

But Why: A Podcast for Curious Kids

Why do flowers bloom?

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Jane 00:21

This is But Why: a Podcast for Curious Kids from Vermont Public Radio. I'm Jane Lindholm. On this show, we take questions from curious kids just like you, and we find interesting people to answer them. We've answered so many questions from all of you over the years. In fact, some of the questions you send us now are actually in some of our older episodes, but some of those older episodes may be older than you. So today, we're going to pair some of your new questions with some of our older answers. Win-Win! In our part of the world, spring is in the air and the leaves are coming back on the trees and the flowers are starting to bloom. We've received a lot of questions about flowers and seeds recently.

Helen 01:03

Hi, my name is Helen. I am seven years old. I live in San Francisco, California. And my question is, how are seeds made?

Lila 01:16

My name is Lila? I live in Illinois.

Parent 01:21

How old are you?

Lila 01:22

Four years old. And I want to know, how are how are flowers and seeds made?

Maddox 01:31

Hi, my name is Maddox. I am seven years old. And I live in Western Massachusetts. And I want to know how are seeds made.

Jane 01:43

A few years ago, we put this question to Charlie Nardozzi. He's a gardening expert and garden writer who lives here in Vermont.

Charlie 01:50

Seeds are made through a process that we call pollination. So pollination, there's a little bit of that word called pollen. And that's that yellow stuff. If you ever look in a flower, or if you ever look at bees flying around, you might see they have this little yellow stuff attached to them. Or if you put your finger or your nose, sometimes in a flower, you have little yellow on it. That's pollen. And what that pollen does is that that pollen will actually pollinate, that's where that word comes from pollination, the flower meaning that

the pollen goes in, and it finds the comparable part in the structure of the flower. So the pollen is male, and the comparable part would be the female part of that flower through that process that actually makes the flower pollinated. So then you get a seed seed as a result of that cross between the male and the female parts of the flower.

Jane 02:38

So in other words, you can't have a flower turn into a new flower or make another flower unless it has another flower to do the job with it's the way babies are made. Exactly you need two. But what blows my mind Charlie's what you're saying is pollen is male, that's kind of hard to wrap my head around because when I think of you know, a male and a female, I don't necessarily think of some yellow dust as a male. So what does that mean?

Charlie 03:05

In the world of plants, that's kind of how it is. So that dust has all the material that needs to actually fertilize that fertilize the egg. If you want to look at it more in terms of human terms or mammals terms. You're fertilizing an egg that that is in that flower. And that yellow dust is what does it it sounds magical, doesn't it? Yeah, and the other thing about it is there's different kinds of flowers. So you have what we call perfect flowers, meaning that the the pollen and the egg that's in that flower, all it needs is to have that pollen just gently dropped down onto the egg and it's fertilized. So tomatoes for example, you don't need bees, you don't need anybody else to come in. You need the wind to jostle it or even your hand is to move it a little bit and the the pollen drops down like raindrops, and it is fertilizes that egg. The other one of course is what you were alluding to being that the pollen comes from a different flower. So some plants will have only plants that don't have a pollen on their flower or they have the wrong kind of pollen. So they need to pollen from one flower to the next that will come. And that's where the bees and the butterflies and the hummingbirds and all these other creatures will pollinate the plants. And the result of all that that creates the diversity the differences because you're getting a pollen from one plant into a pollen of another plant. So the offspring or the babies will look a little bit different a little like the dad a little like the mom.

Jane 04:21

So that's how the seed is made. A flower gets the pollen inside of it. And that kind of creates a new plant, but how?

Charlie 04:30

So the pollen goes into the egg and into the ovule. That's another technical term, but that's the egg that's in in there, and it pollinates it and creates the little embryo the little baby you might say and that would be what's inside that seed.

Jane 04:44

And then that seed has to basically drop off the plant somehow and get into the ground, right?

Charlie 04:49

So once the flower fades those petals drop off you often will see a little structure that's left there. That could be a seed pod, and it may be the seed itself or maybe like I say a pod meaning that it's covered by something and inside is the seed. The covering is there really just to protect it.

Jane 05:04

Okay, so we know how seeds are made, but how do they grow?

Wylde 05:09

My name is Wylde. I'm five, and I want to know how seeds grow. And I live in Little Rock, Arkansas.

Soleil 05:24

Hi, my name is Soleil. I am from Louisiana, New Orleans. I am six years old. My question is, why do seeds grow better in warm places?

Jane 05:39

We learned about seeds in an episode just a couple of years back called Are Seeds Alive? We talked Hannes Dempewolf of the Crop Trust, that's an organization in Germany that runs the Svalbard Global Seed Vault. Hannes said seeds contain most of what they need to grow, but they do need a little help from the environment too.

Hannes 05:58

The nutrients that are packed very densely in a seed are actually all you need and a little bit of warmth and a little, a little bit of light. But to actually for them to grow into a real plant or sometimes a tree you know sequoia trees come from from seeds, tiny little seeds, you need a lot more a lot more at different kinds of resources that are in the soil. And also, you know, a lot more water and a lot more light, a lot more energy and that is given to seeds for light. And so you know, the more a plant grows, the more of those other types of things, other resources that needs to grow. Seeds are very, very different different species have very different kinds of seeds and different type of seeds also need very different conditions to grow. Some grow very, very little humidity with very little wetness, and some need a lot some need to be submerged in you know underwater for a while until they can grow. Some need to be frozen first before they can grow. Seeds are amazing, amazingly complex.

Jane 07:01

And if you're wondering seeds really are alive!

Hannes 07:05

Yes, seeds are very much alive. At least the seeds that we use to grow food. Seeds do die. So if they're not properly cared for, or they're stored in too humid environments, or too cold or too hot conditions, they can die and then we can no longer use them. They can no longer grow into plants. But but they are very much alive. They're just in what scientists call a dormant state. It means that they're not... They're sleeping. Basically, it's like animals you know, sometimes so animals sleep in winter, and they're dormant then. Seeds are also dormant and they need to be activated to grow. But they're still alive even while they're dormant.

Foster 07:47

My name is Foster. I'm three years old. I live right here in Colorado. My question is, why do plants grow to trees?

Jane 08:02

Seeds are the way that plants reproduce. Seeds are the embryos of the plant. You may have heard that word embryo. It means the early stage of development of an organism. Once that seed starts germinating, that means it starts growing into a plant. If that seed is from a tree, it will grow into a tree. How long it takes to grow into a tree depends on what kind of plant or tree it is. Some trees grow really fast and some trees grow really slow. Some are very tall and some are you know more like shrubs. Coming up. We'll learn more about flowers.

Jane 08:39

This is But Why: a Podcast for Curious Kids. I'm Jane Lindholm. Today we're talking about seeds and flowers. So far, we've learned how seeds grow. But there's another amazing aspect to plants: flowers.

Galiya 08:52

My name is Gailya and I'm seven years old. And I'm from Scotland. My question is, why do people find flowers so beautiful?

Jane 09:03

Ooh, that's a really tough question. Maybe it's because flowers are so showy and beautiful. Now they're not putting on that show for us though, even though we like it. It's actually for their pollinators. But maybe humans like them anyway, because we kind of like the same things pollinators do. Scientists have studied this and they really haven't come to a good conclusion. But in practice, humans spend a lot of time and money on flowers. We buy flowers for others. We might plant flowers in our gardens or grow flowering plants inside our homes. Now, not everybody does this, but enough people do it that there must be something that draws humans as a species to these flowers. Maybe we just like the connection to nature? I don't know. Why do you like flowers? Flowers are hard not to notice, especially here in springtime. Anytime you walk through the woods right now you're drawn to the colorful reds, yellows, pinks and purple flowers of the spring ephemerals. Ephemeral is one of my favorite words. And it basically means only here for a little while and then it goes away. Or maybe when you walk through your city you see beautiful tulips and pansies that someone has planted to make your area look nice. So many of you are curious about flowers.

Elise May 10:17

Hello, my name is Elsie May, and I am nine years old, and I live in New York, England, United Kingdom. My question is how and why are flowers different colors and how and why do they smell different?

Dima 10:29

My name is Dima and I'm 10 years old. I live in Wales. And my question is, why your flowers different colors?

Zani 10:40

Hello I'm Zani. And my question why flowers can be different colors, and I live in New Zealand and my age is five.

Eva 10:53

Hi, my name is Eva. I'm five years old. I live in Washington. And my question is, how do flowers get their color?

Bianka 11:01

My name is Bianka. I'm five years old. And I live in Prague. I'm from Australia. My question is why are flowers different color?

Nora 11:12

Hi, my name is Nora. I live in Cincinnati. I am six years old. And I would like to know why flowers are different colors?

Jane 11:24

Here's gardening guru Charlie Nardozi again.

Charlie 11:27

Flowers have many, many different colors. And the reason for all the different colors really is flowers are an attractant. They're trying to put on a show. It's like a beauty show. It's like come see me, come see me. And so they're trying to attract the bees, the butterflies, the hummingbirds, all those insects and creatures that will pollinate them. And we talked about pollination and creating the seed, they want to attract them in there so that they can have more seed and have more of their own kind of plants. It really their whole purpose in life is to make seed so they can keep going keep the the lineage or the their life or their family going.

Jane 11:59

So that purple flower is saying, hey, butterfly, yeah, look at me!

Charlie 12:03

I'm beautiful! Come over, come over, and they come in and they pollinate and you get the seeds, and the seeds disperse. And the plant is very happy, because it's like an old grandma saying, Oh, look at all my grandchildren and great grandchildren. I've done so well. So that's really why there's there's color in flowers is to bring them why why there's different kinds of colors really is just all about that diversity that we talked about at the beginning, why plants are so different. And because certain insects, certain hummingbirds, certain butterflies will be attracted to certain color flowers or certain kinds of flowers or certain shaped flowers. So in order to make their attractiveness, the most attractive for the biggest group, they try to come up with a shape and a color that's going to bring people to that we're bringing these creatures to them.

Jane 12:50

Do you know why? What makes a plant purple? And what makes another flower red? What are the different ways that colors are created within the plant?

Charlie 13:00

Well, within the plant, there are chemicals called pigments. And so based on what kind of pigments you have, those are the colors that will actually kind of exhibit. So the interesting thing about pigments kind of goes into the other question why trees and plants are green is that we know we have this visible light spectrum, the spectrum of light that we see is only a small spectrum of what's actually out there. And within that spectrum is all the colors of the rainbow. And so certain plants will absorb certain colors. And the way it works is that if it absorbs that color, we don't really see it anymore. So if it absorbs blue, or red, we don't see that. But most plants can absorb the color green. And so that's why leaves are green is because we're actually getting a reflection of that green spectrum of light back at us. And the same thing is coming true with all these different flowers. So if you have a red flower, it's reflecting the red back or the purple, the purple back. So the plants need those different spectrums of light to grow. But they don't often absorb everything or all those spectrums in there. So that's why we see the different color flowers.

Jane 14:05

I'm thinking back to my biology classes from when I was a kid and one word keeps flashing in my brain and that's chlorophyll. Is there a connection between the green color and chlorophyll?

Charlie 14:16

Yes, chlorophyll is the actual chemical in the leaves themselves that will absorb all that sunlight that's coming through and the chlorophyll is considered green. You think of chlorophyll, the green and it is because it's reflecting back then that color spectrum.

Jane 14:33

Plants are pretty neat, but they're really important too. Not only do they feed us and provide oxygen so that we can breathe. But Charlie says there's another good reason to keep plants in your house.

Charlie 14:46

Well they clean the air too. We were talking about all the reasons for plants and I love the the NASA research has been done around this where you have house plants, you know things that simple house plants that you might have growing in your house. And not only are they providing oxygen but they're taking toxins or taking chemicals that might come from your, your paint on your walls or your rugs. And they're taking those and absorbing those so that we don't have to breathe them. And those are toxins that might not be good for our body. So plants are cool things.

Jane 15:15

I was told once you should talk to your plants that it'll make them happy.

Charlie 15:18

Yes.

Jane 15:19

That's true?

Charlie 15:20

Yes, you can talk to them. You can play them nice, soft music like classical music. They like that.

Jane 15:25

Charlie, now you're just pulling my leg?

Charlie 15:26

No, no, no, they like certain kinds of music.

Jane 15:28

How do you know that?

Charlie 15:29

Oh, they've been, research has been done. They played different kinds of music to plants. And they saw how they reacted as far as their growth rates and their general health and they didn't like that really like heavy metal acid rock kind of stuff didn't really go so well. But a nice classical piece, little, you know, Mozart, something like that worked very well.

Jane 15:47

Why do you think?

Charlie 15:48

I think it's all about sound waves, we're just getting into a whole another thing. But there's sound waves that will affect the growth of plants, you know, plants have a consciousness to them, they have like, almost like a mind, you might think and there's...

Jane 16:00

Well, they're alive.

Charlie 16:01

They're alive, exactly. And there's been a lot of research recently done about plants talking to each other through their root systems. And so for example, if one tree over here is, is getting attacked by an insect, it'll send a message all the other trees through the root system that they are in contact with under the ground to say, watch out, here comes this bug. And they'll notice the scientists will notice that in those other trees, certain chemicals will start getting produced that will be ways of warding off that bug so they don't get attacked. So trees and plants will actually talk to each other. And it makes sense then if they're getting this information from each other that as we talk to them with our voices or through music or other things that'll have an effect on them.

Jane 16:40

So be nice to your house plants?

Charlie 16:42

Be nice to your houseplant. Give them a little pat.

Greta 16:48

My name is Greta. I live in California, Morgan Hill, I'm four. And, and my question is why you flowers bloom?

Ashwini 17:00

My name is Ashwini. I'm four years old. I live in Philadelphia. And my question is, why do flowers bloom?

Alma 17:12

Hi, um, my name is Alma. I'm three and a half years old. I live in New York. And my question is, how do flowers grow?

Ada 17:23

My name is Ada. And I'm four years old. My question is, how does sun and water make flowers grow?

Jane 17:31

Flowers bloom to attract pollinators. And the structure of the flower is what helps the flowers reproduce. That flower contains all the parts a plant needs to reproduce to make new plants. That blooming flower means the plant is ready to reproduce. And once the job is done, and the seeds are made and dispersed, maybe blown away by the wind may be contained in a tasty fruit, the plant will lose its flowers until it's time to reproduce again. But how do flowers know it's time? Scientists think it has to do with the hours of daylight. Flowers can sense the increasing light in spring and the decreasing light in fall, flowers are going to bloom and the chances are highest for their survival. So they look for those right conditions. The majority of plants flower once per year, but some do flower multiple times. Some flowers that live in the forest bloom in spring because that's when they see light before the leaves come out on the trees above them. Some plants flower in the fall because they've been storing their energy all spring and summer to make that big bloom happen. Others might flower when the winds are strongest in their area because that's when the pollen is blowing around. Or maybe they depend on a specific insect or animal for pollination. So the bloom happens at a certain time of year that is timed with those animals. There's so much variety in the way plants do things in the way flowers look and the way flowers come out. Charlie says that diversity is not just interesting, it's important to our survival.

Charlie 18:59

So that's the beauty of our planet is that there's so much diversity depending upon where you are on the planet with all these different plants. And it's important because as the old saying goes in diversity, there's strength, the more diverse things are, the more different things are. That means if some kind of weather system comes through and and harms a certain kind of plant, the other ones that are different from that plant may not get harmed because they have a certain different constitution a certain structure to them that will save them from whatever harm that's coming their way.

Jane 19:31

We have one more question to answer today from Jackson.

Jackson 19:35

I am three years old. I live in Canton, West Kansas. And I would know about why do you put seeds in the garden?

Jane 19:46

We put seeds in the garden because we want them to grow! Many people like to have a connection to the food that they eat to know they've grown it and to see the whole process in action. Other people might just want the flowers that come from those seeds because they like the way the flowers look. There are as many reasons for planting seeds as there are people who plant seeds. Do you like to grow things? If you've never tried it, maybe now would be a good time. You don't have to have a place where you can grow plants outside. Maybe there's a community garden near you where you can grow things with other people. Or maybe you can even grow some plants in a container on a balcony or on a windowsill. Or maybe you just want to go smaller and sprout some seeds in a damp paper towel to see what happens. We have ideas on our website, ButWhyKids.org. We hope you plant something really fun and tell us about it if you do. That's it for this episode. If you have a question about anything, have an adult record it. It's easy to do on a smartphone using a voice recording app. Then you can email the file to questions@butwhykids.org. We can't answer every question we get. But we love hearing what's on your mind. And hey, maybe we'll do something like this again, where we use your new questions to go back over some old episodes.

Jane 21:00

But Why is produced by Melody Bodette and me, Jane Lindholm, at Vermont Public Radio. Our theme music is by Luke Reynolds. We're distributed by PRX. We'll be back in two weeks with an all new episode. Until then, stay curious!