Soybean Science Script

Before the turn of the century, few people in the United States had heard of pea-sized yellow beans called soybeans, much less eaten them.

But this amazing little legume from East Asia has been creatively processed into edible staples – think tofu and soymilk – and eaten by the Chinese for thousands of years.

Soy foods from China have slowly grown in popularity in the United States in the past several decades. Today, soy foods have jointed the ranks of spaghetti and tacos as popular ethnic cuisines in mainstream America. But the reach of soy goes far beyond adding soy sauce to our stir fry’s and stocking edamame on our supermarket shelves.

More than any other plant, soybeans have shaped our lives by revolutionizing the way we eat, travel, grow food, and build cars and homes. But how can one little bean have this big of an impact?

To answer this question, we need to first take a closer look at the bean itself. Soy is about 37 percent protein by weight. In comparison, meat ranges from 15-20 percent protein by weight. That’s a lot of vegetable protein in one little plant!

Soybeans also contain all eight amino acids, which are essential for human health, and they are low in trans fat and saturated fat. These factors make soy a top choice for food scientists and engineers who are looking to develop new foods for health-conscious consumers.

Through their research, scientists discovered that adding a small amount of soy protein can improve the consistency, texture and shelf life of many processed grocery store items. This has led to the development of thousands of new food products.

Energy bars, sports drinks, soups, meat alternatives such as veggie burgers and dairy alternatives like soy yogurt all are made from soy protein.

But protein isn’t the only thing soybeans have going for them. Soybeans are also rich in oil, and soy oil is now the most widely consumed edible fat in the United States.

Open up your fridge, and you’ll most likely find soybean oil in salad dressings and other condiment sauces. Check out the ingredient list of cereal, crackers and cookies in your pantry, and chances are you’ll find a soy-based oil or emulsifier somewhere on the list.

Ever wonder what soy lecithin is? It’s a soy emulsifier that holds the chocolate and cocoa butter together in chocolate bars and prevents them from separating.

But believe despite all the new additions of soy products to our diets, the most common use for soy isn’t for human consumption. About 85 percent of the world’s soybean crop is processed into soy meal that is used in animal feed.

First, the oil is removed in a processing plant, and the material that remains is toasted and added as a high-protein fiber to the livestock feed of chickens, turkeys, hogs, cattle and dairy cows on industrial farms.

Through this process, millions of tons of vegetable protein are converted into animal protein. This has increased world production of meat, allowing people around the world to incorporate more meat into their diet. So soy has not only changed the type food and food products we eat, but how we go about producing our food in entire food pyramid.

Soy innovation has also gone hand in hand with scientists’ efforts to develop biodegradable, nontoxic products that are environmentally friendly. Soy-based fuels such as biodiesel are increasingly replacing nonrenewable fossil fuels, powering our vehicles and shaping the way we travel.

A big link between soybean agriculture and technology was made back in the early 1930s and 1940s by a pioneer in both the auto and soybean industries, Henry Ford.

At the World Fair in Chicago in 1934, soy made national headlines as part of Ford’s elaborate soy display. He planted plots of soybeans around a barn built by his father that he bought from his childhood home.

Together with his researchers, Ford showed over a million visitors how low-technology soy oil production worked. Soy oil produced in the display was used as biodiesel to run a generator that powered the display. The public also saw how soy protein could be molded into plastic parts and how soybean oil could be used to make auto paint.

Years later, Henry Ford even designed a “Soybean Car,” made entirely out of plastic. His ultimate vision was to grow auto bodies entirely on the farm. Eventually, the onset of World War Two suspended all auto production, including Ford’s soybean plastic car, and the project was abandoned.

Although you still won’t find soybean plastic cars on the road today, we use modern technology to process soy into paint strippers and hand cleaners. We’ve also developed biodegradable or renewable versions of traditional petroleum-based products such as soy crayons, soy ink, soy-based foams used in refrigerators and coolers, soy oil lubricants, and soy-based trash and grocery bags, coffee cups, and pet toys.

The soybean is truly an amazing crop that has changed the world and the way we live our lives. It’s played a key role in expanding the livestock and poultry industries around the world, providing new ways to fuel our vehicles and created innovative products that improve our lives and the health of the environment.