

Gasifier breakthrough

Corn cobs provide energy

One company's search for an answer to short supplies and high costs of energy appears headed for success. But what seemed like a simple solution has taken five years and more than \$750,000 in

research and development costs. Pioneer Hi-Bred International, Inc., the nation's largest hybrid seed corn producer, dried part of its 1979 seed crop using a gasifier which produces a mixture of

combustible gases from corn cobs. Development was a joint project involving engineers from Pioneer and a Des Moines heating consultant. While gasification isn't new, using cobs for fuel required many modifications. A patent application is being considered to cover these features. No government funds were involved in the project, according to Pioneer officials.

Gasifiers were used in drying corn at three of the company's 22 seed handling plants this fall. Nearly \$700,000 has been budgeted for additional installations in 1980.

Pioneer dries about eight million bushels of seed corn each year. This requires removing an average of three gallons of excess water per bushel. In a typical year, some 400 billion BTUs are required for the job, an essential one if farmers are to have high quality seed corn.

Using cobs as a heat source to dry seed corn offers a near-perfect solution to this particular energy problem. It disposes of cobs, a by-product of the seed production operation. It conserves natural gas or propane for other uses. And even though the gasifiers cost approximately \$75,000 each and are used only about 8 weeks a year, they should pay for themselves in less than ten years, based on present gas and propane costs.

Natural gas provided most of the heat to dry seed corn at Pioneer seed plants prior to 1974. Following the OPEC oil embargo, some of the company's gas suppliers hinted that it should be searching for alternative fuels. Also, as the

company looked for additional locations for expanded seed corn production, it found that many did not have natural gas service. Raising costs of fuel gave further impetus to seeking an alternative.

Propane worked well, but a steady supply had to be assured or valuable seed could be lost. Also, propane doubled the costs of drying corn.

The obvious solution was to burn the cobs that are left after seed corn is dried and shelled. "We knew there were enough BTUs in the cobs to dry the high-moisture corn coming from our seed growers' fields," says Walter Stohlgren, one of the company's engineers. "The trick was how to capture that latent energy and produce a steady, well regulated flow of warm air to dry seed corn without damaging it."

The first experiments involved burning cobs in an incinerator. However, this was rejected because of the formation of clinkers and release of corrosive agents and irritating ash in the heated air.

Gasification, in which cobs react with a controlled supply of oxygen, was tried next. Among other problems, this resulted in tar-like substances being deposited within the gas-handling equipment, leading to breakdowns.

After extensive experiments and major modifications, the tar problem has apparently been overcome.

Gasification produces a mixture of carbon monoxide, hydrogen, methane, nitrogen and other gases. Burning this low-BTU fuel heats air that is forced through bins of ear corn to remove excess moisture. The modified

gasifiers operated this year at Pioneer seed corn plants near Druant, Iowa; Rushville, Indiana and Laurinburg, North Carolina.

"To our knowledge, this is the first large-scale drying of seed corn using gasified cobs as fuel," Stohlgren says. He believes other seed companies will no doubt be interested in the process.

Stohlgren says the bill for equipping all of Pioneer's drying buildings with gasifiers and necessary cob-handling equipment would be roughly \$8 million at today's costs. To put this in perspective, the Company expects to spend about \$2 million for drying fuel this year. Prices of both natural gas and propane will no doubt continue to increase in the future.

Economics will dictate how fast Pioneer will switch to gasifiers. There's a side-benefit for farmers in Pioneer using cobs instead of gas to dry seed corn. The manufacture of anhydrous ammonia, the most common source of nitrogen fertilizer for corn, uses large amounts of natural gas. By drying seed corn using corn cobs instead of gas for fuel, Pioneer can contribute to the supply of fertilizer farmers need to grow corn.



Superior seedlings

Mr. Jesse P. Perry, right, of Hertford examines a containerized, superior loblolly pine seedling as tree planter, Frank Robbins looks on. Eighteen acres of these seedlings were planted on Mr. Perry's farm near Beech Spring last week. An increase of 10-20 percent in growth and quality can be expected from these genetically superior trees.

Hunt to speak

RALEIGH — The president of the Corn Growers Association of North Carolina, William V. Griffin, a Jones County farmer, announced that Governor James B. Hunt, Jr. will address the group's annual meeting on December 14. Hunt will tell several hundred corn growers, North Carolina State University

extension personnel, county agents and agri-business people about his recent trade trip to China.

Griffin announced that awards will be presented to the winners of the State Corn Contest. Ted Ivey, a Wayne County farmer and Corn Growers Association Board Member, will be in charge of the awards presentation.

Summary

Corn prices about steady and soybeans 11 to 15 cents higher through Thursday, December 6, compared to the same period of the previous week. No. 2 yellow shelled corn ranged mostly \$2.86 to \$3.05 in the Eastern part of the state and \$2.94 to 3.01 in the Piedmont. No. 1 yellow soybeans ranged mostly \$6.23 to \$6.60 in the East and \$6.05 to \$6.48 in the Piedmont; No. 2 red winter wheat \$3.75 to \$4.20; No. 2 red oats \$1.25 to 1.45.

Cabbage prices were steady at Eastern North Carolina shipping points. Supplies are moderate with demand improving. Quality good.

Newsline

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Dec. 13: Retail Meat Prices
Dec. 14-16: Cattle on Feed
Dec. 17: Cattle on Feed Analysis
Dec. 18: Potato Stocks
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Perquimans Gardening

By Jean Winslow



That nemesis of the season—fallen leaves—can be used to great advantage. Before you put them out on the street, before you rake them up, before you curse their very presence, mow them. Mow them! It is a practical and biologically feasible way to deal with the problem.

We have mowed the back yard twice, the result being a very fine mulch which has sifted between the blades of grass, preparing to decompose as winter continues. It will build up the soil, returning nutrients to the earth in the never ending cycle that was here before man intervened.

Fresh evergreens! The very aroma heralds this holiday season; no house should be without it. So prepare them to last as long as possible. I find that plunging evergreen branch ends into hot sugar water and letting them remain for 24 hours before arranging is highly satisfactory.

During this period it is possible to wire some branches in a specific shape, and they will most of the time, "learn" to stay that way after the soaking.

The same goes for a tree. Purchase the tree several days before you are to decorate it, saw a little off the trunk for better absorption, and place it in a deep bucket in an area where the branches will fall loose again after having been tied up for its trip from the forest.

Hose it in the morning and hose again at night. It will absorb vital moisture lost in the journey. Keep tree in sugar water after it has been put up.

Living holiday plants need attention, too. But, according to florist Mary Ruth Smith at Dozier's, people give indoor plants too much attention, particularly when it comes to over-watering. Don't do it, she says, as long as that beautiful floral paper and ribbon are inhibiting the drainage. She suggests removing the wrapping after three weeks. Also, she said, watch out for temperature extremes.

Most potted plants, say horticulturists, do best at a daytime temperature in the middle 70s and a night temperature between 50 and 60 degrees. Keep out of drafts. Avoid the heated air blowing from a system, just as you should avoid air conditioning draft in the summer. Keep plants in a good indirect light, and allow them to have darkness at night, which means moving some plants to another spot. Avoid over-fertilizing.

I do suggest, though, that a light misting with the old water-filled Windex bottle will help keep dust off leaves, and will actually improve the transpiration of the plant, that is, the function of the leaf to give off water in the form of vapor. The thousands of pores, or stomata, on a leaf should also stay cleared of dust to enable them to assist in photosynthesis, that process in which sugar is manufactured as food, and oxygen is released into the atmosphere.

But I digress. What we should be thinking about next is what to do with that old bloomed-out chrysanthemum, or whatever, from the florist, now that it is no longer decorative. Fortunately, in this climate, you can take it outside, and after having taken it out of the pot (did I really have to tell you that?) plunge it in a protected area for winter. It works. It will live to bloom another day. Anyway, I just bet that's what Mary Ruth says about HER chrysanthemums.



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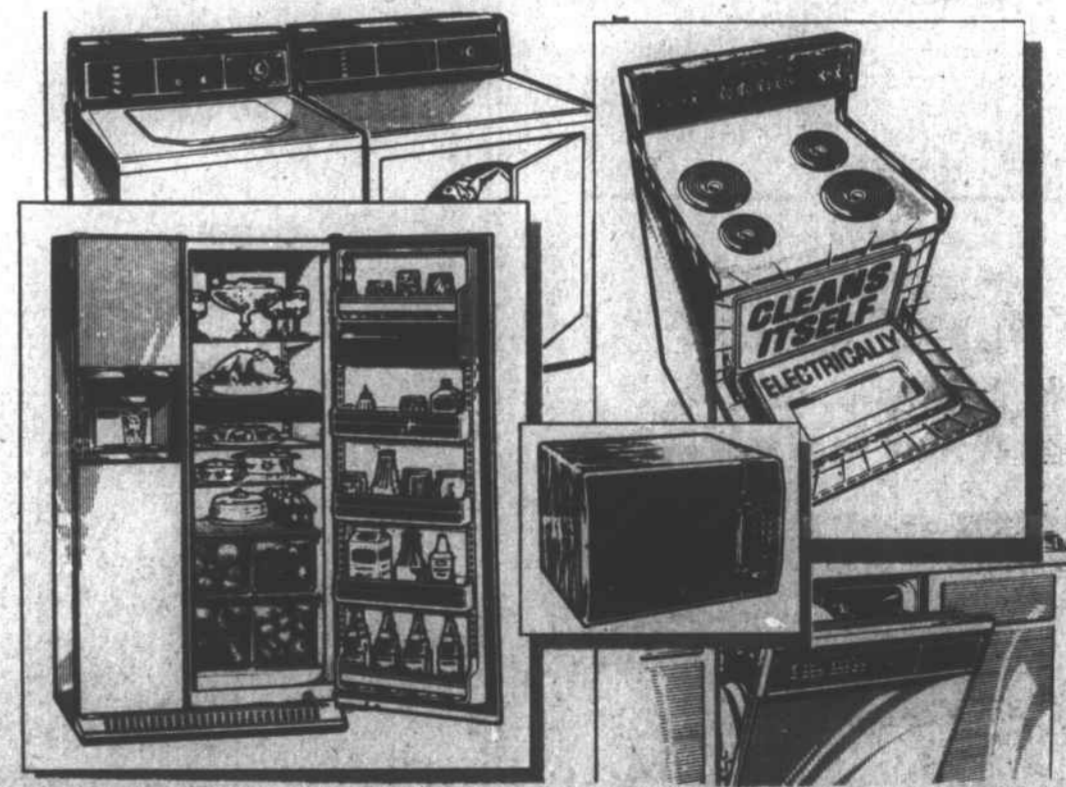
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