

**CONSIDER THE LILIES OF THE FIELD....  
NOT SOLOMON, IN ALL HIS GLORY, WAS ARRAYED AS ONE OF THESE**

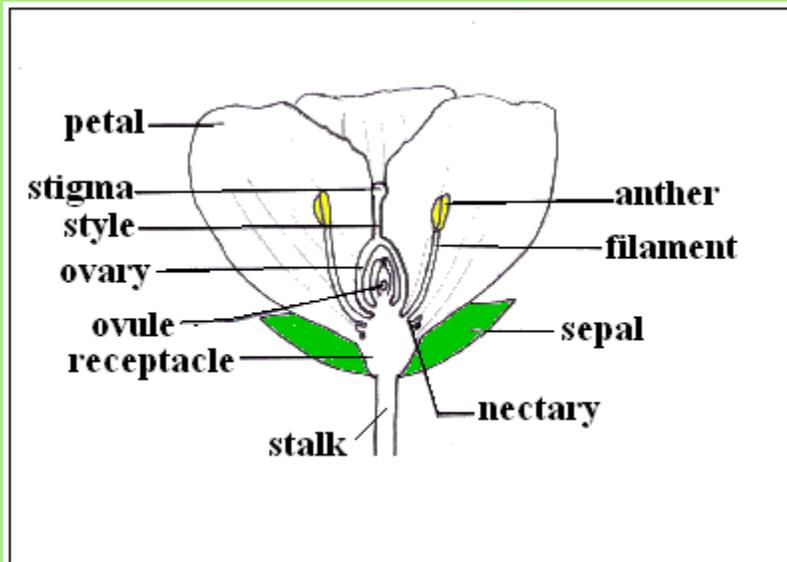
## Flowers and pollinators

Colour, scent, nectar, warmth, they all play a role in bringing pollinators to flowers, says S.Ananthanarayanan.

August is the month that brings tourists in to the 'Valley of flowers' a breathtaking sanctuary for flora in Arunachal Pradesh. The route is to reach Rishikesh, take a bus to Joshimath and then to trek to Ghangria, which is just at the sanctuary. And once there, Hemkund, Auli and the hot springs at Badrinath are within a day's reach.

### The flowering business

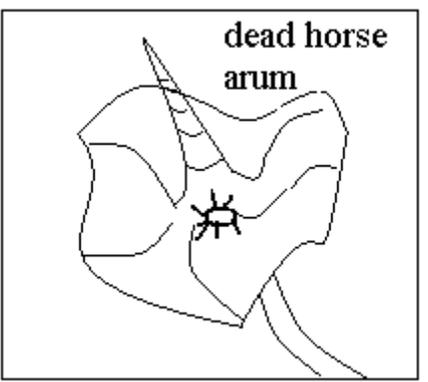
Unlike insects and mammals, which can move and seek mates, plants need to use external agencies to make reproduction possible. And the plant that can do this with the most genetic variety and efficiency is the best survivor.



Reproduction in plants takes place when the pollen, the male part, of one plant comes into contact with the stigma, which leads to the ovary, of another plant. Evolution, then, has created the array of flower varieties, to attract insects to visit the plant with pollen from other plants and then to carry pollen away to yet others.

And so, the palette of infinite colours, the myriad perfumes and the nectar, as reward for the insect for having responded to the colour and smell. In fact, it is the nectar for which the insect comes – the colour and perfume are to signal and advertise!

In fact, there is a class of plants that actually generate their own heat, so that strong odours, of rotting flesh, emanate. This attracts insects that carry pollen from a previous attraction to the same smell. The Dead Horse Arum, of Corsica, is perhaps the best known. This plant generates



more heat than any other and exudes a strong odor of dead horses' meat. Blowflies are attracted to the Arum and they bring the pollen for the female parts of the flower, deep within, which are the first to mature. Spines and tendrils at the entrance trap and hold the fly for many hours, till the male parts of the flower also mature.

The trap is then released and the flies go forth, carrying pollen from the male parts

### Other economies

Such straight deception apart, most flowers are heat collectors and insects come to flowers not just for nectar but also for a warm place where it is easier to maintain body temperature. Here, a recent study has shown, the colour of the flower signals the flower that provides not just the most nutrition but also greater warmth. Lars Chittka and colleagues at the University of London have shown that bumblebees prefer to visit warmer flowers and that they use colour to predict floral temperature before landing.

The experiment was first to see if the bumblebees in fact preferred warmer nectar. A nest of the insects was placed in an arena with different samples of sucrose, some warmer than others. It was found that the insects consistently went more often for the warmer nutrient, the preference being marked when the temperature difference was 4 C or more.

Next, to see if the bees used colour as an identifier of warmer nectar, sucrose was placed in artificial flowers of different colours – four pink flowers at 20 C and four purple flowers at 28 C. There was a marked higher frequency of feeding from the purple flowers. In a control group, where the flowers were all at the same temperature, there was no preference, which shows that it was not the colour that the bees preferred, it was the higher temperature that the colours indicated.

Some plants, then, provide warmth as a major attraction and can hold pollinators for long periods, even without nutritional reward. But others may have evolved to reproduce more efficiently by offering a quick and tasty snack but no heat, so that the pollinator speeds on its way!

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