

Farm Tips

By Dr. J.W. Pou
North Carolina flue cured tobacco growers can save millions of dollars next summer by making their curing barns more energy efficient.

This estimate comes from Tim Donnelly and other specialist with the North Carolina Agricultural Extension Service who have conducted energy audits of hundreds of curing barns in various locations around the state.

The audits, plus research by the N.C. Agricultural Research Service, have prompted the specialists to prepare four "Money Saving Tips" for flue-cured tobacco growers.

The tips are especially important at this time since farmers need to do everything possible to reduce expenses and to increase their profit per pound of leaf.

Donnelly's first suggestion is to use a wet bulb thermometer to determine proper ventilation.

Commercial models are about \$30. Homemade models cost \$8 to \$10. Free plans for making a wet bulb thermometer are available from county extension offices.

Donnelly's second suggestion is to repair cracks in barns. "Our audits have shown that this practice alone can save \$50 to \$60 per barn per year, and there are over 40,000 bulk curing barns in the state," he said.

Repairing the foundation seal on updraft barns is very important, extension workers say. They describe black roofing tar as a good foundation sealant. Caulking compound is recommended for other cracks in the barn. Additional energy can be saved by repairing or replacing worn door gaskets.

As their third suggestion, Donnelly and his colleagues urge growers to have their furnaces checked (by a service man) for operating efficiency. "We've found that a burner operating at only 90 per cent of optimum wastes 135 gallons of gas per year," he said.

As his fourth suggestion, Donnelly urges farmers to consider an energy audit. It is a free service made possible by a grant from the energy extension service of the N.C. Department of Commerce. All an interested farmer has to do is to contact his county agricultural extension office.

Audits are conducted by a team of extension specialists who visit farms, analyze tobacco curing barns, outline specific energy-saving practices, and tell a farmer how long it will take him to recover his investment in each practice.

"Audits are ideal for farmers who are considering insulating their bulk barns," Donnelly said. "We found the payback period for insulation runs from five to 35 cures."

Concrete pad insulation usually pays for itself in one year (six cures). Spray-on insulation usually saves from \$100 to \$130 per barn per year.

North Carolina farmers were expected to spend over \$85 million during the summer and fall of 1982 on energy to cure their \$1 billion plus flue-cured crop. Most of the money will be spent on fuel oil and propane gas for heat and electricity to operate fans used in the curing systems.

Zimbabwe (formerly Rhodesia) is moving ahead rapidly in efforts to rebuild its tobacco export trade.

Its leaf exports in 1981 are estimated at 231 million pounds valued at the equivalent of \$196 million in U.S. currency, according to the U.S. Department of Agriculture.

In 1982 its exports are expected to exceed 220 million pounds. Export earnings from tobacco likely will be between \$238 million and \$252 million (U.S.).

Whatever happens to prices, tobacco is certain to be Zimbabwe's largest export for the third consecutive year. One factor that may help their tobacco industry is depreciation of Zimbabwe's dollar, a move that makes their tobacco more competitive in world markets.



inches). Many factors determine the amount of dissolved oxygen in the water. I feel routine measurement of oxygen is necessary in aquaculture. Never let the

Aquaculture
By
Johnny Foster
UNC Sea Grant

Good water is probably the most important part of aquaculture. Without good water, fish cannot grow and survive. Although complex, water quality can be understood with common sense, a little study and a monitoring program.

Low oxygen is the main aquaculture problem. And light has a profound impact on water quality and oxygen content. In open water systems algae produce oxygen in the presence of light. Blooms of green algae usually are encouraged. Muddy water hinders this growth because light penetration is reduced.

A deep green color (sometimes brownish) water is desirable because it indicates you have a rich microscopic, single-cell algae bloom. You want to avoid long, stringy algae. It will shade your single-cell algae.

Rooted plants growing from the bottom are a real nuisance. Maintaining an algae bloom will keep light from reaching the bottom and keep rooted plants from getting a start.

You can easily measure light penetration. Lower your hand in the water until you can not see it anymore. Note the depth. Light penetration should be limited to about 30 cm (12

dissolved oxygen (DO) level get below 3.0 parts per million (ppm). Levels at or above 5.0 ppm promote better growth. Rainbow trout require higher levels of oxygen, about 8 ppm or higher.

Dissolved oxygen can be measured with expensive meters or with chemical test kits. An interesting old method of measuring oxygen levels used different types of wood. Water lacking in oxygen will stain certain woods.

To try the old method, use red oak, white oak, American chestnut, Chinese chestnut, cherry, dogwood, black locust, redwood or sycamore. Dried wood works best. Choose a piece long enough to drive into the bottom of the pond at the pond's average depth. Scrape or plane the wood to remove dirt and stains. Oak shoe molding is convenient to use.

Leave the wood in the water 30 minutes. The wood will stain when the DO levels are below 0.2 ppm. Areas of the wood stained dark correspond to parts of the pond that have virtually no oxygen. If the stained areas approach the surface, add water or aerate - an oxygen depletion is taking place. The most critical time to measure oxygen levels is just before dawn. After daylight, algae will begin producing more

oxygen through photosynthesis.

Temperature is another important characteristic of water quality. As temperature increases, the amount of oxygen capable of being dissolved in the water decreases. This is one reason rainbow trout do not live in warm water. They require more oxygen than the water can hold.

Fish and shellfish have the same body temperatures as the water surrounding them. In warmer water the animal moves faster, eats more, requires more oxygen, grows faster and produces more waste. Generally speaking a fish's metabolism will double with each 10 degree C (18 degree

F) change in temperature. Of course each "cold blooded" (poikilothermic) animal has a range of temperatures at which it grows best.

Water quality is dependent upon a number of chemical characteristics. The degree to which the water is acidic or basic is pH. Water must be fairly close to neutral (pH equals 7) for good growth of aquatic animals. Meters, test kits or litmus paper can measure pH.

I still need to describe the importance of salinity, ammonia, minerals, chemicals, gases and particles to water quality. I'll tackle those topics in a future column.

NEW LISTINGS

BELLA VISTA DRIVE — Waterfront brick ranch, 3 Bdrms., 2½ Baths, L.R., D.R., Fam. Room with fireplace, screened porch, 1 acre lot, two car garage. 9 per cent assumable loan. \$82,000.

HOME IN THE COUNTRY — On acre of land, large L.R., d. rm., kitchen, two bedrooms, central heat and air. Workshop, many extras. 8 per cent assumable. \$32,000.

WATERFRONT — **SOLD** 3 bd., home, screen porch, deck, bu. **SOLD** yard, sandy beach.

HISTORIC DISTRICT — **SOLD** charming Victorian home on quiet street, seven **SOLD** rooms.

FANTASTIC BUY!—Country Club area. Owner must sell. 4 BR brick ranch. Over 2000 sq. ft. ½ acre, fenced lot. Garage, family room with fireplace, 9½ per cent assumption. Drastically reduced to \$59,500.

CHOWAN BEACH—House on 2 lots. 2 BR, 1 bath, screened porch, 1 outbuilding. Priced to sell \$18,500.

HISTORIC DISTRICT—Lovely 2-story frame house. Large country kitchen, family dining room, 3 BR, 2 baths, 2 fireplaces. \$60,000.

MORGAN PARK — Lovely 3 BR brick ranch in excellent condition, central heat and air, built-in, 9½ per cent assumption \$65,000.

HOME IN THE COUNTRY — Lg. livingroom, kitchen w-bar, attached den w-wood stove, 2 full baths, 2 BRs, 2 car garage, large lot, furnished. \$37,000.

NEAR TOWN—Attractive brick veneer home on ½ acre wooded lot, 3 BR, L.R. den, dining area, 1½ baths. 10 per cent APR owner financing \$39,500

4 BEDROOM HOME — On 2 acre lot. Convenient to town, 2 full baths, LR, family room w-woodstove, central air and oil furnace, 3 yrs. old, outbuildings. 10 per cent APR owner financing \$42,000.

BRICK HOME — Three BD, 2 baths, large livingroom with fireplace, dining room, kitchen. Well insulated. Central heat and air. Two car garage and workshop. 12 per cent owner financing \$49,500.

SNUG HARBOR—Two bedroom frame house \$18,500.

BRICK RANCH—4 bedrooms, living room, den with fireplace, well equ. **SOLD** chn, dining room, utility room, 2½ baths, rec. room, in-ground swimming pool. 12 per cent owner financing

CAPE COLONY — 3 bedroom home, eat in kitchen, living room with fire **SOLD** shop on the water. 10 per cent owner financing \$39,000.

SMALL HOUSE IN COUNTRY — 1 year old \$14,400

TWO BEDROOM HOME — In town, living room w-fireplace, bath, eat-in kitchen, screened porch, fenced backyard \$32,500.

WATERFRONT — Custom built cedar home. 3 BR, 2½ baths, recreation room, great room with cathedral ceiling, 2 car garage, bulkheading with sandy beach on the Albemarle Sound. \$80,000.

HISTORIC DISTRICT — Spacious 2½ story home with large, beautifully landscaped yard, 6 bedrooms, 2 full baths, 2 half baths, 2 car garage, workshop, guest house, recreation room, waterview.

APARTMENT HOUSE — Good location in town, 5 apartments, 3 lots. \$40,000.

ALBEMARLE SOUND — Beautiful wooded lots over one acre in size on the water. Prices starting at an unbelievable \$24,000.

WATERFRONT — Albemarle Sound, charming 2 BD house, deck, bulkhead, **SOLD** cent owner financing

10 PERCENT ASSUMABLE LOAN — Payments of 304. per month buy **SOLD** new 3 bedroom home in the country with ¾ acre lot. Call for further details. Low down payment.

INVESTMENT OPPORTUNITY — Apartment house with eight apartments. Excellent income in prime location. 9½ per cent assumption.

HALF ACRE LOT — Just \$60 per month buys your own half acre lot with septic tank, water and electricity, perfect for mobile home. Low down payment.

PRICE REDUCED — Log Cabin, beautiful inside and out. Large fireplace, 2 bedrooms and loft. Maintenance free, energy efficient \$38,000.

ACREAGE — Three lovely acres in a choice location, privacy. 12 per cent owner financing. \$10,000.

SNUG HARBOR — Partially furnished mobile home on a well landscaped lot. Large workshop, room addition, and deck. 10 per cent owner financing. \$15,000.

WATERFRONT — Elegant home in a spectacular setting on the Albemarle Sound, featuring, foyer, great room, 3 or 4 bedrooms, Florida room, 2 full baths and 2 half baths. Plus 3 bdrm guest house. 1.1 acres with sandy beach. 12 per cent owner financing.

COMMERCIAL BUILDING — On 2.6 acres with 365' of highway frontage - 12 per cent owner financing \$65,000.

COMMERCIAL BUILDING — Highway frontage on 2.8 acres. make an offer.

HISTORIC DISTRICT — Charming 4 BD home with 2 full baths, eat-in kitchen, formal dining room, LR, den, and utility room. Beautiful yard. Price reduced to \$46,000.

CAPE COLONY — Charming 2 bedroom home, 1½ baths, eat-in kitchen, LR, **SOLD** lida rm, carport, large utility rm. Beautiful, **SOLD** setting. Many extra features

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