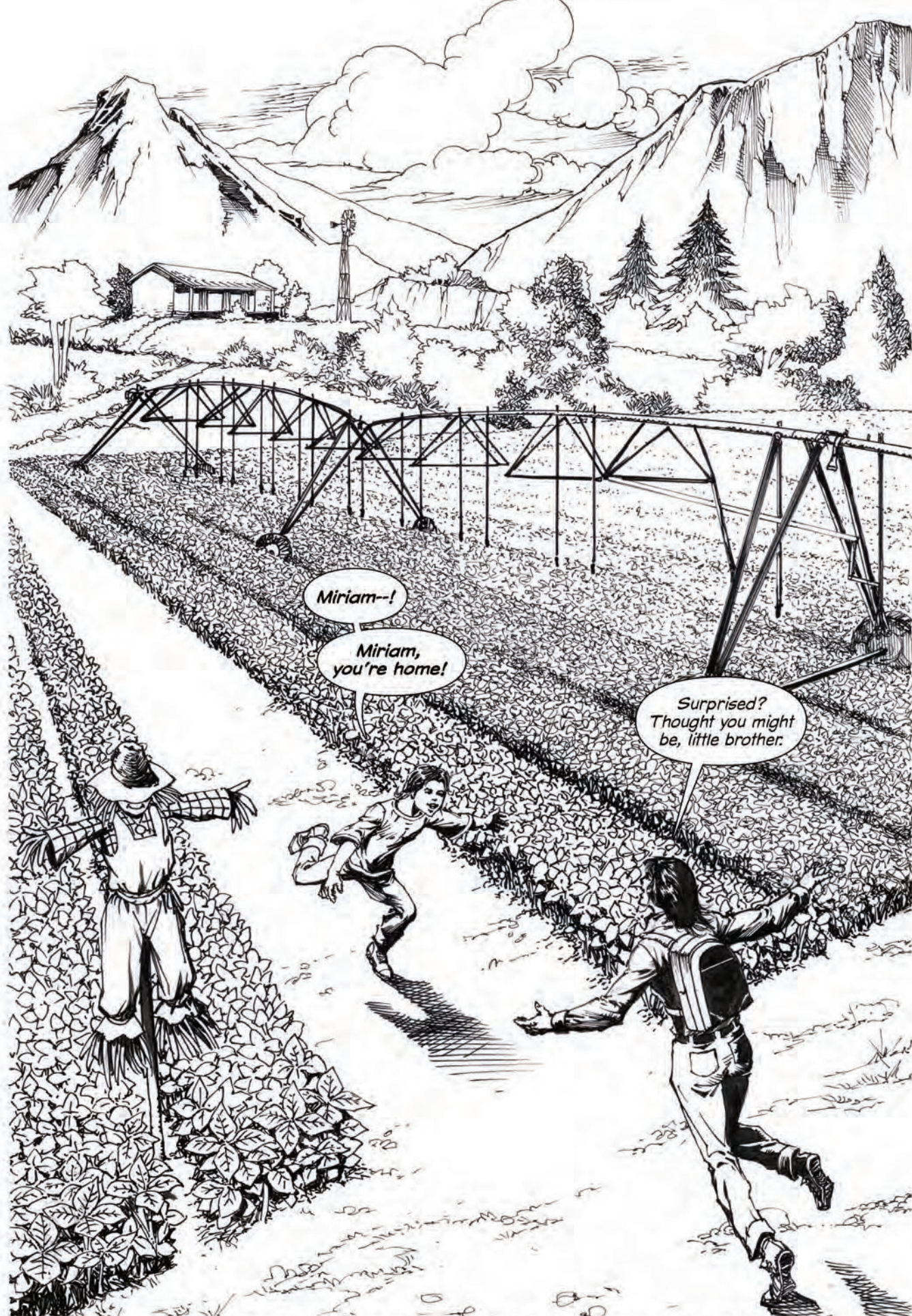


# THE CHANGING TIMES







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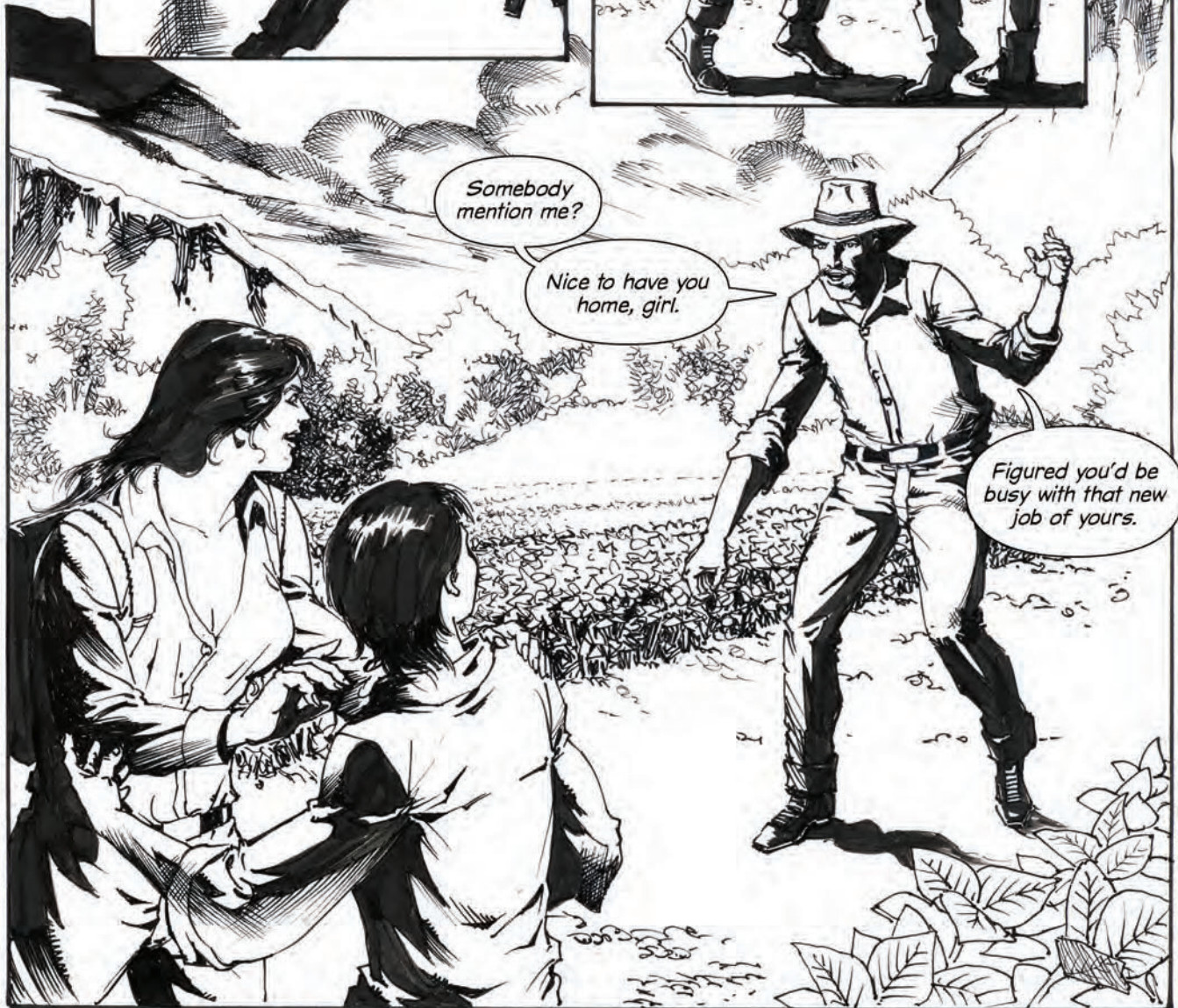
My goodness, Davy! How did you grow so much in just one year?

Well, it was a long year!



I'm so glad you're home. Wait til Dad sees you.

Yeah, I missed you guys, too.



Somebody mention me?

Nice to have you home, girl.

Figured you'd be busy with that new job of yours.

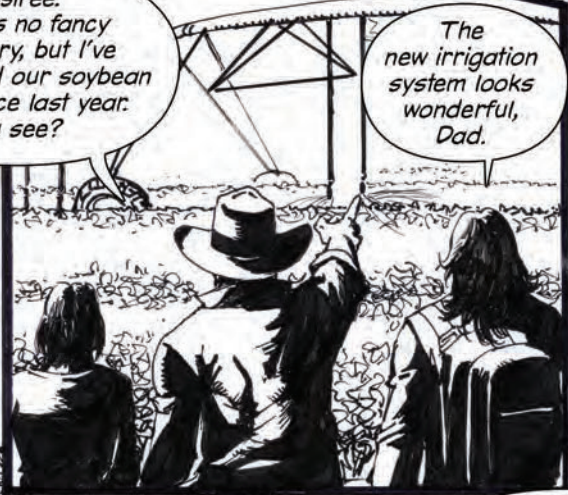




That doesn't start for a couple weeks. I wanted to spend some time home on the farm with my family.

We're sure glad you did. Right, Dad?

Yessiree. Well, it's no fancy laboratory, but I've modernized our soybean fields since last year. You see?



The new irrigation system looks wonderful, Dad.



Yup, well, I'm sure you two have tons to talk about. I'll leave you to it. Supper's in an hour.

We won't be late, Dad.



Gee, I thought Dad would be happy, but he seems kinda sad. What's wrong, sis?

Come on, Davy.

Let's tour the farm and talk it over.









Good thing we have irrigation now. Nothing like that can happen again, right?

Well, hopefully not, but crops are hurt by more than droughts. Science is always trying new ways to grow healthier crops.

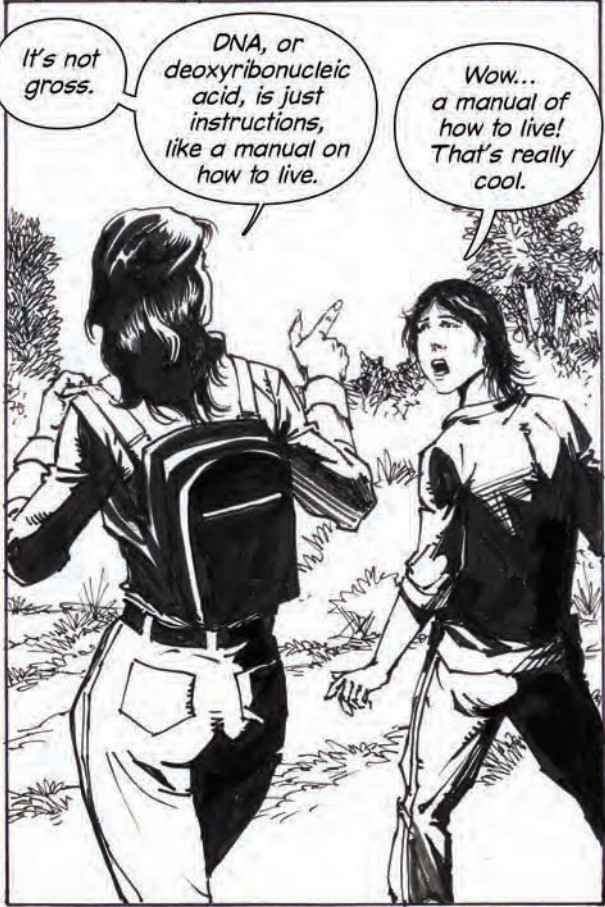
That's what my new job is all about.



Did you know that all our food contains DNA?

BLECH!

I don't even know what that means, but it's grossing me out!



It's not gross.

DNA, or deoxyribonucleic acid, is just instructions, like a manual on how to live.

Wow... a manual of how to live! That's really cool.



It sure is!

The smallest building block of every living creature, a cell, needs that manual to live. Our cells, and soybean cells, too.









Teosinte was even more important after humans selected for just five gene changes that made teosinte into corn, which made it easier to eat and contained more grain.

It took hundreds of years. Not new at all.

Now, we can study the changes we want to make and make them within a few years. Depending on how the change is made, we call the result a **genetically modified organism** or **GMO**.

GMOs are new.

That's awesome! How come Dad doesn't like all this cool new stuff?



I wish I knew.

Most of the other farmers use GMO crops. Dad could also benefit, especially after his recent heart attack.

You mean eating GMO vegetables can make us healthier?



Well, they're not a cure, but what we eat is a major cause of heart disease. Even the soybean oil that our farm produces can cause serious health problems.

But how? I thought vegetables were good for us?



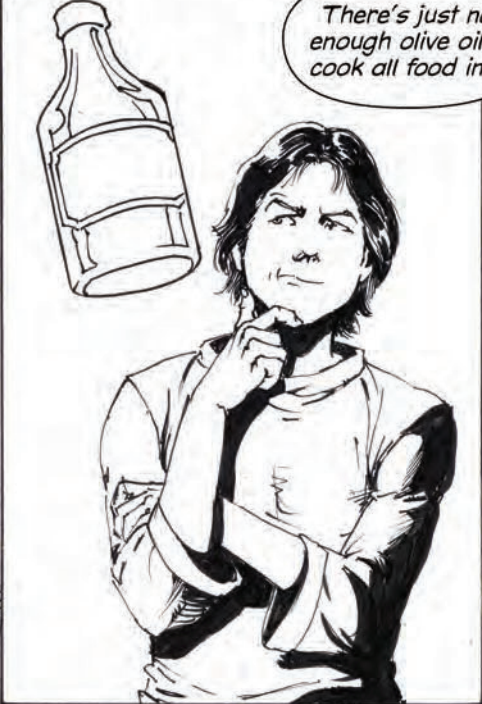




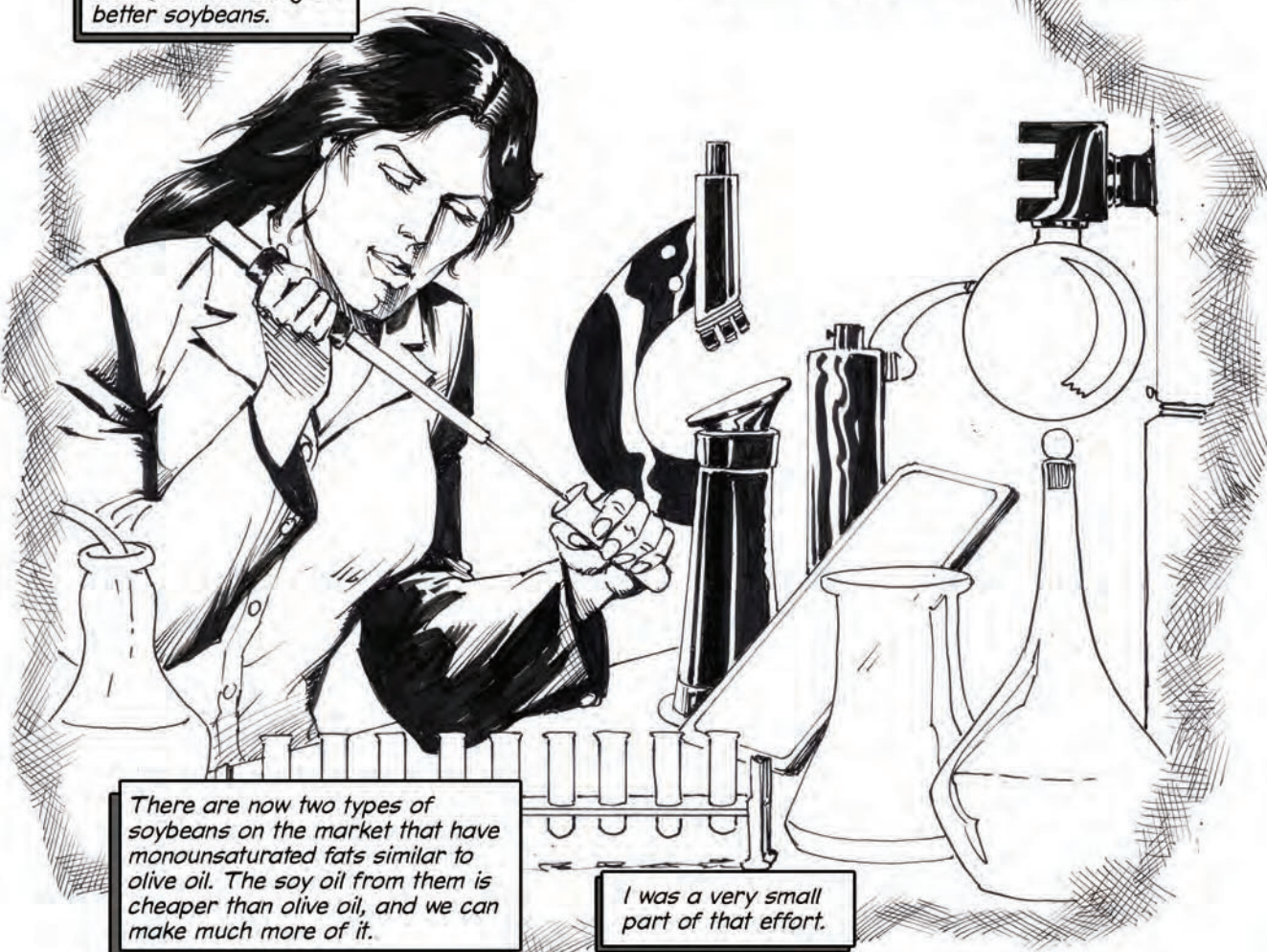
Soy oil is used everywhere, from salad dressings to deep fryers. It's a big part of what we eat. It's not the healthiest oil though. It is low in monounsaturated fatty acids.

Olive oil is very high in monounsaturated fatty acids, which are known to reduce the risk of heart disease and stroke.

There's just not enough olive oil to cook all food in it.



We can't grow enough olives, but we can grow better soybeans.



There are now two types of soybeans on the market that have monounsaturated fats similar to olive oil. The soy oil from them is cheaper than olive oil, and we can make much more of it.

I was a very small part of that effort.



*We checked everything we could about the soybeans. Hundreds of compounds.*

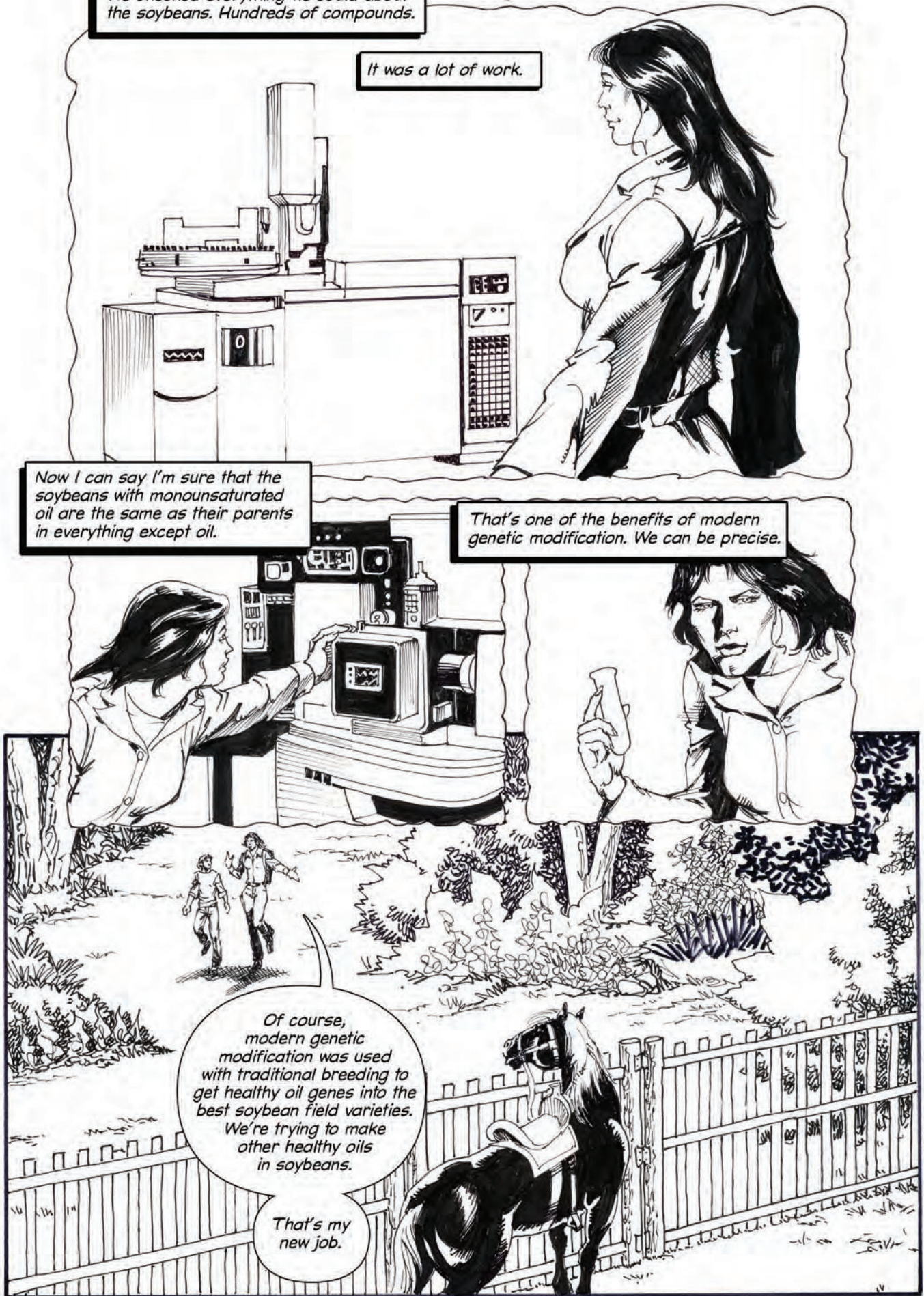
*It was a lot of work.*

*Now I can say I'm sure that the soybeans with monounsaturated oil are the same as their parents in everything except oil.*

*That's one of the benefits of modern genetic modification. We can be precise.*

*Of course, modern genetic modification was used with traditional breeding to get healthy oil genes into the best soybean field varieties. We're trying to make other healthy oils in soybeans.*

*That's my new job.*







As for Dad, well, he likes old-style breeding and is afraid of more modern methods.

I'm planning on talking to him about what they both mean, and maybe we can change his mind.

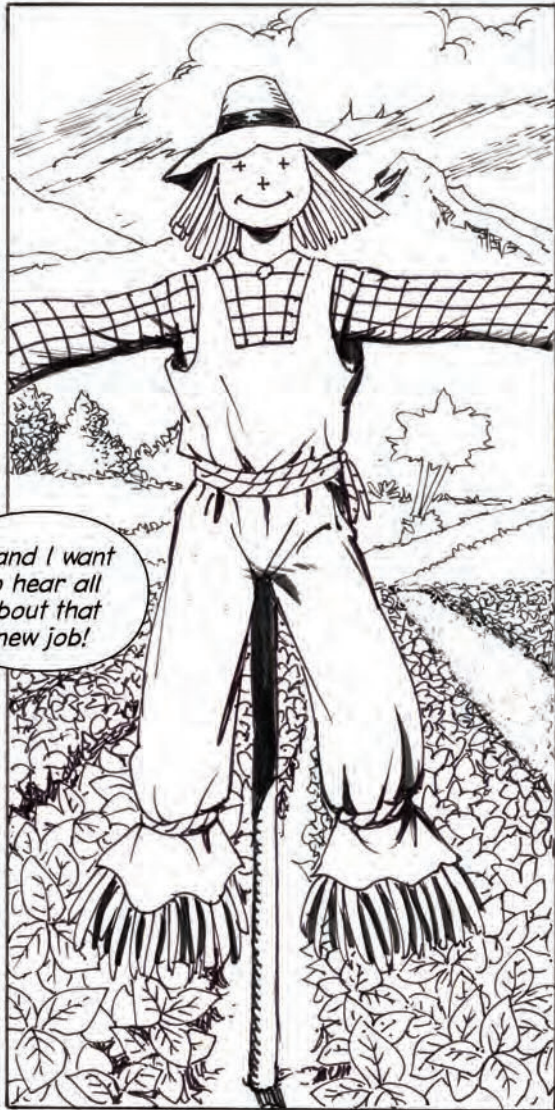
I'll bet we can!



So, there you are!

C'mon in, supper's ready...

...and I want to hear all about that new job!







The 2016 US Board on Agriculture and Natural Resources's Prospectus on Genetic Engineering: National Academies of Sciences, Engineering, and Medicine. Genetically Engineered Crops: Experiences and Prospects. Washington, DC: The National Academies Press, 2016. [www.nap.edu/catalog/23395/genetically-engineered-crops-experiences-and-prospects](http://www.nap.edu/catalog/23395/genetically-engineered-crops-experiences-and-prospects)

The Intelligence squared debate on Genetically Modified Food  
[www.intelligencesquaredus.org/debates/genetically-modify-food](http://www.intelligencesquaredus.org/debates/genetically-modify-food)

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