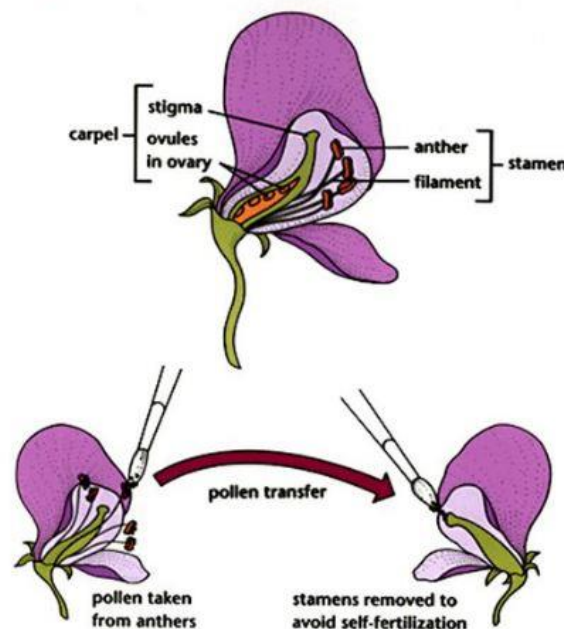


New varieties and cross-pollination

Well, not actually, but answering a request from a few customers.

We see 'new' varieties of fruit every year, much more-so than vegetables. 20 years ago apples there were Gala, Fuji, Granny, Spartan etc. 10 years ago you saw new varieties added like Ambrosia, Honeycrisp and Pink Lady. And today, add Envy, Jazz, Opal, Pacific Rose and a few more. Same story with grapes, like our introductions of Cotton Candy and Black Perlette. So where do these new varieties come from?

Cross-pollination



Plant Breeders. And how do they do it? By simply mimicking what bees do to pollinate crops to produce hybrids, which are new varieties. You are a hybrid – it is highly unlikely that there is anyone like you in the world and you were hybridized from DNA supplied by your parents. Bees are responsible for most pollination and as they flit from plant to plant, they pollinate them, thus allowing the plant to produce a blueberry or tomato etc.

What plant breeders do is mechanically cross-pollinate two varieties of grapes within the same species (which really in most instances involves holding a little paint brush and dusting pollen from one plant and putting it on the other,) and then waiting to see what happens.

If you look up any of the hybrids I mentioned above in Wikipedia, you can find out their genetic history. For instance,

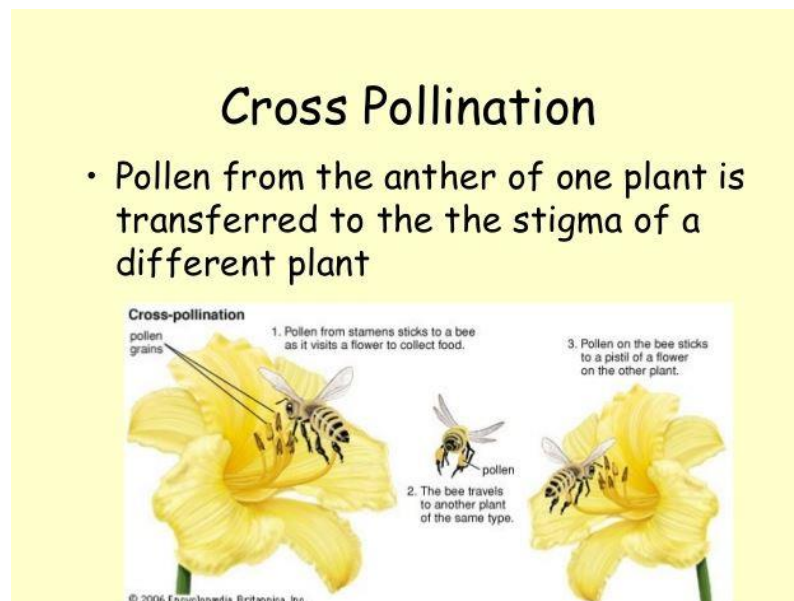
Pink Lady. 'Cripps Pink' was originally bred by [John Cripps](#) at the (then named) Western Australia [Department of Agriculture](#) by crossing the Australian apple '[Lady Williams](#)' with a '[Golden Delicious](#)' to



combine the firm long-storing property of 'Lady Williams' with the sweetness and lack of [storage scald](#) of 'Golden Delicious'!

Easy peasy? Not so. A plant breeder doesn't know what they are getting for a few years, when the apples they have cross-pollinated, (which is exactly what happens in an orchard) grow into small trees and produce their first fruit. When the pollination occurs, the Pink Lady described above will produce a Pink Lady apple – but its seeds won't. Same occurs for squash – you can plant many varieties, which the bees pollinate, which will grow out exactly what you planted, but the seeds will produce a combination of the traits of any number of varieties that were on the bees 'fur' when it flies through a field with multiple varieties being grown. I can't imagine being a plant breeder – having to wait 4 years to see what happens would require super-human patience.

So what about the seeds? Seed production requires that there be no cross-pollination. A farmer buys Delicata seeds and expects Delicata squash. Seed producers can only grow one variety within a genus, and grow it where they are isolated – at least a couple of km. away from anyone else growing squash, and that buffer zone is farther than a bee will travel – and bees will fly nearly that distance and back to the hive as they seek out pollen sources.



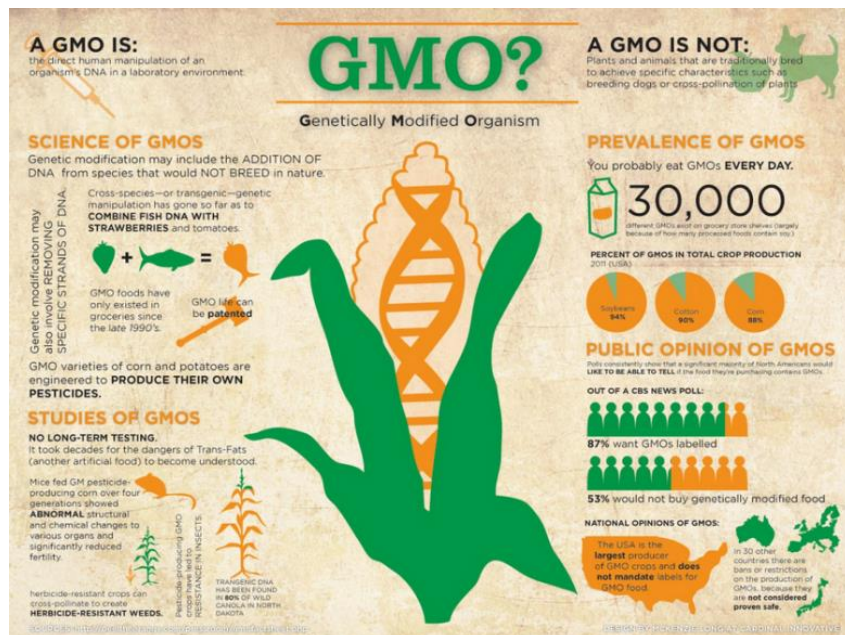
We have such incredible diversity in, say, our range of apples, because bees are constantly cross-pollinating in every orchard, but we are eating those apples, not planting their seeds. But sometimes an apple can get tossed somewhere and up comes a new variety that can be something great. The Ambrosia was what we call a 'chance' variety that grew up in Mennel's orchard in Cawston, just out of the reach of the grass mower, and its first apple tasted amazing, and that single tree became history as its branches were rooted and the amount of root stock multiplied every year so it could be grown out in every increasing numbers until there are orchards around the world licensed to grow them. The same for the Granny Smith – it was in the compost that the elderly Ms. Smith from Australia tossed out with her compost, it rolled into a ravine, and grew up to be an amazing 'chance' apple as well. And why are they 'licensed'? Well, for a plant breeder who hits it lucky, or an orchardist finding a 'chance' apple – they can



claim the fame to it, and if they want, they can control who gets to grow it. That's fair – it's just the same as copywriting or trademarking.



How is this different from GMO? Genetically engineered plants and seeds would be impossible in Mother Nature's world, because they are hybrids of two different genera, manufactured by inserting genes from a pig into a tomato, for example to get better shelf life. (Who figured that out?) Or bred with the active chemical from a herbicide like Roundup, actually inserting it into the seed of corn or soy, making the plant resistant to Roundup, so the farmer can spray Roundup all over their field, which will kill all the weeds, but won't kill the corn. One step further is so-called terminator seeds, which are bred so they are sterile and can't reproduce, so farmers can't save their own seeds.





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