

Research supports low-temperature brooding

COLLEGE PARK, Md. - Poultry scientists have been selecting broilers for a number of years on the basis of rapid growth potential. So researchers at the Maryland Agricultural Experiment Station recently ran experiments to see if this selection process has af-

ected other traits in young chickens.

To find out, Dr. Wayne J. Kuenzel, associate professor of poultry science at the University of Maryland in College Park, conducted two experiments on body temperatures of broilers.

Dr. Kuenzel knew that

broilers have a lower rate of metabolism and gain weight twice as fast as chickens selected for egg production. So he hypothesized that their body temperatures might also be lower. If so, broilers could be expected to direct more energy toward true growth and expend less for

body maintenance than their egg-laying cousins.

The first Maryland experiment measured body temperature from one day to eight weeks of age - the normal life-span of broilers. Checks were run to see if there were any significant differences between the

body temperatures of males vs. females or broilers vs. Leghorn laying chicks.

Research data indicated no differences in body temperature due to sex. But it did reveal a tendency for broilers to have lower body temperatures than layers.

In the second experiment, sets of chicks were placed in varying environmental temperatures for one-hour periods prior to measuring their body temperatures. The environmental temperatures were 0, 10, 20, 25, 30 and 35 degrees C. (32 to 95 degrees F.)

Chicks exposed to the 10 degree C. (40 degrees F.) environment were found to have body temperatures significantly lowered.

The data also showed that it takes broilers about six days longer than it does for layers to reach the point where they can regulate their own body temperatures at a normal level. Broilers reached this point at 16 days of age, while layers reached it in only 10 days.

Results from these experiments support the concept that lower brooding temperatures maximize growth response in broilers, according to Dr. Kuenzel.

The Maryland poultry scientist supports a modern broiler management practice of starting chicks at 30 degrees C. (95 degrees F.) for the first week of their life, and then lowering temperatures to 25 degrees C. (77 degrees F.) for the

second week. During the third and all successive weeks, temperature can be maintained at 20 degrees C. (68 degrees F.).

These data also support past research which indicates that low-temperature brooding will eliminate the problem of unabsorbed yolk sacks found in the abdominal cavities of some broilers at processing plants.

Up to one-half of one per cent of all broilers are condemned by government inspectors at poultry processing plants because of unabsorbed yolk sacks, Dr. Kuenzel reports.

Every chick is born with a yolk sack, he explained. It is the yolk of the egg enclosed in the chick's body, which furnishes nutrition until the chick is old enough to start eating.

Under former conditions of brooding broiler chicks at high temperatures and forcing them to start eating as soon as possible, a situation was sometimes created under which chicks had no need to absorb nutrients from the yolk sack. Thus, it was not absorbed into the body as nature intended.

But, when broiler chicks are placed in a low-temperature brooding environment, the extra stress induces their bodies to utilize the yolk sack for energy purposes, even though feed is readily available.

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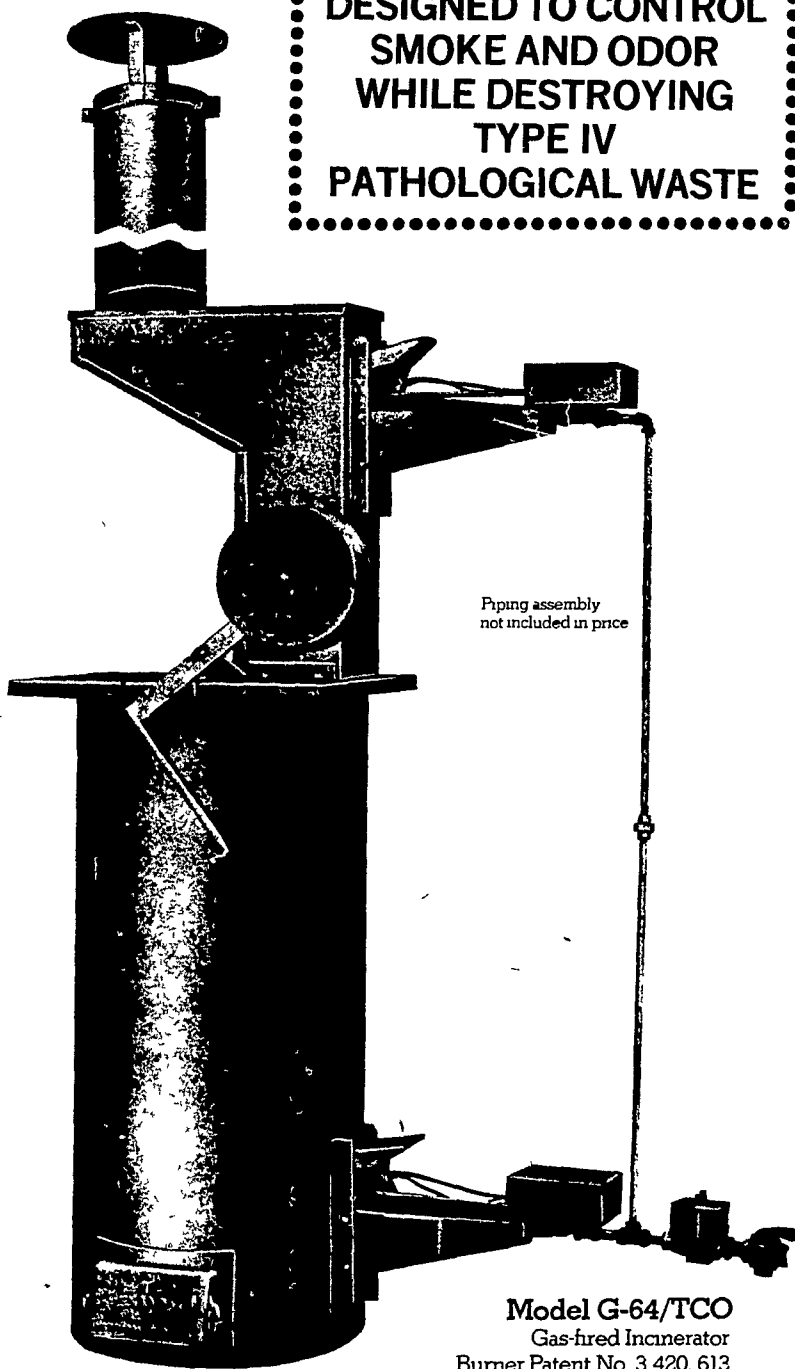
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Fuel, energy saved with no-till farming

NEWARK, Del. - Delaware plants about 400,000 acres of corn and soybeans each year. Large quantities of these crops are consumed by Delaware's broiler industry - 36 million bushels of corn and 11 million bushels of soybeans annually.

reduced the power required for tillage, and thus the fuel consumed in tilling the land. The chisel plow has replaced the moldboard plow in over half the state's crop acreage. The chisel plow stirs and loosens, but does not turn over the soil. It uses from 15 to 35 per cent less energy per acre than the moldboard plow. In Delaware's sandy soils the savings is one gallon per acre; in the clay soils the savings is 0.5 gallons per acre.

The other energy-saving machine is the no-till planter. This machine tills only a narrow strip where the seed is deposited. The remainder of the field is untouched. This once-over system saves fuel because the plowing and disking operations are eliminated. Crop yields are equal to or greater than conventional systems, but planting speed is slower and chemical weed control is a must.

No-till planters are used on 15 to 20 per cent of Delaware's cropland, with savings of 4.5 to 7 gallons per acre, depending on soil type and the conventional method of tillage previously used, according to Delaware

Extension power and machinery specialist Thomas H. Williams.

Williams cites University of Delaware research which shows that no-till uses one-fifth the energy, one-sixth the fuel, and one-third the labor of minimum or conventional tillage methods of planting corn. At the same time, corn yields have been equal to or greater than yields obtained by conventional tillage methods in comparisons at the University of Delaware's Georgetown Substation over the last nine years.

Over the last three years, no-tillage outyielded chisel plowing by six per cent on loamy sand, and eight per cent on silt loam. In 1976, no-tillage performed significantly better on both soils. Over the three-year period, corn yield was 94 bushels per acre using no-till, and 89 bushels per acre using chisel plow on loamy sand.

On silt loam, the corn yields amounted to 127 bushels per acre using no-till, 118 bushels per acre using chisel plow.

To learn more about energy savings in agriculture, one can visit Sussex Energy Expo on November 3 and 4, at Delaware Technical and Community College, Georgetown. The program, which is free and open to the public, will run from 10 a.m. to 7 p.m. on Friday, and from 10 a.m. to 5 p.m. on Saturday.