SOYBEANS BRED FOR LOW LINOLENIC SOY OIL OFFER FULL TASTE, NO TRANS FATS

By Brian Meyer

One of the world's foremost soybean breeders rummages in his office wastepaper basket and finds a wrapper for a soy bar, a staple of many of his lunches.

Walter Fehr points out the first ingredient on the label: "non-GMO soy protein isolate." He's making a point about how the label is all about marketing. "At the end of the day, the goal of soybean breeding program is to develop soybean varieties with seed components that are positive for human health," he says.

For 41 years, what's mattered to Fehr, a Charles F. Curtiss Distinguished Professor of Agriculture and Life Sciences in Agronomy and director of the Office of Biotechnology, has been breeding soybeans with novel seed traits primarily for food and health. "That," he says, "summarizes my professional life."

Walter Fehr has been breeding soybeans for better food and health traits for more than forty years. His collaboration with Earl Hammond resulted in low linolenic soybeans containing zero trans fat.

Fehr's tenacity in breeding soybeans for enhanced food and health qualities has gained national attention. Most recently, it's been about how ISU soybeans address trans fats.

Soybeans, which supply nearly 80 percent of all oil used for cooking and baking, have high levels of linolenic acid, which makes the oil spoil sooner. To stave off spoilage, processors use hydrogenation, a process that extends shelf life but creates trans fats, which can raise levels of bad cholesterol.

Over many years, Fehr collaborated with ISU food scientist Earl Hammond to develop soybeans with very low levels of linolenic acid, resulting in oil with longer shelf life, without hydrogenation. The low-lin oils have earned solid reviews for performance and taste.

Fehr doesn't have exact numbers, but he believes companies contracted to grow about a million and a half acres of the low-lin varieties in 2008. "That's pretty remarkable, given the high prices for commodity soybeans, plus the extra management required to grow low-lin beans in order to preserve their identity."

The most encouraging news to Fehr is that more seed companies are committed to breeding aimed at healthier soybean oils.

Brian Anderson, a former student of Fehr's, focuses on breeding unique soybean varieties at Schillinger Seed, Inc. "Dr. Fehr's varieties are an important source of genetics for many of the traits we focus on. He's given us a great place to start," he says.

Fehr keeps looking forward. He has collaborations with other faculty, including combining the low-lin trait with insect and herbicide resistance. Because soybean components are an important part of vitamin E dietary supplements, he's studying ways to modify fatty acid composition to enhance vitamin levels. (More dietary vitamin E may mean reduced prostate cancer and coronary heart disease.)

Fehr practices what he preaches. He regularly eats soy foods at work (the evidence is right there in his waste basket) and at home. "I enjoy eating soy, but given a choice between an Iowa pork chop and a tofu burger, I'll choose the chop."