

## Prospects Brighten For Feeding Straw

With burning regulations becoming more stringent every year, farmers and ranchers find it increasingly difficult to dispose of straws. Incorporating straw into the soil is not feasible in many cases; burning it causes air pollution, and wastes a potentially usable byproduct.

Straw is the world's largest source of agricultural carbohydrate; for every pound of grain produced, about one pound of straw is produced and must be disposed of. One approach toward disposal is feeding straw to livestock, a method of limited value, until recently.

Historically, rice, wheat, and barley straws, and corn cobs, make poor feedstuffs because lignin, silica, or a combination of the two, so encrust the energy-rich carbohydrates, cellulose and hemicellulose, that the microbes in ruminant animal's stomachs cannot break them down to release energy. The answer to this problem is some treatment that opens up the fibers enough to permit increased digestion to occur in the animal's rumen.

As early as 1965, research-

ers at the Western Regional Research Center of USDA's Agricultural Research Service at Berkeley, Calif., were looking for ways to treat straw and similar materials to increase their usefulness in feeds for cattle and sheep. Now, ARS chemists George O. Kohler, Howard G. Walker, and Anthony C. Walis, who experimented with many combinations of chemical and physical treatments, have selected two processing systems as the most promising. Large scale preparation of treated straw in quantities sufficient for animal feeding trials resulted from pilot scale processing studies of the two systems conducted by engineers Robert P. Graham and Marcus R. Hart.

In one system, ground straw is treated with sodium hydroxide (NaOH). The NaOH is sprayed on the straw as a 30 to 50 percent solution so that about 4 pounds are applied per 100 pounds of straw. This mixture is then either pelleted in a mill, or put through a screw extruder - much like a meat grinder - designed by the Center's engineers. Both the pelleted

and extruded forms of this product are reasonably dense, facilitating handling and transportation. The products are fairly dry - 11 to 18 percent moisture - and, therefore, do not require costly dehydration for safe storage.

The second processing system involves soaking baled straw with a 20 to 25 percent solution of ammonia in water so that each 100 pounds of straw is treated with about 5 pounds of ammonia. Stacks of treated bales are enclosed in plastic sheeting and allowed to stand at least 30 days before dehydration. The "stacks" are vented, and excess ammonia is safely trapped to prevent air pollution.

In a preliminary 63-day trial, sheep which were fed rice straw treated by these methods gained about 1-3 pound per day or approximately 50 percent more than those fed untreated straw. This compares favorably with alfalfa-fed sheep. The treated ration contained 72 percent straw, 10 percent alfalfa hay, 6 percent barley, 9.8 percent cottonseed meal, 1 percent urea, and small amounts of dicalcium phosphate, trace mineral salt, and vitamin A. This trial was conducted in cooperation with Dr. William Garrett at the University of California, Davis.

More recently, a 56-day beef cattle feeding trial was carried out at Davis. In this experiment, the cattle gained over 3 pounds per day on a ration containing up to 60 percent treated rice or barley straw. "We are very encouraged by the results we're getting," says Dr. Walker. "Our next step is a

SAT. JULY 12 9:30 a.m. - Nichols Estate Auction, De Alton Nichols Home, Maple St., Roulette, Pa. off Route 6, 10 miles from Coudersport, 7 miles from Port Allegany. SI Pepperman, Auctioneer.

SAT. JULY 12 - 12:00 Noon. Public Auction for "G. Byron Streett" at the ARMORY, Chestertown, Md. Antiques, Furnishings, Paintings, prints, glass, silver, china, books. Auctioneers: Harry Rudnick & Sons, Inc.

100-head beef feeding trial at Davis which will run for about 150 days. We hope to get the same results in this longer trial."

Dr. Kohler says, "The increased gains are due to increased digestibility of cellulose and increased consumption of the treated straw rations. We observed no animal health problems with any of the treated straw rations.

"The project is important not only because of the pollution problem that straw burning causes, but also because of shortages and increasing prices of grains. By replacing grains as much as possible in cattle and sheep rations, we should be able to produce meat cheaper.

"The world is facing a shortage of energy and arable land. This makes it essential that we make more efficient use of crops in which large expenditures of energy have already been made. It is especially important that we develop ruminant feeds from materials that are unsuitable for human consumption," Dr. Kohler says.

SAT. JULY 12 12:30 p.m. - Complete Dispersal of 32 Head Holstein Cattle and Farm Machinery located 4 miles from East Smithfield, 5 miles from Ulster, 5 miles from Route 6, N. Towanda on Saco Road. Watch for arrows. Sale by Galen & Susan Finnerty, owners, R2, Ulster, Pa. Scott and Nichols, Auctioneers.

SAT. JULY 12 - 11:30 A.M. Public Sale of Valuable Real Estate and Household Items located at 1003 East Main St., Akron, Pa., Lancaster Co. Real Estate to be sold at 1 P.M. Sale by Pedro and Mirto Melendez, owners; Diller and Kreider, Auctioneers.

SAT. JULY 12 9:00 a.m. Sharp - Public Sale of Antiques, Collectables, Personal Property and Farm Machinery on Route 254, 1 mile West of Rohrsburg, Pa.

on Greenwood Rd. Sale for the Estate of William H. Evans, Doyle Evans, Executor; Eugene A. and Gele L. Derr, Auctioneers.

TUES. JULY 15 - 6 P.M. Public Auction of Furniture, Glassware, Appliances, etc. at the Farmersville Auction located at Farmersville, 3 miles East of Brownstown, Lancaster Co. Sale by John J. Rutt; Richard Murray, Auctioneer.

Stars, five miles northwest of Liverpool, located in Juniata County. Terms by John S. Kurtz; Lester O. Weaver, Auctioneer.

TUES. JULY 15 - Bragdon's Furniture Auction, Rt. 77, Monroeville, N.J., one hour from Lancaster, Penna. Selling outside 4 p.m., inside at 6 p.m. Consignments accepted daily, 9 a.m. til 9 p.m.

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## Public Sales Register

### 35th YORKSHIRE SWINE SALE

Production Tested - Certified Meat Tested

**FRIDAY, AUGUST 22**

1 P.M. AT THE FARM

**OFFERING 50 BRED GILTS  
AND PROVEN SOWS — 100 OPEN GILTS  
25 BOARS.**

**THE SALE WITH THE TEST RECORDS**

Our 1974 Big Winner - Grand Champion \$1000.00 Keystone International Carcass Barrow.

1975 begins with big, big, big, and bigger winners. We had the Grand Champion Carcass, the 1st light wt.; 1st med. wt.; 1st H. wt.; and 1st H. wt. pair. All carcass winners at Eastern National, MD.

CATALOGUES AVAILABLE

**Brooks End and Parkay Farms**

RENO H. THOMAS, Sale Mgr.  
Beavertown, PA 17813  
Phone 717-658-5821 or 6544 or 7007

### WINCHESTER-SUMMER YEARLING SALE

FARMERS LIVESTOCK EXCHANGE, INC. WINCHESTER, VA.

**FRIDAY EVENING, JULY 25, 1975**

7:30 P.M.

**1500 STEERS AND HEIFERS**

State Sponsored-Graded-Uniform Lots-  
All Beef Breeds.

Weight: 500 to 1000 lbs. Dehorned

MORRIS FANNON, AUCTIONEER  
P. T. MCINTIRE, SALE MANAGER

Write or Phone.

703/662-2946 - office 703/837-1254 - home

**NORTHERN VIRGINIA LIVESTOCK, INC.**

Box 440 Winchester, VA 22601

### 40 HEIFER AUCTION 40 FRIDAY NITE, JULY 18

at 7:00 P.M.

In Boro of Factoryville on College Ave., just off Rt. #11 and Rt. #6, Lackawanna County, a few miles from Rt. #81. Arrows!

40 Extra fancy Bagging Holstein 1st Calf Heifers. These heifers are artificially sired, selected as calves from the Better Dairies and all bred to a Jersey Bull. To start freshening the last of July, the majority in Aug., some in Sept. Size and quality. Interstate Charts. Terms: Cash or Approved Check.

**RAYMOND HAYDUK, JR.,**  
Owner

Jim Adriaance, Auctioneer  
Montrose, PA 717-278-1574

### REGISTERED HOLSTEIN HEIFER SALE

**52 HEAD  
THURS. EVE., JULY 24, 1975**

7:45 P.M.

Located one mile East of Turbotville, Northumberland Co., 25 miles Southeast of Williamsport, 12 miles Northwest of Danville, just off Rt. 54. Follow Auction Arrows.

**31 REGISTERED — (21 quality Grades)**

35 head due July, Aug., Sept., remainder through fall.

Featuring Paclamar Bootmaker, (Ex GM), dtr., her dam w-20,940m 914f 4.3 percent 337d; Hilltop Apollo Ivanhoe (VG GM) dtr., her dam 336d 17,887m 711f, 42 percent. Several dams w-15,000 to over 18,000m.

Mostly A.I. sired including the following popular Sires: Whirlhill Kingpin VG PQ; Penstate Ivanhoe Star VG GM; W. President Vernon Ex GM; H. Lucky Typeblazer Ex GM; Paclamar Triune Jethro Ex GM; Citation R Maple Ex GM; Hartsbrook Ivanhoe Ken Ex; Polytechnic Imperial Knight Ex GM; Collins-Crest Paclamar Seven J VG; Fleetridge Monitor Ex GM.

Pregnancy Examined, Health Charts, Catalogs. Your inspection is invited anytime. Well cared for, fine group of heifers from popular bloodlines. Must be seen to be appreciated.

**Lewis D. Brown,**  
Turbotville, Owner

Diller and Kreider  
Aucts. and Pedigrees  
2112 South View Road  
Lancaster, PA  
717-464-2233

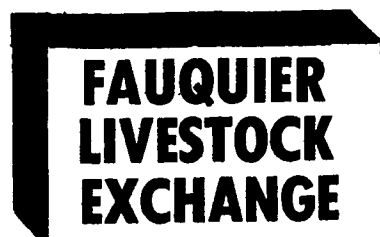
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### Summer Yearling Sale THURSDAY, JULY 24, 1975

7:00 P.M.

2,000 State Graded Yearling Cattle  
1,500 Beef Steers and Heifers  
500 Holstein Steers

Sponsored by Marshall Feeder  
Calf Association  
at



Marshall, VA  
703-364-4861

### GOOD'S & MARTIN'S PUBLIC SALE

Held at

**WOLGEMUTH'S  
AUCTION BARN**  
**THURS. EVE., JULY 17, 1975**

at 6:00 P.M.

Located along Valley Road, 4 miles West of Manheim, 1 mile West of East Fairview Brethren Church. Take Hosler Road to Valley Road.

G.E. apt. size elec. range (used 15 mo.); Admiral & Magnavox color TV's, RCA AM-FM stereo, Old Teardrop bedroom suit, single bed, dresser, wardrobe, wash stand, chest of drawers, porta-crib, play pen, night stand, Cherry hide-away desk, drop-leaf table, plank chairs & rocker, 4 blanket and 1 cedar chest, trunk, sewing cabinet, (50 yrs. old) school teachers desk, Easel, 8-day and old mantal clocks, single 16 ga. Ivy Johnson shotgun, egg incubator, old collar box, stem ware, wine glasses, wash board, old mixing and punch bowls, Nat. Geographics and maps, kero. lamps, oval mirror, crocks, jars, steam hair setter, elec. juicer, ice cream maker, handmade Hungarian looms, irons, silver butter knife & sugar shell set w-mother of pearl hands, marbles, child's swim pool, Christmas decor., old 45 records, wooden barrels, old cigar boxes, collectables, pots, pans, dishes, and many useful items not listed.

Lunch available. Sale to begin at 6:00 p.m. Thurs. July 17 at Wolgemuths Auction Barn.

**C. H. WOLGEMUTH**  
Sale Manager  
Phone 717-665-5664