements are then passed on unchanged (except in arrangement) to offspring thus yielding a very large, but finite number of possible variations.

Activity 1

Interview the person who buys vegetables and fruits in your house to find out what type of vegetables and fruits are preferred in your house. Find out what he/she knows about hybrids.

Here are the questions:

1. What do you look for when buying fruits and vegetables? Prioritise the following by giving numbers 1, 2 and 3.

   ☐ The look of the vegetables (colour and cleanliness)

   ☐ The arrangement (stacks in attractive trays or baskets)

   ☐ Price of the vegetables (price as per looks and arrangement)

2. Do you know what a hybrid is? Name a few vegetable or fruit hybrids that you buy.

_____

_____

1. _____ 2. _____ 3. _____

4. _____ 5. _____ 6. _____

3. Do you know the difference between a hybrid and a genetically modified vegetable or fruit?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Activity 2

Visit the nearest vegetables and fruits shop and interview the vendor. In addition to ask what you are curious to know, you must also ask the following questions:

1. What criteria do people have in mind while buying fruits and vegetables from your shop? Prioritise the following by giving numbers 1, 2 and 3.

   ☐ The look of the vegetables (colour and cleanliness)

   ☐ The arrangement (stacks in attractive trays or baskets)

   ☐ Price of the vegetables (price as per looks and arrangement)

2. Do you know what a hybrid is? Name a few vegetable or fruit hybrids that are available in your shop.

_____

1. _____ 2. _____ 3. _____

3. Do you know the difference between a hybrid and a genetically modified vegetable or fruit? Identify a few genetically modified vegetables and fruits available in your shop.

1. _____

2. _____

4. Do buyers prefer hybrids and genetically modified fruits and vegetables?

   ☐ Yes ☐ No

Ever seen a mango tree laden with the golden Alphonso on one branch, the reddish Sindura on another and the green Langra on the third?

If you think this is impossible, then P. Allimuttu, a 60-year-old farmer from the Nammakal district of Tamil Nadu, begs to differ. He has grafted 28 varieties of mangoes on a single tree!

Allimuttu is no botanist by profession – in fact he is educated only up to the sixth grade. However, his love for agriculture and experimentation has resulted in a hybrid mango tree that blooms different varieties of mangoes throughout the year. Some of the varieties on his mango tree are Alphonso, Selam, Mangloora, Imam Pasand, Banganapalli, Malgoa, Bangalora, Neelum, Sindhura, Sujata, Nadichella, Sind, Ratna, Mallika and Neelisa.

Grafting is used extensively in agriculture wherein tissues of two plants are fused together for varied purposes such as creation of hybrid varieties. "Grafting is done on trees that are generally low-yielding or do not produce good quality fruits," says Sriram, Allimuthu's son.

Mango King and Padma Shri Haji Kalimullah Khan, who is well known for his knowledge about Dusseri Mangoes, showed the other side of him. He is not only in love with mangoes but is also a ardent cricket fan. What can be more pleasurable if you can combine all your passions and give birth to a new craze?

Yes, Haji Kalimullah has created a new hybrid mango and named it after the master blaster – Sachin Tendulkar. The hybrid version of the creamy, sweet-tasting fruit was made by combining two of the finest Indian varieties of mango – Gudada Shah and Chausa Mangoes. The Gudad Shah variety of mango was also developed by the mango king.

"There is no player like Sachin Tendulkar in the whole world and that's why I have named this mango after him," said Kalimullah Khan who hails from Mahilabad, Lucknow District.

If you found the activity sheet interesting, E-mail us at eeu@cseindia.org or write to:
Activity Sheet, Centre for Science and Environment
41 Tughlakabad Institutional Area
New Delhi-110062 or Call 29955124 Extension 219