

Question: पेड़ों में फल क्यों लगते हैं?

Answer:

Yes, come to think of it, while biting into a juicy, sweet-&-sour piece of orange during these cold months and carefully spitting out the seeds, how many times do we reflect upon the seemingly simple and obvious question: Why should there be oranges in an orange tree if it is not the tree who eats them?

The answer is already with us though.

Can you spot it? No? Then just look around you once more.....

Yes, it lies hidden in those little seeds we had just casually spat out on to the ground.

Can't make any sense of this, is it?

OK, then let's begin with another straightforward question.

Do all plants produce fruits?

No, not really.

You see, in the history of plant evolution, seed-producing plants came much earlier than fruit-producing plants – the former variety came onto the scene around 375 to 360 million years ago, while the latter variety evolved 245 to 202 million years ago. So before seeds began to get packaged inside the fleshy interiors of fruits, there just used to be naked seeds hanging from tree branches. In fact, such trees are still with us and are doing good too. Need proof? Next time you visit the mountains, take a good look at all those deodar trees around you. They belong to a group of seed-producing plants called the gymnosperms, a composite word in Greek which basically means “naked seeds”. They don't grow actual fruits, because the cones which you may find lying beneath such trees don't keep their seeds completely enclosed, like does an orange plant, or a mango plant, or an apple plant.

The flowering plants are the only group of plants that grow parts which can be labelled as fruits, that is, structures which develop from the ovaries of flowers and protect inside them the seeds of the plants. The composite Greek word used to name this group is angiosperms, which basically means “encased seeds”. In today's Earth they are the most diverse group of land plants, with more than 295,000 species known till date.

I can already see you getting ready to throw the next query: What led to seed-bearing plants coming up with fruits to cover the seeds? As you realise, answering this will automatically answer our original query: पेड़ों में फल क्यों लगते हैं??

Why are fruits important?

We should start by appreciating one point with the greatest clarity: Plants produce fruits to serve *their own* particular needs.

As we all know, new plants grow from seeds. In order to do this, two conditions have to be met: 1. Seeds need to have a source of nutrition which will guarantee that they continue to live on, till the point of time when they develop enough to be able to fend for themselves, that is, start the process of photosynthesis; 2. Seeds need to be spread out far and wide from their point of origin, so that they don't have to compete with each other and with other existing plants for water, nutrients and sunlight, as well as to safeguard their survival even if something goes wrong in the place of origin.

By spitting out or throwing out or excreting the seeds after eating a fruit, often long after eating a fruit, animals such as primates, bats, four-leggeds, birds, ants as well as humans take care of the second task quite well.

While there is some speculation that fruits first evolved to protect seeds, we do know that very soon after fruits evolved, animals evolved to eat those fruits (for the rich nutrients and high energy they hold) and disperse the seeds within. So, plants produce fruits for animals to eat so that by doing so the animals take their seeds away from the parent plants, giving them an opportunity to grow elsewhere.

Fruits are expensive

Making fruits is an expensive act. One should keep in mind that it is risky business for a plant to allocate so much resource and energy to grow such densely nutrient-packed structures, unless there is a good chance of it being successful. It can minimise the risk by limiting reward (making fruit taste good and be nutritious) to only the right spatiotemporal moment when the seeds are ready for dispersal, because if the fruit is eaten before the seeds are "ready" (developed enough to be deposited elsewhere) then there will be no benefit of producing it in the first place.

We can probably consider this as a reason why unripe fruits whose seeds are not fully developed, don't seem to be eaten by animals. We ourselves find that they don't taste so nice. However, the fact that fruit-producing plants are doing the best among all other plants found on land in the modern-day Earth means that this strategy for the dispersal of seeds has been relatively quite successful from the point of view of evolution, as well as become a good source of much-needed nutrients for animals, who are now important players in the process.

If not frutis, then what?

You see, there are many ways available for a plant to spread its seed without giving it the luxury of a food-filled home: dispersal using wind-flow (example: in dandelion), dispersal using water-flow (example: in water lily), dispersal using the outer skin of animals in case of seeds possessing adhesive mucus and a variety of hooks, spines and burbs (example: in Old World clover) are some of the other most common methods utilised for seed dispersal. So, producing an edible fruit is not necessarily the only way to send seeds away, but an effective way as animals have turned out to be good at transporting seeds.

Thankfully for us langada and dussehri loving people, fruits evolved and in great diversity!

- **Answer by Rudrashis Chakravorty**