

# Plants Evolve Scents and Colors to Attract Animals for Seed Dispersal

BY JESSLYN SHIELDS OCT 18, 2018



In Madagascar, ready-to-eat fruits, such as figs, have evolved to be extremely fragrant and mostly yellow, a color more visible to lemurs, which are red-green colorblind. WIKIMEDIA COMMONS CC BY-SA 3.0

Imagine having to get a specific person's attention in a crowded room without being able to move a muscle or make any noise at all. That sounds impossible, doesn't it? Well, this is the predicament plants have found themselves in since time immemorial: How does one get the attention of a fast-moving animal when one is silent, motionless and also a bush?

Plants have solved the problem, though, because necessity is the mother of invention, and also because they've had around 100 million years to work on it. Many angiosperms — flowering plants, that is — require the help of animals to spread their seeds around since, as we've discussed, they're incapable of doing so themselves. It's one thing for a mango tree to drop its fruit and grow another little tree right underneath the parent, but it's quite another for a monkey to take a piece of fruit a half mile away and drop the seed in a previously mango-free zone. This is where the rubber meets the road when it comes to angiosperm dissemination, and angiosperm evolution has depended on individual species concocting new ways to manipulate the animals it's most likely to come in contact with.

Two recent studies published by the same research team at the Institute of Evolutionary Ecology and Conservation Genomics at University of Ulm in Germany examine the mechanisms by which plants learned to flag down the right animals. It turns out that though sound and movement are good strategies for getting somebody's attention, animal heads are also turned by smell and color. And, according to this research, plants have worked those angles pretty hard.

The first [study](#), published Sept. 26, 2018, in the journal *Biology Letters*, investigates how the color of certain fruits can attract specific seed dispersers. The research team compared experiments with fruit-eating primates in wildlife preserves in both Uganda and on the island of Madagascar. The study found the fruit-bearing plants had evolved to cater to the visual capabilities of the main seed-dispersing animals in each place. Though the landscapes in the two parks are very similar, Ugandan seed-dispersers (monkeys, apes and birds) have tri-color vision like humans, whereas lemurs in Madagascar are red-green colorblind. The ripe berries on fruiting plants reflected this: In Uganda, ripe fruit on dark green foliage showed up better to the animals native to that area, whereas in Madagascar, the ready-to-eat fruits were mostly yellow, a color more visible to lemurs.

Similarly, according to the other [study](#) published Oct. 3, 2018, in the journal *Science Advances*, the fruit in Madagascar is also more fragrant — those plants didn't want to leave their seed dispersal entirely up to the visual acuity of a bunch of lemurs. Ripe figs on the island are very smelly, which makes sense, given that color-blind lemurs would have been able to find the smelliest fruits in the forest more easily than they could find the most brightly colored. The figs that produced the most odiferous cocktail of chemical compounds as they ripened were eaten — and their seeds dispersed — more often on Madagascar, suggesting that plants, contrary to popular belief, are no dummies.

NOW THAT'S INTERESTING

The fruit of the *Balanites wilsoniana* tree in Uganda has such a powerful smell (like sweaty gym socks) that it can carry for miles on the wind, calling in elephants — the only animal that can swallow the large seeds whole and disperse them.