

# SEED & CROPS

The Business *Digest* for Agriculture

May 2004

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# Landec Ag's Growth Stems from Polymer Development

*Company president, Tom Crowley, forecasts an exciting future for seed coating technology.*

by Mary Shepherd

*S&C: What is the corporate ownership and identity of Landec Ag?*

**Crowley:** Landec Corporation was founded in 1986 to develop applications of a special class of polymers, called side chain crystalline polymers, which are derived from natural fatty acids. These polymers have the unique characteristic of changing properties rapidly at a specific temperature that can be set during the polymer manufacturing process. Landec has developed several commercial applications in the medical, industrial, agricultural and food industries.

Intellicoat was formed as a wholly owned subsidiary of Landec Corporation in 1997 to develop and commercialize applications of this polymer to the ag industry. Intellicoat was renamed Landec Ag after the acquisition of Fielder's Choice Direct in 1997. Landec Corporation headquartered in



**Claude Butt, a senior sales agronomist with Landec Ag, is in a field of relay crop soybeans intercropped into wheat. This picture was taken in mid July after the wheat was harvested and the soybeans had started rapid growth. The coated soybeans were planted late April/early May, prior to the wheat's jointing stage.**



**Tom Crowley, president of Landec Ag, is shown with coating equipment used in the Intellicoat Early Plant corn coating process.**

Menlo Park, Calif., was incorporated as a public company in 1996 and is listed on NASDAQ (Symbol: LNDC).

*S&C: What changes have come about at Landec Ag since the introduction of the first Intellicoat products in the early part of this decade?*

**Crowley:** In recent years, Landec Ag has made significant advances in the development of Intellicoat polymer seed coatings, coating applications and biological testing. After the initial concept testing of a "temperature switch polymer" on several crops, we directed our focus to developing our first commercial products for corn and soybeans. There have been many exciting changes for Landec Ag since then.

Landec Ag's first commercial success, Intellicoat Pollinator Plus, was launched in 2000. Pollinator Plus, which significantly reduces production risk for seed companies, has been adopted as a production practice by over 30

companies. We expect it to be used on over 80,000 seed corn production acres in 2004.

In 2001, Landec Ag moved all its research and manufacturing facilities from Menlo Park to Oxford and West Lebanon, Ind. The research facilities are now in the heart of the Midwest and close to our customers. The manufacturing facilities have been expanded and the throughput capabilities of our equipment have increased to commercial scale with improved levels of precision.

We launched our second commercial product, Intellicoat Relay soybeans in 2002. Relay is an application that allows farmers in northern regions to double crop by inter-planting coated soybeans into winter wheat. The result — farmers can harvest the two crops in the same year for greater profits.

In 2003, we successfully launched our third commercial product, Intellicoat Early Plant corn. Early Plant corn allows farmers to plant as much as four weeks earlier than normal without the risk of chilling injury. Early Plant is potentially Landec Ag's biggest Intellicoat application and could eventually be used on as much as a quarter of the planted corn acres.

**S&C:** *How and why did Landec's partnerships with other seed companies come about?*

**Crowley:** We realized that having market access through a national seed brand would be strategically important, so in 1997, Landec Ag purchased Fielder's Choice Direct. Fielder's Choice was instrumental in pre-commercial trials and in the initial launch of Intellicoat Early Plant. During 2001 and 2002, Fielder's Choice offered Intellicoat Early Plant corn through a pilot program to its key customers. The program was very effective in providing technical data and farmer feedback. It also allowed us to validate product efficacy and to quantify value to the farmer. Our market research during this period indicated Early Plant could eventually be used on one in four corn acres — a total of 20 million acres. This is a significant opportunity.

The strategy Landec Ag always intended was to license the Intellicoat Early Plant technology broadly to the seed corn industry. Consequently, we worked with a number of seed companies over the last several years to test the technology in their research programs and to incorporate the technology into their product offerings. Early Plant Corn was sold in 2003 by three seed companies: Beck's Superior Hybrid and Hubner Seeds, in Indiana, and Fielder's Choice Direct.

In 2004, six partner companies are selling Early Plant corn: Beck's Hybrids, Atlanta, Ind.; Dyna-Gro Seed, a division of United Agri Products, Greeley, Colo.; Fielder's Choice Direct, Monticello, Ind.; Hubner Seed Co., Inc., West Lebanon, Ind.; Ottilie Seed, Marshalltown, Iowa; and Seed Consultants, Inc., Washington Court House, Ohio. We expect the number of partner companies to grow much more in 2005.

**S&C:** *What benefits do the partnerships offer Landec and the individual seed company partners?*

**Crowley:** Intellicoat Early Plant corn provides seed companies a way to differentiate their brands and to offer a product that increases productivity and profits for their customers. In addition, it provides the seed partners an opportunity to gain market share and increased profit margins. The Early Plant technology is applicable to their customers who have timing or time constraints in their operations. It is like providing "time in a bag" to their busiest customers.

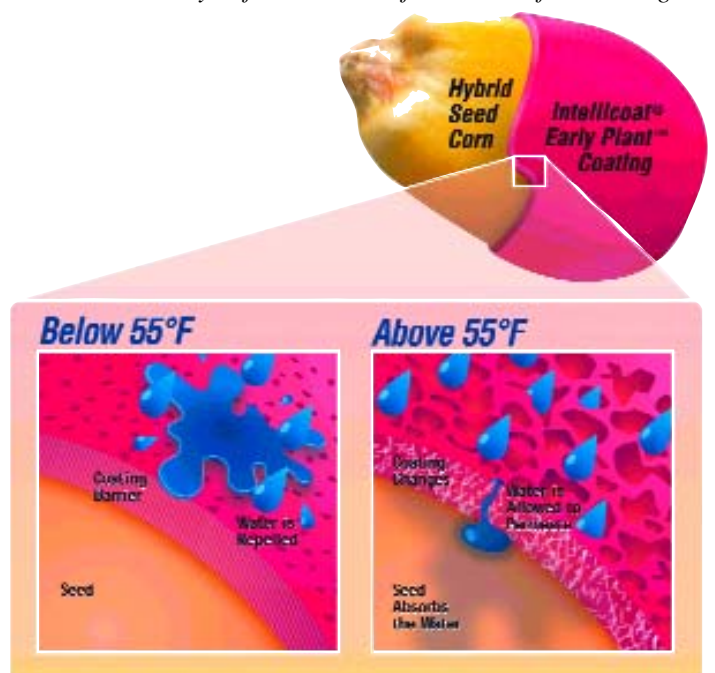
**S&C:** *How was the term "intelligent seed coating" begun and by whom?*

**Crowley:** Landec's founder, Dr. Ray Stewart, discovered that these polymer coatings had the ability to regulate water uptake into the seed as a function of temperature. Dr. Stewart characterized these functional polymer seed coatings as "intelligent," and thus coined the name Intellicoat.

**S&C:** *What do you see as the future of Intellicoat applications and their beneficial changes to agricultural practices?*

**Crowley:** We believe that Intellicoat seed coating technology is still in its infancy and will have a broad application across additional crops in the coming years. Now, with more prevalent use of trait and seed-applied technologies, Intellicoat technology can provide protection to increasingly more valuable seeds and can more effectively deliver seed-applied treatments. New product opportunities exist in providing chilling protection of cotton, soybean and vegetable crops, fall planted canola and controlled release of seed-applied chemicals and nutrients. Several of these applications are in early stages of development.

**S&C:** *What do you foresee as the future role of Landec Ag?*



**The Intellicoat polymer coating controls germination until soil conditions are ideal — keeps water out in cold soil and lets water in when soil temperature is optimum for growth.**

**Crowley:** Landec Ag has two unique technologies, patented temperature-activated polymer seed coatings and a unique direct marketing and sales model. We believe our coatings will deliver solutions to farmers and seed companies that were never before possible and our direct marketing model will bring farmers great products and service at the lowest possible cost.

Our signature trademark is that we are unique in the industry, both in terms of our technologies and how we bring products to the market. The result will mean new products and new ways of doing business. It will be exciting.

*Intellicoat, Pollinator Plus, and Early Plant are trademarks of Landec Corporation.*

# 2004 Growth Expected for Intellicoat Early Plant Seed

*A chat room on the Internet buzzes with speculation about some Illinois farmers planting corn in March. "They're just gonna have to replant cause we're gonna have more cold weather in April." "Damn foolish if you ask me." "It's just too early." "Do you suppose they're using Intellicoat?"*

*"What's Intellicoat?"*

There is reason for the buzz. Intellicoat Early Plant technology is generating a lot of grower interest.

In its second year of commercial availability, 2004 sales of seed corn treated with Intellicoat Early Plant functional polymer seed coatings are expected to increase, as returning customers expand their use and more seed companies offer the product.

Intellicoat Early Plant seed coating technology enables farmers to plant corn into cold soils without the risk of chilling injury, allowing farmers to plant as much as four weeks earlier than normal. "This helps to reduce planting delays, spread out spring workloads and maximize the full yield potential of seed corn investment," says Tom Crowley, president of Landec Ag, the company which developed the technology.

"Being able to plant corn earlier means producers can avoid yield loss associated with late planting, reduce drydown costs and spread out their workload for more timely planting of other spring crops such as soybeans," he says. "Compared to uncoated seeds in early-planted trials, Intellicoat seeds have consistently shown better, more uniform emergence and higher

stand counts for improved yield potential."

Intellicoat Early Plant corn seed coating provides a protective barrier around the seed that is impermeable to water in cold soils. Intellicoat uses a patented, polymer technology with a temperature switch that becomes permeable to water only when the soil temperature reaches a certain point.

Intellicoat's temperature-activated characteristic is based on the proprietary technology of Intellimer polymers developed by Landec Corp., the parent company of Landec Ag. "Intellimer polymers can be customized to abruptly change their physical characteristics when heated or cooled through a pre-set temperature switch. In the case of Intellicoat, when the soil warms above the pre-set temperature of 55 degrees, the coating becomes permeable and allows the seed to take up water and germinate under optimum conditions," Crowley explains.

## What partnering seed companies say

Intellicoat Early Plant seed coating is currently marketed through six seed partners: Beck's Hybrids, Atlanta, Ind.; Dyna-Gro Seed, a division of United Agri Products, Greeley, Colo.; Fielder's Choice Direct, Monticello, Ind.; Hubner Seed Co., Inc., West Lebanon, Ind.; Otilie Seed, Marshalltown, Iowa; and Seed Consultants, Inc., Washington Court House, Ohio.

"This year we are seeing return business from existing Intellicoat customers far exceeding our estimates," says Dennis Schlott, vice president

sales, Fielder's Choice Direct. "It's clear that the Intellicoat technology has allowed us to offer a new, unique solution for Fielder's Choice Direct customers."

Al Carlson, United Agri Products seed business manager says, "Customers have been asking us about Intellicoat, and we believe the technology will be an excellent management tool for them."

"Our own tests at Beck's Hybrids have shown that the Intellicoat technology works and can provide producers with an opportunity to gain additional planting days in early spring to prevent later planting," says Sonny Beck, president, Beck's Hybrids, whose company markets seed in Indiana, Ohio, Michigan, Illinois and Kentucky.

Bob Hubner, general manager, Hubner Seed Co., which markets corn in seven states from Missouri to Virginia, also responds positively. "Our customers were very pleased with Intellicoat's performance last fall; sales of Intellicoat have increased this year and we anticipate this continuing trend in the future."

"We've found that Intellicoat is an excellent technology for the progressive or the large, no-till producer," Hubner adds. "It gives them the opportunity for an earlier planting window, more uniform stands and consistently higher yields. Intellicoat also allows producers to replace their last 20 to 25 percent of planting, which normally yields less."

For more information about Intellicoat Early Plant technology, call 1-800-241-7252 or visit [www.intellicoat.com](http://www.intellicoat.com).