



by Diana Noonan

We all know about banks for money – and most people have heard of food banks and blood banks. But what about seed banks? Students at a small school in the Catlins – Tahakopa School – are very familiar with seed banks. Recently, they found themselves working for one. They were asked to help save a rare species of broad bean.

Seed Banks

Seed banks are places in which seeds are looked after for the future. The seeds are kept cool and dry, and they are replaced regularly. Seed banks can be found all around the world. Some store the seeds of essential food crops, such as beans, wheat, and rice. Other seed banks are for wild or native plants.

Seeds are stored for different reasons. The most important is to ensure biodiversity. This means growing as many different plants – and varieties of each plant – as possible. We don't want to lose a plant that might one day become important. For example, a new pest may kill one variety of potato but not another. Or some varieties of corn may grow better in drought conditions caused by climate change. And who knows which wild plants might cure a new disease. Because we don't know what the future will bring, it's best to keep our options open. Seed banks are a way of doing this.

SEED SAVING IN NEW ZEALAND

New Zealand has many kinds of seed banks, which all work in different ways. Some are run by home gardeners who help save seeds that grow well in their local areas. Other seed banks work across New Zealand. For example, the New Zealand Indigenous Flora Seed Bank collects the seeds of our endangered native plants. Eventually, it wants to “bank” the seed of every native plant in the country. It's hard to predict which plants may one day be threatened by extinction.

There's also the Koanga Institute near Wairoa. This seed bank looks after the seeds of hundreds of **heritage** fruit and vegetables that are either from New Zealand or were brought here by our ancestors. Some of these plants are in danger of becoming extinct in their home country.

heritage: very old or passed down from earlier generations

Seed Guardians

Most seeds stay fresh for only a few years. After that, they won't grow into plants, so they need to be replaced. Replacing seed takes a lot of time for a seed bank because it involves growing hundreds – sometimes even thousands – of different plants. To help with this work, seed banks use "seed guardians". These are volunteers who grow plants that will produce the fresh seed to return to the bank. This is exactly what the students at Tahakopa School did.

Joey, a student, explains: "The Southern Seed Bank asked a local gardener to grow a rare broad bean that has red flowers. But she'd already planted the more common, white-flowering kind. She was worried about cross-pollination, so she came to us. Our school garden didn't have broad beans, and we didn't have close neighbours growing beans."

"But then we learnt that bees can fly a long way in search of pollen," says Casey, another student at Tahakopa School. "That meant our 'safe zone' had to be double-checked. We made sure no one within 3 kilometres of our school was growing the white-flowering broad bean."

CROSS-POLLINATION

To make seeds, most flowers need **pollen** from another flower. If the other flower is on a plant that is exactly the same kind as the first, the seed will grow into a plant exactly like its two "parent" plants. But sometimes pollen comes from a plant that is a little different. This is called cross-pollination, and it means the resulting seed will grow into a plant that's also different. For example, if red-flowering broad beans cross-pollinate with white-flowering broad beans, the next generation of beans may have red, white, or even pink flowers because they are a different variety.

pollen: a fine powder that comes from the male part of a flower and allows plants to reproduce



Extra Ingredients

The Tahakopa School garden had already been dug, so the soil was nice and loose. But no **nutrients** had been added for a long time. If the rare broad beans were to have the best chance, the students would need to add extra ingredients. "We added compost from our school compost bin and buckets of donkey poo," says Izzy. "These both contain a lot of nitrogen."

nutrients: minerals such as nitrogen and potassium, which plants need to grow

Planting Day

Spring arrived. It was time to sow the beans, but then it started to rain. The rain fell for three weeks, and the temperature dropped. It was the worst spring ever – but the seeds needed to go into the soil if there was to be enough time for them to grow into plants and form seed pods. One day, the rain stopped for a whole morning. The students quickly planted the beans. Then they laid a big sheet of clear plastic over the garden.

"We did this to help the soil warm up so the seeds would **germinate**," Izzy remembers. "The plastic also kept the rain off. This meant that the beans wouldn't get too wet and rot." Lastly, to be extra cautious, the students built a framework so they could cover the garden with netting. The neighbours didn't have broad beans – but they did have some wandering sheep!

germinate: begin to grow



Watching and Waiting

The cold, wet spring was followed by a hot, dry summer. Broad beans are known to be **hardy** plants, but then came the school holidays and problems with keeping up the watering schedule. The plants grew very slowly. Finally they flowered – but then there wasn't enough moisture in the ground to help the seed pods develop.

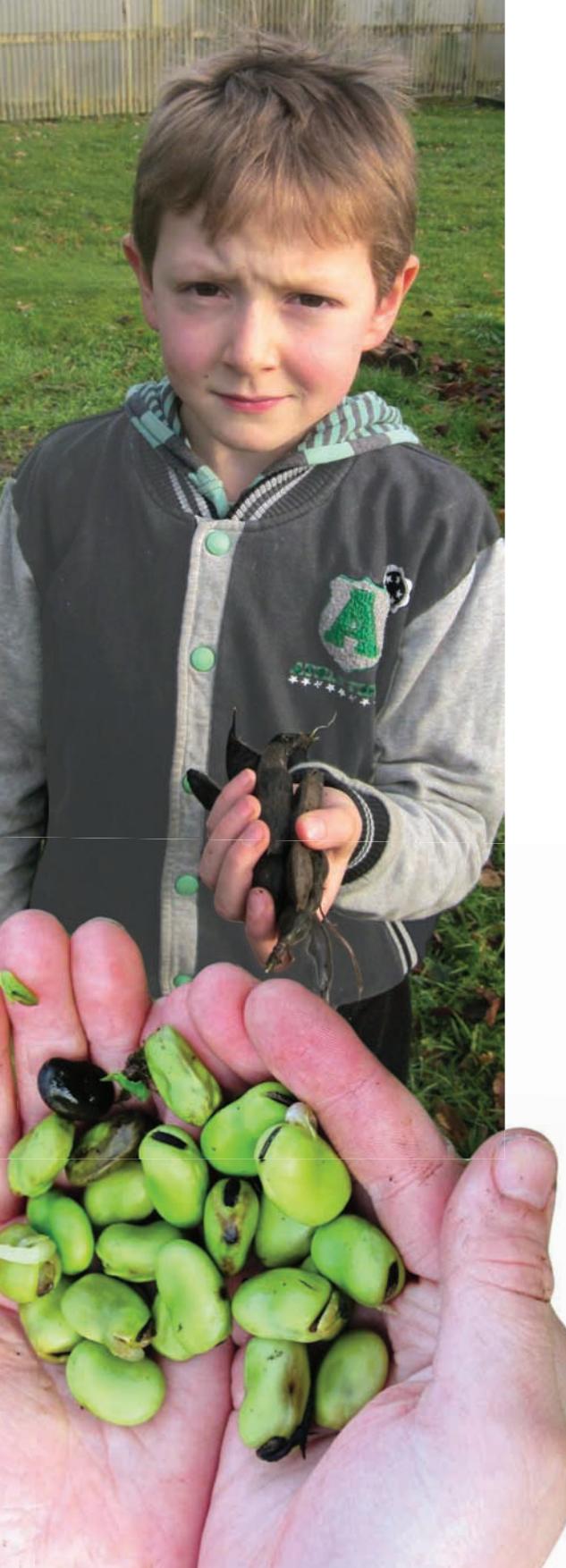
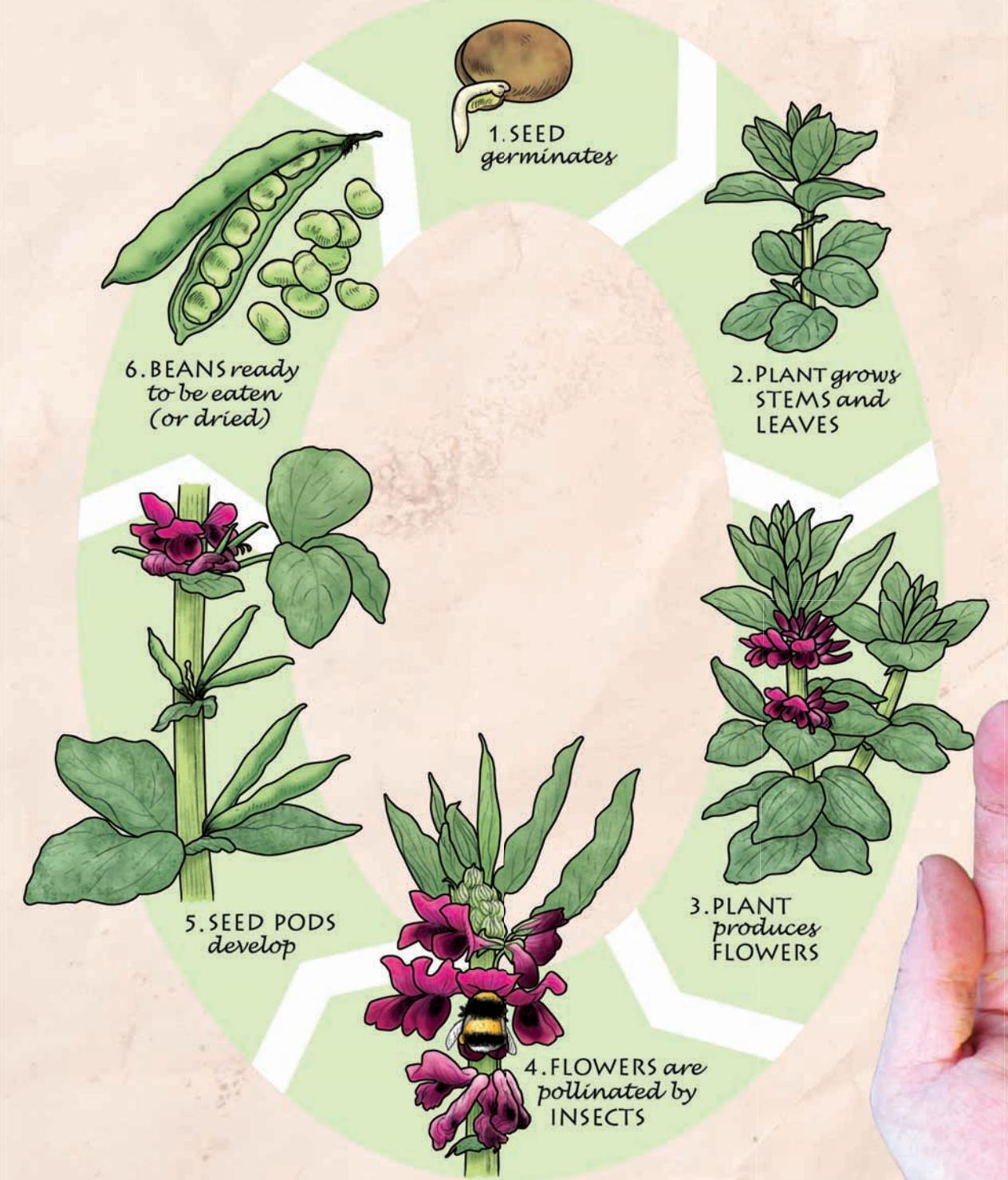
Broad beans usually take about four and a half months to produce beans. But Tahakopa's broad beans took seven months! "When we came back to school in February, the seed pods were still small and green," Casey says. "We watched them slowly grow bigger until finally they started to turn black. That's what we'd been waiting for!"

But before the pods could dry out properly, the rain came again! Like the previous spring, autumn was cold and wet. Worse, the rain was making the pods too wet, and some of them started rotting. And then there was another problem. Joey explains. "We opened a pod to see what was happening. The beans inside were wet and beginning to germinate!" If the students wanted to save *any* seed, they needed to act fast.

hardy: able to grow in harsh conditions



BROAD BEAN LIFE CYCLE



The Seeds

The students picked any blackened pods and took out the beans. Ones that had started to germinate were taken home and sown in family gardens. Maybe they would grow through the winter. Beans that hadn't germinated were left to dry on sunny window sills. It was important to dry them properly. Any moisture could signal the bean to start germinating.

The Southern Seed Bank had provided 100 grams of seed, hoping for 300 grams in return. It was time to check the result. The dried seed was weighed: 120 grams. Not a brilliant result, but still an OK one. And the students were returning fresh seed, which was helpful. Plus seed guardians in other parts of the country had experienced better weather. Some of them were returning a lot more than 300 grams of seed.

So, would the students act as seed guardians again? Their answer is a definite yes, which is good news. Without seed guardians, many important plants could be lost forever – and that's not good for anyone.

Seed Savers

by Diana Noonan

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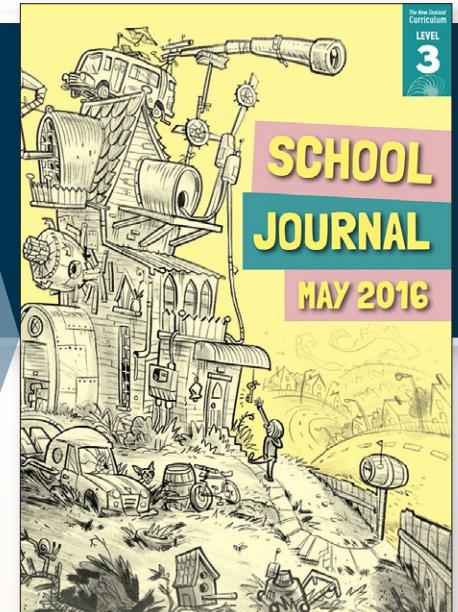
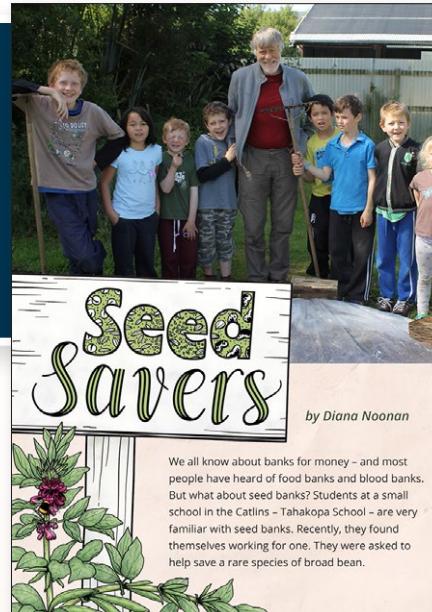
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