

Penn State Researcher Develops New Process For Pectin Extraction

UNIVERSITY PARK (Centre Co.) — A process developed by a researcher in Penn State's College of Agricultural Sciences to extract high-quality pectin from orange peels may result in a new multi-million dollar American industry.

The new method, called flash extraction of pectin by steam injection, uses a high-temperature, high-speed procedure that appears to be ideal for extracting high quality pectin. The university has applied for a patent on the process.

Pectin is a complex carbohydrate found in fruits. A food additive, it is commonly used to thicken jellies and fruit fillings for pies and other desserts, and historically has been extracted from the peels of citrus.

In 2002, the United States imported more than 5,300 tons of pectin worth more than \$56 million. Most pectin extraction is done in Europe using lime peels imported from Mexico and South America. For decades, pectin has been extracted mostly from lime

peels by slow cooking. Pectin producers use lime peels because they produce higher-quality pectin than other citrus peels.

But that might be about to change. According to Paul Walker, professor of agricultural engineering, flash-extracted pectin from orange peels is comparable or better than pectin from lime peels. "Of course, we have mountains and mountains of orange peels here because the United States is one of the largest producers of oranges in the world," he says. "About 90 percent of the oranges we grow are used to produce juice."

During a recent sabbatical at the U.S. Department of Agriculture's Wyndmoor, facility — where he was developing techniques to remove microbiological contaminants from fruits and vegetables — Walker became interested in pectin-extraction research being done there. Partnering with a USDA chemist, he began pondering better, faster ways of extracting pectin from peels.

"They were experimenting with using microwave energy for extraction," says Walker. "As an engineer, I started thinking about the benefits of using steam injection to heat the peels quickly under pressure, and the benefits of extraction at high temperature, with rapid cooling."

So he worked on the problem in his spare time for a year or so, developing equipment to do the process his way. During the research, Walker and his colleagues at Wyndmoor realized, to their delight, that they could get high-quality pectin from orange peels using the new, high-speed, high-temperature process. That discovery could result in the growth of a pectin-extraction industry in the United States using a source — orange peels — that now goes to waste.

"The ramifications of this research are enormous," says Walker. "Big orange juice makers are very interested. It's a simple process, but the best ideas are the simplest. As Einstein said, 'Every thing should be made as simple as possible, but not simpler.'"

On Being a Farm Wife

(and other hazards)

Joyce Bupp



FALL...down

Wind-whipped, scudding,
drifting, blowing,
Slithering, blithering, tossing.
Going!
Summer's green now history
past.
Our leaves are disappearing.
Fast!
Some float down on gentle air,
Hesitant to land. And, where?
Others fly at break-neck pace
As tho to swiftly end their race.
In corners, crannies, nooks,
they pile
Suggesting that they'll stay
awhile.
Once most have tumbled thru
the sky,
We sweep 'em, rake 'em, pile
'em high.
Our cats investigate, peruse
Which piles are softest for a
snooze.
The turkeys even honker down

Amidst the leaf piles, gold and
brown.
One balmy morn, I grab a rake
Some neatness in the yard to
make.
And hope that we can move 'em
out
Before a gust blows them about.
Beneath one pile, all crisp
and crunchy,
A bone that Derra finds quite
munchy.
Another hides a snail, so small,
Parked right beside a stray
golf ball.
A garden hose, three flower pots
A length of twine tied up in
knots.
One rubber boot, an ear of corn
An old balloon, now badly torn.
This raking leaves is not a bore,
Surprising finds speed up the
chore.
Still, I am glad when they are all
And that job's done...
'til another Fall.

Evergreen Centerpiece Class

COLLEGEVILLE (Montgomery Co.) — The popular class on evergreen centerpiece arrangements is again being offered this year by the Chester County Cooperative Extension.

The class will be conducted Saturday, Dec. 6, from 10 a.m. to noon at the 4-H Center parking lot, 1015 Bridge Road, Collegeville. The cost of \$25 per person covers cost of all the materials. Participants should bring gloves and, if they have them, pruning shears.

Preregistration is required by calling Sheila at (610) 489-4315.



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"Being inducted into the VFW Hall of Fame was the greatest honor in my lifetime."

—Cristy Lane

POW's and MIA's... We Should Never Forget.

Amidst their hardships and tribulations, America's fighting men and women have always taken comfort in their favorite songs of faith. These songs have helped to keep strong their belief in their God, and their love for their country, which has asked of them great sacrifices for the sake of their fellow Americans. To serve these wonderful men and women Cristy Lane worked more than 120 shows in Vietnam during the Vietnam War. It was Cristy's way of keeping faith with the troops, at a time when many Americans were turning their backs on them. As long as she lives, she will never forget the faces of these young men and women. On August 27, 2003 the VFW formally inducted Cristy into the VFW Hall of Fame in San Antonio at their National Convention. And now Cristy Lane is proud to present a special CD of songs of faith to our Veterans of Foreign Wars, many of whom she met in the jungles of Southeast Asia.

These are the most requested songs of faith of all time, including Cristy's #1 country hit from 1980, the timeless classic, "One Day At A Time." These songs have been selected especially for you, America's veterans, who know so well the meaning of faith, and the value of a great song of faith.

God bless and take it one day at a time.

—Cristy

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- Whispering Hope
- Precious Memories
- The Old Rugged Cross
- Rock of Ages
- Softly & Tenderly
- In The Garden

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- Standing On The Promises
- The Lord's Prayer
- God Bless America
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