

Avoca: Sage Advice from the Odor Generation



Photos courtesy of Avoca

By Jim Shamp, Senior Editor, NC Biotechnology Center

The pungent aroma of clary sage wafting across colorful eastern North Carolina fields began its annual transformation into the smell of money this week.

Every June for the past 30 years, farmers contracting with the Bertie County firm known as **Avoca** have harvested the pink, white and purple sage plants that now adorn some 5,500 acres with eye-popping color and, for some, a nose-grabbing odor.

Some say the colorful little sage blossoms stink. Ultimately, however, this unusual late-spring harvest ritual comes up smelling like a rose – or more significantly, like an expensive French perfume – through modern technology improving upon North Carolina's vestigial fishing and tobacco industries. It dazzles wide-eyed tourists headed to and from the Outer Banks along U.S. Route 64, but most don't realize this outsized flower show is also an epicenter of scent.

In fact, David Peele, Ph.D., Avoca's president, said Avoca sells to the fragrance industry more than 90 percent of the world's supply of a key component – a derivative of sage extract called sclareolide. It's a modern-day replacement for ambergris, a waxy floating prize from the vomit and excreta of sperm whales collected by fishermen of previous generations. Like its predecessor, sclareolide is used as a "fixative" to maintain perfume potency in everything from laundry supplies to ... well, perfumes.

The main product from clary sage is sclareol, a wax excreted from the plant, apparently to protect it from diseases. Growers harvest the sage with forage choppers, cutting the whole plant into one-inch pieces, and bring it to Avoca where each truckload is tested and priced according to its sclareol content. The harvested sage is extracted using hexane.

Sclareol is the starting material for the production of sclareolide.

"The transformation of sclareol to the sclareolide product is the most interesting part," said Peele, "because we have to convert sclareol from a 22-carbon compound into sclareolide, a 16-carbon compound. It's a bioconversion done with yeast, at a sister company in Wisconsin. The yeast cell will use sclareol as its carbon source, and so inside the yeast cell the conversion goes to sclareolide. It's a pretty clever little deal, if I say so myself."

Avoca brings the yeast-converted sclareolide back to Merry Hill and runs it through a purification process, resulting in a product that is more than 95 percent pure. Peele said the use of sclareolide as a fixative was developed in the mid-1970s in Germany.

“A fixative prevents a desirable fragrance from evaporating too fast,” said Peele. “A perfume not only has to have a pleasant smell, but you’ve got to then have it stay on your body as long as what you think it should for what you paid for it.”

“You have to appreciate the marketing people of the world,” he laughed. “Detergent enzymes without fragrance would stink so bad you wouldn’t use them. So marketers have convinced Western cultures that clean has a fragrance, an odor, a smell. Tide, Cheer, Dash, you can almost recognize detergent by the smell. You open your closet, you want it to smell like whatever your definition of ‘fresh’ is. You don’t want to open your closet door and have it smell musty. And they want those fragrances to say on those clothes.”

Peele and his partner, David Holmes, co-founded Avoca six years ago, using the name known by local historians as a former plantation. The entrepreneurs bought it from R.J. Reynolds Tobacco Co., which decided to divest its then-small sage-growing enterprise.

RJR bought it in 1960, said Peele, who serves as chairman of the North Carolina Biotechnology Center’s Eastern Advisory Committee. A self-described “educated farmer,” he joined RJR in 1978 as a staff agronomist after earning a bachelor’s degree in agricultural engineering at North Carolina State University, a master’s in soil science at The Ohio State University and a Ph.D. in crop science at NCSU.

“RJR put in a facility for chemistry and ag research here,” he said, “but in late 2002 they changed focus and decided to divest it. I’d been here for 25 years and wanted to stay with it. So I found a partner, and we were able to take it private. It’s been a wonderful career in a wonderful place.”

Avoca has succeeded in becoming a global provider and developer of botanical extract products by targeting the highly specialized fragrance market with its sage extracts. The firm, which sells all of its sclareol to European buyers, also sources its sclareol requirements from France and China to reduce the chance of losing an entire harvest to hurricane, drought or other localized catastrophes.

But Peele has also integrated science more broadly into the company’s growth.

“This fragrance work is one part of our business, the most public part,” he said. “But we also work under confidentiality agreements on developing better ways to extract a variety of products from plants – things like Omega fatty acids, for example. We do a lot of work on extracting antioxidants from different plant materials that go back into the food industry. Most is solvent extracted. And Avoca operates under food-grade GMP (good manufacturing practice) standards using solvents.”

As agricultural diversification continues across North Carolina, increasingly prodded by the North Carolina Biotechnology Center, Peele said Avoca expects to play an ever-larger role.

“We’ve visited the North Carolina Research Campus in Kannapolis, for example, and what they’re exploring with foods in the lab stage, we’re prepared to participate in from the processing standpoint. We’re just at the beginning now of seeing specialized food products coming through these labs around the state that need to be commercialized. Any company in North Carolina will need a company like Avoca to get what they want out of the plant.”