

# WEST TEXAS *Country* *Trader*

The West Texas Country Trader is a supplement of:

ABERNATHY WEEKLY REVIEW  
Abernathy, Tx - Hale County  
CANYON NEWS  
Canyon, Tx - Randall County

CLARENDON NEWS  
Clarendon, Tx - Donley County  
CASTRO COUNTY NEWS  
Dimmit, Tx - Castro County

HEREFORD BRAND  
Hereford, Tx - Deaf Smith County  
HOCKLEY COUNTY NEWS  
Loveland, Tx - Hockley County

LAMB COUNTY LEADER  
Littlefield, Tx - Lamb County  
LORENZO EXAMINER  
Lorenzo, Tx - Crosby County

PLAINVIEW DAILY HERALD  
Plainview, Tx - Hale County  
RALLS REPORTER-NEWS  
Ralls, Tx - Crosby County

Thursday, July 8, 1993

SLATON SLATONITE  
Slaton, Tx - Lubbock County  
TULIA HERALD  
Tulia, Tx - Swisher County



**Weed buggy ride**

Laura Bass (left), 13, and sister Catherine, 11, spend a sunny afternoon recently with their grandfather, Frank Bass, spraying weeds on some South Plains cotton. The crop is thought to be in excellent condition so far.

Gordon Zeigler/AgReview

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# AgReview



## Calendar Ag News

**July 10**

**LEVELAND CELEBRATION & TRACTOR PARADE** — A parade featuring tractors at 10 a.m. in the downtown area will highlight the day's festivities. For information, contact Preston Reeves, 562-4381.

**July 10**

**NAZARETH GERMAN FEST** — A traditional event featuring German cuisine and a Suds 'N Sounds music concert. For information, call 945-2232.

**July 17**

**SEAGRAVES DAYS** — The Texas Plains Chapter of the Two-Cylinder Club will bring the sounds of the Old Poppin Johnnie to Seagraves residents celebrating their annual community event.

**July 17**

**CHILDRESS PICNIC & REUNION** — Jim Parker will head up the event, which includes spotlighting old tractors.

**July 17**

**SWISHER COUNTY PICNIC** — A parade at 10 a.m. and the traditional noon barbecue will highlight this annual celebration. Old tractors will be part of the parade, which begins lining up at 9 a.m.

## Cotton trash turned into 'gold mine'

**Special to AgREVIEW**

**A&M Extension Service**

**C**OLLEGE STATION — Drs. Wayne LePori and Calvin Parnell knew there might be treasure in cotton trash, but had no idea their hunt would end up as it did.

Almost two decades after Texas A&M University agricultural engineers began searching for alternative energy sources, LePori and Parnell think they may have an unintended but commercially viable byproduct. In their quest to use cotton-gin trash — sticks, burrs, leaves and motes — for fuel, they have found an inexpensive source of low-grade activated carbon, which can be used in filtering wastewater.

The Texas Agricultural Experiment Station researchers have signed a licensing agreement with Cratech, Inc., of Tahoka for the technology, and Texas A&M regents approved the agreement during their March meeting.

"It turns out the byproduct may be more valuable than the fuel," said LePori, a Texas A&M professor of agricultural engineering who started developing a gasification process for cotton-gin trash in the mid-1970s, during the midst of the world energy crisis.

"Everybody was concerned about energy availability, and we began looking at sources for and from agriculture," he said. "Cotton residue just popped out, because there was a lot of it already available, centrally located at the gins."

They envisioned a source of energy to power cotton gins, as well as a way to help solve the expensive problem of cotton-gin trash disposal.

But LePori and others quickly found that burning the trash left too much slag and fouled the conventional boiler used for small-



**NEW VALUE FOR TRASH** — Texas A&M is studying ways to put new value in cotton trash.

scale steam production.

LePori and Parnell, also a professor of agricultural engineering, later began looking at a process called Fluidized bed technology, which involves a container of heated inert material such as sand. Air blown through the bottom of the container bubbles through the bed of sand, which is heated to approximately 1,400 degrees Fahrenheit and becomes almost suspended within the container.

Cotton-gin trash is then fed into the fluid sand, where it percolates through the sand with the air bubbles. Controlling the fuel-to-air

The A&M researchers adapted

existing fluidized bed technology by developing three new elements to add to the gasifier. Those were a special feeder to move cotton-gin trash into the gasifier, a cyclone system that separates the char from gases, and a two-stage combustion system that destroys nitric oxide while converting the combustible gas into energy.

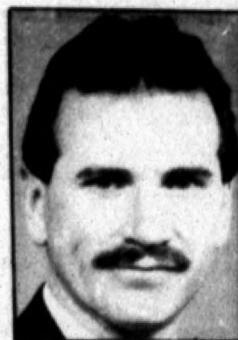
Their changes led to a system that gives off less nitric oxide (a harmful gas) and particulates while producing the char and a combustible gas that could be used for energy.

**See TRASH, Page 9**

## Feedgrain prices continuing to struggle

U.S. feedgrain prices continue to struggle as the grain trade attempts to get some idea of what this year might actually stack up to be. There are a number of factors that have the trade concerned such as; planting delays, number of acres possibly shifted to soybeans, yield potential, summer weather, and export demand. The combination of all this uncertainty and a USDA forecast of a slight increase in ending stocks for the 1993-94 marketing year continues to keep prices near their lows.

Corn planting progress continues to edge forward, with only 4 percent left unplanted as of June 14. However, it is getting late for corn planting, even in the midwest. As a result, some of the remaining acreage could be shifted to soybeans or other crops. Those states lagging furthest behind appear to be South Dakota, Missouri and Wisconsin at 82, 89 and 90 percent planted respectively. The market seems to be moving away from the attitude that rain means prevented acres, and more toward one of rain makes grain. There may still be some spillover from soybeans



### GRAIN MARKET UPDATE

**Dr. Mark Waller**

though, as there is still a concern over planting delays with that crop.

From a supply/demand perspective, the outlook is somewhat of a mixed bag. U.S. and world feedgrain production is expected to be down, and consumption is expected to be up for the 1993-94 marketing year. That is mostly offset though by larger beginning stocks as a result of last year's large U.S. harvest. A major area of concern for the market will be the lower estimates for both U.S. and world exports in 1993-94. Export competition will likely remain

tough during the coming year, especially in the good Asian basin market where Thailand and China have a definite transportation advantage. U.S. demand will continue to grow as a result of good growth in domestic feed, food and industrial use, but exports will continue to be a problem. There are not many buyers out there willing or able to pay cash. As a result, exports will be very dependent on USDA programs.

From a marketing perspective, the next real chance of higher prices will likely come as the midwest moves into the pollination time frame. Since planting and crop development has been delayed, pollination could be pushed back into the hotter part of the summer. We have a similar situation here in Texas where some corn got planted 5 to 6 weeks late. If the weather turns off hot and dry later that could get prices moving back up.

**(Mark Waller, a Texas A&M Extension Economist, is an authority on the nation's grain markets)**

# South Plains Ag News

**July 24 & 25**

**SECOND ANNUAL AMARILLO TRUCK & TRACTOR SHOW** — The event will be centered at the Travelodge East, 3205 I-40 East.

**July 24 & 25**

**WESTERNWHEATLAND GREEN & YELLOW EXPO** — Old tractor buffs from Texas, Kansas, Missouri, Arkansas, Louisiana and Oklahoma will gather for a salute to the old tractor. Featured model this year is the John Deere Model D. Machines from 1923, 24 still needed. Jim Cole, Rt. 2, Selling, OK, 73663, is show coordinator.

**COUNTRY RECIPES PUBLISHED** — A collection of what are called "mouth-watering" recipes from Texas farm and ranch wives has been made available by the Texas Agricultural Cooperative Council.

The book is entitled 'TACC's Country Fixin's' and is available at \$10.50 per copy from the Texas Agricultural Cooperative Council, P.O. Box 9527, Austin, TX 78766.

## Wheat: fine tuning to local situations

By JOE BRYANT

A&M Extension Journalist

**C**HILLICOTHE — Wheat research at the Texas Agricultural Experiment Station facility here

continues to look for varieties which best meet the needs of Rolling Plains producers, making the most of what nature offers in the area. A key attribute is drought tolerance.

"We're interested in the kind of drought tolerance that means a difference of a few bushels (of grain) an acre," Dr. Mark Lazar, molecular geneticist with the Experiment Station at Amarillo, told some 300 visitors at the Texoma Ag Day this year.

The research plots on drought resistance were one of three featured stops on the field tour. Other stops showcased wheat variety research and weed management, and a computerized tractor which visually displays energy use in various field operations. The program also featured seminars on specialty enterprises, including vegetable and melon production, raising emus and ostriches, and organically-grown cotton.

"We have pretty decent moisture in the fall," Lazar reminded the guests. "But we lack moisture at critical times in plant development and grain fill."

The ongoing study is looking at varieties and crosses of wheat in a special nursery. It includes lines developed by Dr. Kenneth Porter,



**WHEAT SCENE** — Fields like this one may see improvement if varieties can be tailored to local situations.

Experiment Station wheat breeder at Amarillo who is now retired, and another group of lines from Romania.

The same nursery is also being grown and studied in Romania, Lazar said, "to see what similar lines would look like grown in another area. Not all droughts are alike."

Lazar said the study has two basic objectives. One is to examine simple characteristics of varieties, such as number of plants per acre and number of tillers per plant under drought and under natural rainfall conditions.

The second is to try to understand

the mechanism of the plants, what makes them respond as they do to drought conditions.

Lazar demonstrated the rainout shelter which assures that drought conditions are maintained in the test plots, even though Mother Nature may decide to grace the field with a shower. It is a large metal roof on tracks which automatically rolls into place at the first drop of rain. The shelter is electronically controlled. When a raindrop completes the circuit in the control switch, the shelter covers the drought plots in only 60 seconds. ■

## Industrial uses of crops to increase

By MARGARET SCHERF

Associated Press Writer

WASHINGTON (AP) — amount of plant matter used in industrial materials could increase by over 5 million tons over the next three years, almost doubling the use in 1990, says USDA's Economic Research Service.

"Given the national economic outlook, housing,

textiles and fabricating metals — key users of agricultural materials — are likely to show above-average growth, while printing and publishing — also key users — probably will show more sluggish growth," said a situation and outlook summary by the service on Industrial Uses of Agricultural Materials.

It said scientific gains,

along with federal and state environmental regulations, and growing consumer demand for so-called green products that are environmentally safe, are increasing the industrial demand for agricultural materials.

"Some analysts expect that over the next three years the amount of plant matter used in industrial materials, excluding paper and natural rubber, could

increase by over 5 million tons, almost double that of 1990," it said.

Looking at specific materials, the summary said that over the next four years, production increases in ethanol and adhesives will help pull up the industrial uses of starch and sugar.

"Cornstarch is now relatively less expensive than starch from other sources,

and has captured most of the market," it said.

Industrial uses of corn are expected to increase about 140 million bushels to 795 million bushels by 1995-96, up roughly 8 percent per year, it said.

Over 3,800 acres of kenaf, a tropical fiber crop, are being commercially grown in the United States this year, the report said. Kenaf is used for packing

materials, bond paper, horticultural mulches, potting mixes, seeding mats, animal litter and bedding and oil absorbents.

"Potentially, it could move into newsprint and paperboard markets," the report said.

The report noted that U.S. beef byproducts are worth an estimated \$3 billion a year, with most going for industrial uses.

## An issue of endangered species vs endangered farms

By VERNIE GLASSON

Texas Farm Bureau

All of us recognize the beauty and symbolic majesty of the American Bald Eagle. We are committed to maintaining the species at almost any cost.

Few of us would deny that it is important to preserve our national bird for the enjoyment of future generations. Certainly there are other animals and plants that are important to our ecosystem, and we have strong interests in protecting them as well.

It is time, however for serious reflection on the question of endangered species protection. Have we as a society gone somewhat overboard in our eagerness to maintain each and every species that exists today? Just how important is the continued existence of the Blind Salamander, the Golden-Cheeked Warbler, the Red-Cockaded Woodpecker, and a wide assortment of invertebrate cave beetles?

All of these are the subjects of expensive preservation efforts. Protection of endangered species is one of those "warm and fuzzy" issues that almost everyone is "for" until they hear the bottom line. Are you willing to forfeit your job,



GLASSON

### Guest Viewpoint

or control of your property in the name of preserving every living thing on the planet? It could come to that. For many, it already has.

Can we prevent extinction? We don't really know yet. Should we even try in each and every case? Species go extinct every year, despite our best efforts. Dinosaurs managed to die out long before humans could become the villain of the story, as so many are eager to cast us today.

The present Endangered Species Act was enacted in 1973. Its purpose was to preserve and enhance the existence of both plants and animals whose existence was threatened.

Since the inception of the Act, there have been fewer than five species whose numbers have recovered to the point that they could be removed from the list of the endangered. Here in Texas we have approximately 50 species on the list as actually endangered. There are another 300 species of either plants or animals about which there is not sufficient data to make a decision. These are listed as threatened or as a candidate for listing. This group is not currently covered by the protection of the ESA.

A fierce battle is now being waged in the Congress between those who seek to modify the Endangered Species Act and those who simply want to extend and expand the current act.

The chairman of the Merchant Marines and Fisheries Committee, Congressman Gerry Studds (D-Massachusetts) is for an expansion of the current ESA provisions. He would also

like to apply the ESA to those species on which there is not sufficient data to make a determination. Studds has introduced legislation that would do exactly that and he is seeking co-sponsors for his bill.

Those of us who would like to see modification of the ESA want to strengthen the scientific data requirements prior to listing species. We want to recognize the rights of individual landowners to use their property, and we believe there are ways to expand the numbers of endangered species through economic incentives to landowners.

Our legislation was introduced by Congressman Jack Fields of Humble, and co-sponsored by several members of the Texas delegation. Other Texas co-sponsors include: Jack Brooks, Charles Wilson, Bill Sarapalius, Chet Edwards, Greg Laughlin, Solomon Ortiz, Charles Stenholm, Ralph Hall, Sam Johnson, Lamar Smith, and Henry Bonilla.

It is important that people involve themselves in this process. Jobs are being lost, important projects stopped or delayed, and progress denied in the name of environmentalism.

We are not suggesting that development must always go forward despite the environmental cost. We do think, however, that the human species is at least as important as plants and animals. As it is enforced today, the Endangered Species Act is an extreme law. Missing are economic balance, respect for private property and solid scientific data. Our Texas congressional delegation needs to give the FieldsTauzin Bill a fair hearing and consider signing on as a co-sponsor.

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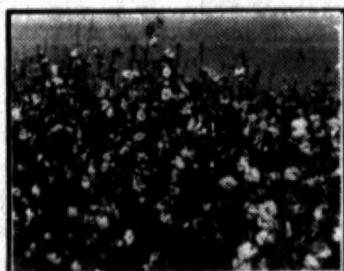
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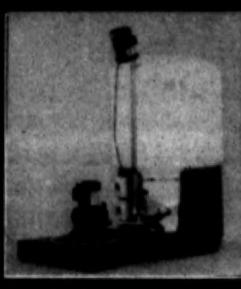
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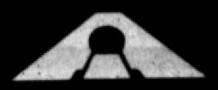
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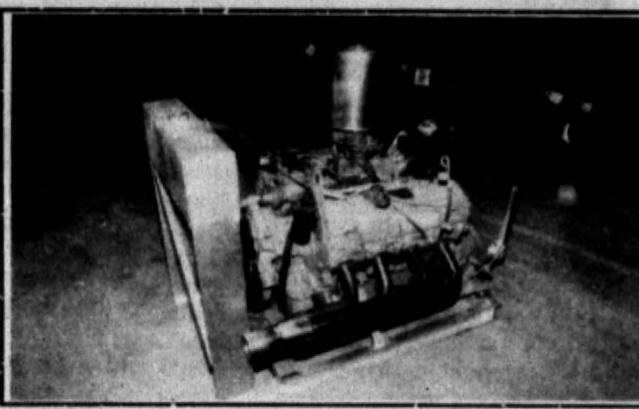
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# Computerization comes to the cotton gin

By MARGARET SCHERF  
Associated Press Writer

WASHINGTON (AP) -- The computer age has dawned on the cotton field.

The Agriculture Department says one of its research engineers has developed the world's only fully computerized cotton ginning system, and it may

someday boost returns to farmers by \$7 to \$23 a bale.

Current ginning methods give all cotton the same amount of cleaning, regardless of how much actual trash, such as seeds, is in it. Many cottons don't need to go through each step, and reducing the steps can cut energy costs and reduce fiber damage.

The computerized gin developed by W. Stanley Anthony of USDA's Agricultural Research Service is designed to put raw cotton through only the steps needed to clean the specific batch.

The computer considers cotton moisture, trash content, color, cotton pricing structures and gin machin-

ery performance characteristics to calculate ideal ginning conditions.

Infrared sensors measure moisture and video cameras pinpoint dirt, trash and cotton color. Then the control system automatically routes the cotton through the best machine sequence.

Commercial gins process

as much as 150,000 pounds of cotton an hour. A bale of cotton weighs 500 pounds.

When cotton is sold, each bale of cotton receives a grade based on such factors as color, trash content, fiber length and strength, all of which can be influenced by ginning. The grade determines how much a farmer is paid.

Anthony said his computerized system produces a good grade of cotton, reduces fiber damage and increases farmer profits.

However, "computerized ginning is not something that is going to happen overnight," he said.

"It is going to essentially require ginners to completely overhaul their operations."

At present, the only complete system is the one operating at the research service's cotton ginning laboratory in Stoneville, Miss., where Anthony works.

But four patents have been issued for components of the system. Anthony said several ginners have contacted him about the technology, which he said could save enough on energy and other costs to repay the gin operator's investment in two years.

## Corn exports to hit 50 billionth bushel

WASHINGTON (AP) -- Sometime this year, U.S. farmers will wave goodbye to their 50-billionth bushel of corn exports, enough to fill a line of rail cars that would circle the Earth seven times -- 175,000 miles.

The U.S. Feed Grains Council came up with those figures, citing Agriculture Department records that have tracked corn exports going back to the Civil War.

The United States, according to the records, hit the billion-bushel mark of corn exports in 1888; 5 billion in 1953; 10 billion in 1967; 25 billion in 1978.

"Sometimes we forget the sheer enormity of our grain export business, how successful we have been and what impact it has had not only on our agricultural and rural economies, but also on the economy of the United States as a whole," said Kenneth Hobbie, president of the council.

"This is a clear example of a great American success story," Hobbie declared.

"Fifty billion bushels is an almost incomprehensible amount of corn," said Charles Ottem, a farmer from Osnabrock, N.D., who is the 1993 chairman of the feed grains council.

"It is an event that we need to take pride in not only as farmers, but also the entire agribusiness sector from seed to export. Think of the worldwide impact and the industries that have been spawned and supported around the world based on U.S. corn as an exported raw material," he added.

The council announced this month that it is planning, jointly with seed producers Pioneer Hi-Bred International, a series of activities to commemorate the fifty-billion-bushel mark.

Among them will be a celebration sometime this spring in New Orleans,

probably early in May. Representatives from all sectors of the corn production and export business will be invited to participate in a ceremonial placing of the 50-billionth bushel of corn on an export vessel.

The council is a private,

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non-profit organization that develops and expands export markets for U.S. feed grains and products.

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Bailey said an epidural provides a continuous dose of medication through a catheter inserted in the patient's back. She said it is different from a spinal block, in that the 18-gauge needle does not penetrate the "dura" (the covering of the spinal cord), but stops just short of that.

Bailey said the patient is rendered numb, but still able to move.

Bailey said if a Cesarean section becomes necessary in the course of labor, the epidural can be used for the anesthesia for that procedure as well.

"The level of pain relief can be increased, but the patient can still be conscious and be able to know when the baby is born," Bailey said.

Bailey also is qualified to provide other types of anesthesia as well.

Another expansion of services offered at the hospital is the availability of laparoscopic surgeries. Laparoscopy is the use of a small incision and the insertion of a small camera lens and cutting instruments through a tube into the body cavity. The smaller incision allows faster recovery time for the patient. Procedures that lend themselves to this type of

However, he plans to retire from that business as soon as he can wrap up loose ends.

Bailey said the pair are looking for a small farming operation they could move into, somewhere out in the country.

"It's nice to be in one place for a while," Bailey said.

They had been travelling around a lot, with Bailey going to various hospitals to provide temporary anesthesia services, filling in for vacationing personnel, etc.

A graduate of McGavock High School in Nashville, Bailey obtained her bachelor of science degree in nursing from Vanderbilt University in Nashville, Tenn.; and received her master's degree in health sciences as an anesthetist from Texas Wesleyan University in Fort Worth, while she was in the Army.

For more information, call Plains Memorial Hospital in Dimmitt at 647-2191.

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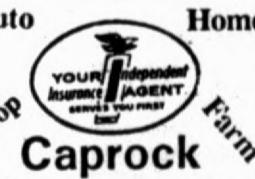
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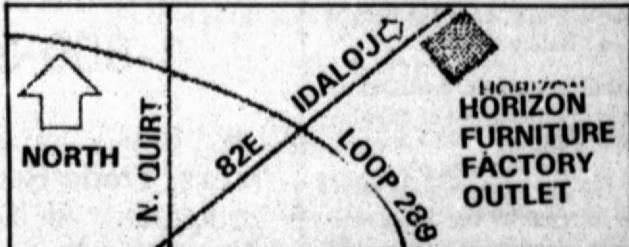
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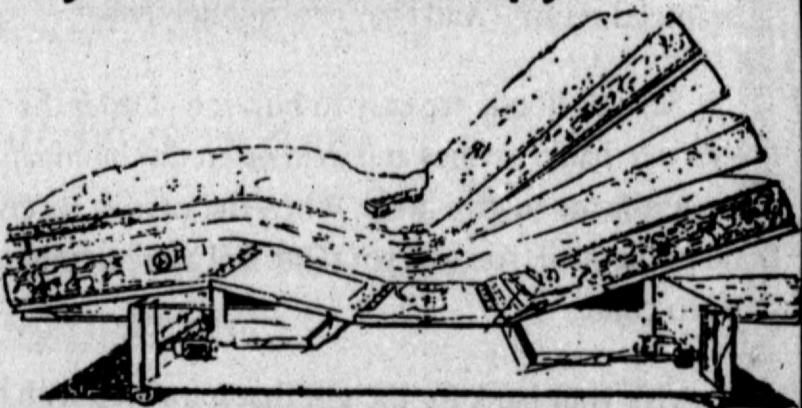
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# TRASH

From Page 2

Parnell said.

"That nasty black stuff, it turns out, is useful. It's just one of those quirks of research," he said. "Not only are we reducing the emissions, but we have a product that can actually clean up water in a very economical manner."

The char could be a commercially viable byproduct, particularly for use in smaller business or municipal wastewater treatment facilities in rural areas where cotton-gin trash is located, LePori said.

"We are planning to put

in a facility to see how it would work in an actual system," he said. "The ideal situation is to locate it where we can use both the electricity and waste heat year-round as we produce the char — perhaps a cotton oil mill."

"Commercial-grade activated carbon sells for anywhere between \$1,000 and \$3,000 per ton. If we could get \$200 a ton for this char, it would make this thing go."

The researchers originally published a paper saying a \$2.5 million investment in a 2 megawatt power plant using cotton trash would generate \$1.2 mil-

lion per year in revenue from energy sales on operating costs of \$1 million.

That would make the venture marginal in terms of its profitability, they said. However, they later calculated the same plant potentially could earn more through activated carbon sales — perhaps up to \$2 million per year.

Cratech estimated profits of \$3.5 million over the first years of using the technology, with sales of char and energy expected to begin in 1995. The Texas A&M University System will receive 5 percent of all royalties.

Joe Craig, president of

Cratech, said he's been actively trying to build a business based on the technology since 1984. But he's been working with the concept even longer, because he was a graduate student under LePori in the late 1970s.

Potential consumers of energy and activated carbon from Cratech include agricultural processing plants, municipalities and industrial parks, he said.

Craig has obtained funding support from the U.S. Department of Energy's Western Region Biomass Energy Program and hopes to receive support from a State of Texas alternative-energy program.

LePori said it's gratifying to see the project approaching commercialization after almost two decades. He also foresees a trend toward more use of biomass for fuel and other applications.

"Some of the people who ignored this before have gone broke trying to iron out the problems of slag and impurities when using biomass fuels in conventional direct combustion systems. They still haven't learned that biomass fuels are different than fossil fuels," he said.

"I suspect that people are going to take another look at many of these alternate

energy sources, depending on how the energy-tax situation evolves."

Parnell said, "One thing about research is that when you get involved, you don't expect quick responses. But good research and good results eventually bring feedback, and I am convinced this technology will be used in the real world, whether it's 10 years down the road or 50."

"There's a limited supply of oil, and this is a available means of taking biomass waste and converting it to a usable form of energy, compatible environmentally with the air and water. We're excited about it."

## Udderly amazing: radio tells farmers if cows are ill

By MARGARET SCHERF  
Associated Press Writer

**WASHINGTON (AP)** -- Radio signals someday will help dairy farmers detect sick cows, predicts an Agriculture Department scientist.

"Changes in a cow's temperature patterns can

### Global effort monitors soil

**WASHINGTON (AP)** -- Agriculture Department scientists say a worldwide network is needed to monitor soil quality and develop broader means of rating it.

"There is nothing currently available that can measure and predict farming's effects on all the key aspects of soil quality — soil productivity, environmental quality, food safety and quality and human health," said James F. Parr of the Agricultural Research Service in Beltsville, Md.

"It's no longer just a question of measuring the traditional physical and chemical properties to predict crop yields," he said.

Parr and colleagues would like to see a global network developed that would rate soil quality according to a new index or report card.

The proposal was based on reports presented at a recent soil quality conference, said Parr, who oversees ARS soil fertility research.

A new index for rating soil should include plant proteins, vitamins and trace minerals essential to human health, urged Sharon B. Hornick, an ARS soil scientist specializing in human nutrition.

In her experiments, Hornick is simulating human digestion to check how soil quality affects levels of vitamins and minerals that people absorb from eating leafy vegetables.

For instance, she said, experiments at Beltsville have shown that increasing soil fertilizer by a few pounds per 100 square feet can cut the vitamin C content of kale leaves by more than half.

The best way to improve soil quality is to leave unharvested plant parts on the ground, said Douglas L. Karlen, an ARS soil scientist in Ames, Iowa.

signal the onset of diseases," explained Alan M. Lefcourt, a biomedical engineer at the Agricultural Research Center in Beltsville, Md.

An electronic system he developed has been able to catch the slightest blip in the temperatures of 12 cows monitored daily for two years, he said.

With Lefcourt's system, a tiny sensor is placed surgically in a cow's body

cavity or udder, where it takes temperature readings. The readings are relayed every 15 minutes by a radio transmitter to a computer.

An early warning of illness developing in a cow "would reduce the farmer's cost of treatment and increase the cure rate," Lefcourt said in a recent Agriculture Department report.

A dairy farmer could install an alarm that would

"automatically warn the farmer of an abrupt, relatively high rise in a cow's temperature," he said. "This could mean an attack of life-threatening acute mastitis that needs to be treated immediately."

Mastitis costs U.S. dairy farmers \$2 billion annually for treatment and lost milk production.

With Lefcourt's system, a cow's temperature also can be monitored "to detect when a cow is in heat, or estrous, and is ready to be bred," he said.

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"Currently, U.S. dairy farmers miss detecting estrous about half the time," he said, adding that this costs farmers more than \$200 million annually.

Lefcourt said that perhaps the most beneficial use of his system would be in detecting subclinical mastitis, in which none of the usual acute mastitis symptoms are evident.

Subclinical mastitis often

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causes a practically unnoticeable drop in milk production per cow "that can add up to a lot of milk lost if a whole herd becomes infected," he said. "Suddenly, the farmer realizes that milk production is down to 5 to 10 or even 20 percent."

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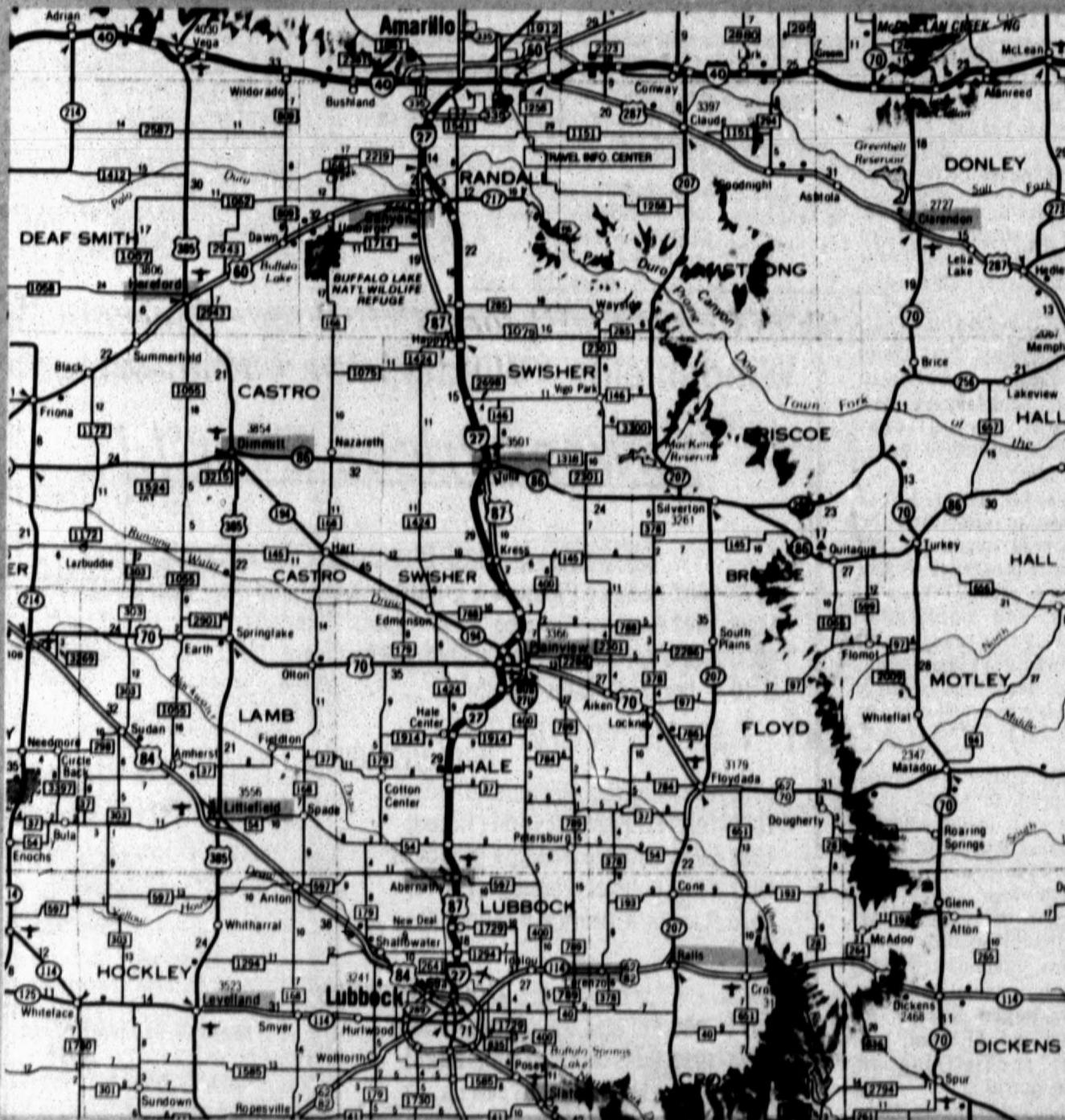
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# Satellite, handheld gizmo make it hard to get lost

By BILL SCHULTZ

Associated Press Writer

MONTGOMERY, Ala. (AP) — New computer and satellite technology is making it harder and harder to get lost, whether you're boating, four-wheeling or just hiking in the wilderness.

With the right equipment, the same satellite navigation system that guided American troops in the Persian Gulf War can tell an outdoorsman where he is within 30 yards.

In some cases it can be as close as 3 yards.

It's called the Global Positioning System, based on a galaxy of 24 satellites circling the earth at 12,000 miles. The first went up in 1978 and only one remains to be launched.

GPS is the booming portion of the outdoor navigation industry.

"When we first started in 1989, there may have been a maximum of six hours of GPS coverage a

day," says Jim White of Magellan Corp. in San Dimas, Calif. "Buyers tended to be the saltwater kind of guy. Even with just six hours coverage, it was better than anything else he could get."

The number of hours' coverage increased as more and more Navstar satellites were launched by Delta rockets from the Kennedy Space Center.

At least 60 companies are in the business today.

"The real market right now is mainly for the boater who's going out of sight of land, who needs to navigate, or is where weather or fog can come in," says Al Nunley, vice president for GPS business of Humminbird.

"If you don't have navigation equipment, you're going to have a tough time getting home."

"I think our next real push will be in land-based recreational markets. You'll never be lost," White says. "That's the

beauty of it. You can travel at night, in a whiteout snowstorm, and it will get you from point A to point B."

With the boom in manufacturers, prices have plunged. White says a portable, hand-held unit that was \$3,000 in 1989 sells for \$875 today.

The system basically is a radio and a computer. Once turned on, it locks onto the signals from several of the satellites. Three readings give it exact latitude and longitude and four will add altitude, useful information for a balloonist.

The readings are updated almost instantly.

The hang-up is GPS could always be accurate within a few feet, but the Air Force has built in the margin for error.

It slightly alters the satellite's signals which are broadcast in the clear. The highly accurate data is kept coded for military use.

"We have to retain the military competitive advan-

tage for which GPS is designed," Lt. Col. Mike Gannon of Washington says.

But others are working to improve the accuracy.

The U.S. Coast Guard is setting up "differential" stations along the coast. They eventually are to go up along the shores of the Great Lakes. They broadcast data which can be picked up and fed into the little GPS receiving unit which corrects for the built-in errors in the Air Force's signal.

Most GPS receiving units are very similar. Many companies buy their parts from Rockwell, which built the original satellites.

The real variety between products is how the manufacturer translates that information onto a screen.

Many units will show where you are and a trail where you have been. If you've been where you want to go previously, some will give you the course to get there again.

Prices for recreational units generally range from \$850 to \$1,500 for a more complicated unit with built-in computer mapping capability.

Prices for more complicated and more accurate commercial units, used for ship navigation or mineral exploration, go up from there.

Humminbird's NS10 has maps of the United States built-in, Nunley says. "The entire coast of the U.S. from Nova Scotia to the Caribbean, Baja to Vancouver, all inland waterways and lakes. No matter where you go or what you do, that map is there."

Lowrance offers the Global Map 1000, which can be used with any GPS system. The GPS unit figures its position, and it will be pinpointed on the map. Another version includes a variety of highly detailed maps of local areas that can be attached to its GPS system, says Tim Neece of Lowrance.

"On a high resolution map, you can go down to see individual boat slips," he says. The accessory is about \$125 and is "a real inexpensive way to add a lot of versatility to the units."

The newest product, AccuTrail, is targeted to off-road vehicles. It will mark your trail so you can turn around and follow it back.

While most units must have a car or boat battery, Magellan's NAV 5000 is hand-held and uses AA batteries.

It can be connected to a radio receiver to get differential correction or to a boat navigation system.

The basic unit weighs 30 ounces and it floats.

The next market, says Humminbird's Nunley, probably will be automatic vehicle locating. Using GPS, fleet dispatchers will be able to locate any of their trucks, boats or planes, in seconds.

## Job future glows brightly for ag students

EL PASO (AP) -- The head of a local youth farming program says the agriculture field is a lot brighter than state analysts report.

While Steve Forsythe, director of Ysleta High School's FFA program, agrees with state and national experts who say

"cows and plows" jobs are on the wane, he says the field is not that limited.

"Twenty years ago, I would have told a student, 'You will have a hog for a project, and without a project you will flunk,'" Forsythe said.

But now he says there's the broader field of modern

agricultural science, which appears to be growing like a weed, along with a host of related disciplines.

Studies in agricultural science can lead to careers in environmental science, health care, engineering and marketing, Forsythe said.

Still, the traditional ag

activities, like raising and cutting hay at the school's 14-acre farm, carry lessons that are important in the age of MTV, Forsythe said.

"A lot of kids come here who don't know how to work," he said. "We teach 'em. We try to emphasize that there's honor in good, honest sweat."

Last month, the Ysleta chapter of the National FFA was honored for having the best community service program among nearly 10,000 FFA chapters nationwide. It was the second consecutive win for the school.

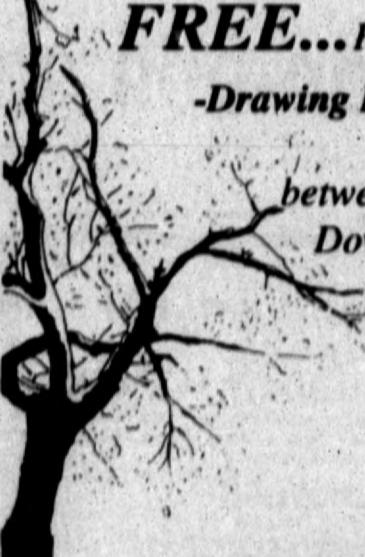
Ysleta High's FFA prog-

ram this year included a door-to-door campaign spreading information on cholera, and collection and distribution of canned goods.

FFA formerly stood for Future Farmers of America. Now the group goes only by the initials.

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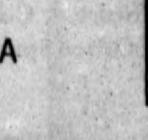
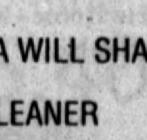
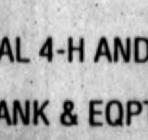
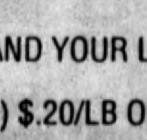
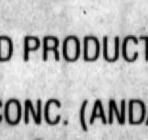
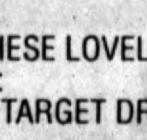
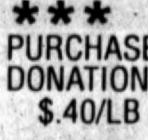
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