

# OSU Researcher Giving Turkeys A Stronger Leg To Stand On

COLUMBUS, Ohio - A model developed to measure bone strength in poultry may help farmers choose breeds that meet market demand for meaty birds while eradicating bone deformities associated with rapid weight gain.

Alfred Soboyejo, an Ohio State University agricultural engineering researcher, studied physical and biochemical factors associated with poultry breeding to determine what combinations increase tibia and femur bone strength in turkeys and broiler chickens.

Genetic selection of poultry breeds to improve body weight increases weight gain without compensating for increased bone strength to support that weight. The result is leg bone deformities, such as "bowing" and "buckling" that cause lameness, broken bones and inflammations, and cost the poultry industry \$32 million a year in production losses.

Karl Nestor, an animal science researcher from Ohio Agricultural Research and Development Center in Wooster, Ohio, collaborated with Soboyejo on the project. Soboyejo found that specific poultry breeds play a role in increasing bone strength and believes that

bone deformities could eventually be eliminated through genetic selection in much the same manner it has paved the way for bigger birds with good meat.

"Species are very important. We can't select birds on body weight alone. We have to find ways to increase the body weight and breast muscle with correspondingly higher bone strength in the legs to promote good health of the bird," said Soboyejo. "By identifying poultry breeds that exhibit the best bone strength, we can then recommend to farmers which birds are best for the market."

The project is the first of its kind to combine the principles of biomechanics and probabilistic structural mechanics with biology to identify and control physical and biochemical parameters as they relate to bone structure. Soboyejo, looking for a quantitative tool useful to farmers, developed new models for the quantification of bone strength and body weight gains in turkeys and broiler chickens, as they relate to physical and biochemical parameters. Some of these parameters of bones include elasticity of the cellular structural material of the bone, density and collagen

content.

Soboyejo found that certain chemical factors, such as collagen content of bone and the presence of pyridinoline and deoxypridinoline, also enhance overall bone strength. Collagen, a protein that largely makes up the organic layer of bone, combines with calcium salt crystals that form a cellular bone material with high mechanical properties of tensile and compressive strengths. Pyridinoline and deoxypridinoline are crosslinks of bone collagen used as markers to test bone diseases because they are released into the blood during bone degradation. Soboyejo suggested that a change in diet or addition of vitamins to a diet might enhance the effects of those chemical indicators to improve bone strength.

Soboyejo believes that such indicators used to measure bone strength in poultry can also have practical applications in other scientific fields such as veterinary medicine and orthopedic medicine. "People suffering from osteoporosis, for example, could benefit from this type of work, because the factors that contribute to bone strength can be clearly identified and controlled," he said.

## Jonestown Ag Repair Shop

Complete Skid Loader Repairs Our Specialty



Galaxy skid loader tires & other brands

Painting & Sandblasting

170 Old Rt. 22, Jonestown, PA 17038  
Darvin Weaver

717-865-9427 717-865-9096 Fax

### 1988 Dresser 175C



Call 717-665-2872

700 Hrs on Good UC, New Pins, Six Cylinder Turbo, New Service and New Seals. \$24,500 OBO  
Excel. Cond Fresh Paint Crawler Loader



### 1988 Liebherr 621B Crawler Loader \$20,000

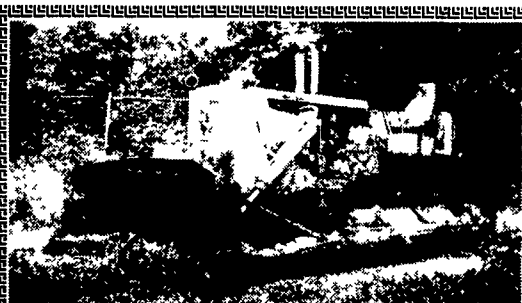
Heavy Equipment Loader Parts, Inc.  
10070 Allentown Blvd., Grantville, PA 17028  
No Sunday Calls (717) 469-0039



### Caterpillar 436 Wheel Loader Backhoe

\$15,000

Heavy Equipment Loader Parts, Inc.  
10070 Allentown Blvd Grantville, PA 17028  
No Sunday Calls (717) 469-0039



### CAT D8-2U

11' Hyd. Blade, 600 Hrs. On Overhauled Motor. 70% U.C. Good Working Condition. \$4,500.00  
570/875-0368



### Wholesale InterNational

Buying & Selling Lift Trucks For Indoor & Outdoor Use. Many Makes & Models To Choose From 215/773-9660

## Lancaster Farming Antiques Center

See pages B19-B26

## Paul B. Zimmerman INC.

### Suspended Comfort Stalls Manufactured to Last!

Finished With TGIC Polyester Powder Coating...Superior to Epoxy!

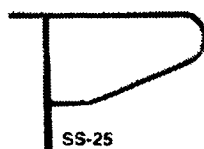
Install the Best!

- Increased comfort for cows
- Polyester finish stays cleaner
- Easy Access
- Adjustable tie rail



### Fabricated for Durability & Dependability

- All welded construction for years of service.
- Constructed with 1.9 O.D. wall, high strength tube and 2" square post with 1/4" wall



### Added Value With Our 2 Coat Process!

- 1 Five step metal preparation, including iron phosphate conversion coating, to enhance adhesion & prevent undercoat corrosion
- 2 Zinc rich epoxy powder undercoat
- 3 TGIC polyester powder top coat baked at 400° to fuse coats, forming a cross link molecular bond

## Paul B. Zimmerman, Inc.

295 Woodcorner Rd. • Lititz, PA 17543 • 717/738-7365  
1 mile West of Ephrata

Call or write for additional information and the name of your nearest dealer

Hours:  
Mon -Fri.: 7-5  
Sat.: 7-11

### 1A CONSTRUCTION EQUIPMENT

1979 Cat 225 excavator, 36" bucket, new thumb, runs good, \$14,500. 410-593-9866

### C. BETZ Lift Truck Sales & Service

Used Forklifts  
Gas, L.P.G., Diesel, Electric  
615 N. Clear Ridge Rd.  
Hustontown, PA 17229  
717-485-0410

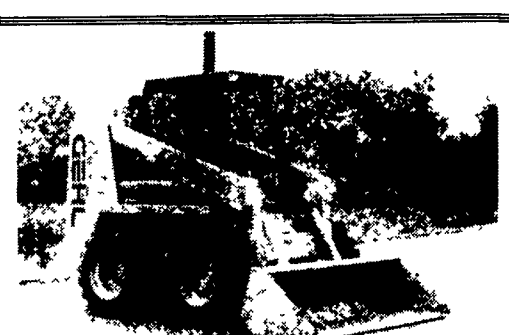


### Cat D4 10 ft. Blade



### CAT 931B Loader

Like New With New Bottom Rollers  
610-926-5221



Gehl 5625 SX  
Skid Loader 824 hrs. \$12,900  
717/484-2233