

Global Opportunities and Current U.S. Agriculture

August 5-9, 2007

Beijing China

H.W.Ockerman and Lopa Basu

52 nd

International Congress
Meat Science and Technology
Harnessing and exploiting Global
Opportunities

August 5-9, 2007

Beijing China

2005



Baghdad

London

Moscow

Delhi

New York

North Pole

Chicago

Beijing

Los Angeles

Tokyo

North Pole

2005





2005

85

115

2005

Dry
Cured
Hams,
SW
China

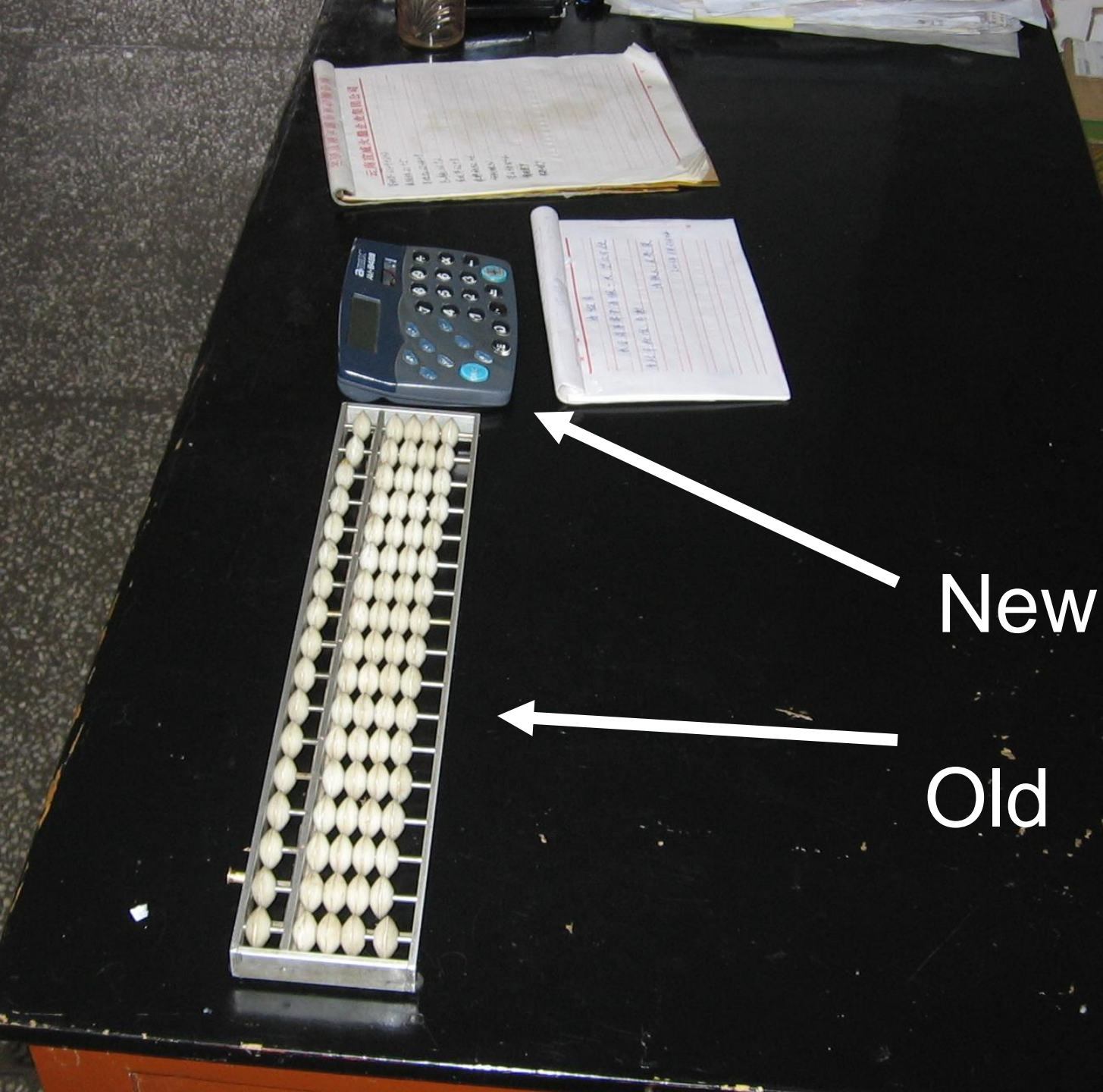


Dry
Cure
Ham
Plant
SW
China

New

Old

2005



2005

**Dry Cure
Ham
Ageing,
SW China**





**Water
Buffalo,
SW
China**

2005

Mud and Straw Construction, Farm Building, SW China

2005



**Fruit, SW
China**

2005



Tea Twisting, SW China

2005



Dali Univ. SW China

2005



Erosion Control on Highway Cut, SW China

2005



2007



Night Food
Market, Squid



Banner at a 2007 China Conference suspended by a helium balloon. Banner brought back and photographed at OSU

Dr Chen, Professor in Taiwan and an OSU alumni who established this experimental farm in mainland China and organized the conference in China

2007



Trends of Modern U.S. Agriculture in the Last Decade

过去十年来美国农业之发展状况

By

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Illegal Agriculture Labor 非法农业劳工

- Often uneducated – lower price labor 多半为低教育程度低收入劳工
- More international competitive 较具有国际竞争力
- Vote for a more social welfare system 支持要求更多之社会福利支持
- Food organ not particularly important 对于食物要求不高
- Quality at a reasonable price 以薪资而言，劳工素质尚称合理

Types of Crops 作物种类

- **Organic – no fertilizer, pesticides, hormones** 有机产品—不施以化学肥料杀虫剂、荷尔蒙
- **Local crops – less time in transport** 本地所产之作物—减少运输所需时间
- **Country of origin – some countries lack controls, standards vary** 来源地—部分国家管控较松，标准不一
- **Tractability – difficult when sources are mixed** 追溯系统—当来源混合时困难执行
- **Farm to plate safety important** 从「农产到餐桌」安全概念之重要性
- **Pollution, important but difficult to control** 污染属重要议题，但较难管控
- **DDT has its place when used in appropriate location and sparingly** 使用DPP需要特别留意使用场所及谨慎小心

Horticulture 园艺作物

- **Genetically Modified Products** 基因改造产品
- **Some consumers don't want – marketing problems** 部分消费者接受度低—销售困难
- **Some fear weeds will modify** 部份人士担心野草可能被基因改造
- **Scientist - after approval they are safe** 科学证明基因改造产品之安全性

Genetically Modified Food

Labeling 基因改造食品之标示

- In 1992 FDA ruled – Labels not required unless modification significantly alters the properties 1992美国食品药品监督管理局规定—除非食品的特性明显地因基因改造而改变，否则无须标示
- ~ 87% of UA Soybeans are GM to tolerate herbicides, Roundup ready (no-till possible) 大约87%的美国黄豆属于基因改造，用以减少除草剂之使用
- ~35 % if US corn crop are GM to resist European Corn Borer and corn rootworm, high lysine 大约35%的美国黄豆属于基因改造，具有抗欧洲玉米螟及抗玉米根虫及高离胺酸含量之特性
- USDA – says indistinguishable from non GM 美国农部—无需与非基因改造食品有所区隔
- If labels were required – 66% of US food would have to be labeled 若是规定产标示必须标出—66%美国食品就必须标出其为基因改造食品

Animal Industries 动物生产产业

- **Animals must be healthy and well cared for** 动物应保持健康状态，更需要良好的照顾，可藉由下列事项达成：
- **Receive medical care, vaccinations and treatment** 接受健康医疗照顾，疫苗注射及治疗
- **Nutritious diet, access to fresh clean water** 营养的食物及干净饮水之供给
- **Healthy living conditions** 健康的生活状况
- **Handling gently** 温和非粗暴地对待
- **Comfortable surroundings** 舒适之生活环境

Animal Production 动物生产

- **Animal welfare is important and being addressed** 动物福祉非常重要，且日益受到重视
- **Embryo transfer is successful but expensive** 胚胎移置已可成功操作，但费用昂贵
- **Cloned animals are currently being researched** 动物复制相关研究持续进行中
- **Animal identification is needed** 动物识别之需要性

Dairy Industry 乳类产业

Sex Seamen – Select Sires, 75% usage 精液—公畜选拔

- Brazilian Co. Purchase of Swift, Largest Meat Conglomerate – Easier route to Asia 巴西公司并购Swift 最大之肉品集团公司，更易打入亚洲市场
- DDT is starting to make a come-back DDP卷土重来
- Illegal Labor – 5 of 50 states more than 50%, 50% drop out of school before finishing High School 非法劳工—美国50州中的5州，有超过50%的学生在完成十二年的义务教育前辍学
- Safety (sanitation and pasteurization) and quality critical 产品安全(卫生及杀菌)及质量非常重要

Dairy Continued 乳类产业

- **No antibiotics, animals may be treated but milk does not go into food supply** 抗生素可使用来治疗动物疾病，但不可因此而进入供人饮用之乳类中
- **No pesticides** 不可施用杀虫剂
- **Hormones are naturally present in plants and animals** 天然存在于植物及动物体内之荷尔蒙
- **BGH (bovine somatotropin) occurs naturally in cows – helps direct milk production** BGH(牛生长素)天然存在母牛体内，有助于乳牛之生产
- **rBST (synthetic copy of BGH) approved by FDA in 90's and is species-specific, not labeled** rBST(合成之BGH)在1990年代获得美国FDA(食品及药物管理局)之批准，可使用于特定之品种，而且不必标示
- **FDA – voluntary moratorium on food from cloned animals** FDA关于源自于复制动物所产制食品之义务延期偿付

Poultry 家禽生产

- Driven by consumers 生产受到消费者需求而影响
- Egg – more space for layers – McDonald led the way 蛋 – 提供产蛋鸡更多生活空间，由麦当劳推动开始
- Meat – convenience – preparation in 20 min. or less 鸡肉 – 食用方便性，可在20分钟(或更少时间)内完成烹调或准备
- Corn, ethanol – distillers grain and solubles will be used 玉米 乙醇 – 蒸馏谷物与可溶解物之使用
- Decrease production – first time in many years 生产量减少 – 过去多年来首见
- Antibodies out – probiotics in 减少抗生素使用 改用益生菌
- GM grains are important to this industry 基因改造之谷物 非常重要

Meat Harvesting and Processing

肉用动物屠宰与加工

- Food Safety must be stressed with a strong inspection program and HACCP - this requires commitment, personal training, participation of problems, motoring production, controlling critical control points, keeping records.
- 藉由严格的屠宰与肉品检查及HACCP系统之执行，以确保食品的安全，其成功与否亦需要依赖：执行的决心、员工训练、积极参与、监测、重要管制点之控管，纪录保持等工作。

Meat Continued 肉类之生产与消费

- **Consumers is demanding convince and fast (microwaveable) preparation** 消费者对于方便快捷可准备(例如:微波食品)的需求日增
- **Precooked is gaining popularity** 已事先烹煮过, 买回后只要加热即可食用之食物, 日益受到消费者欢迎
- **Gourmet, often precooked, is starting to appear, often with take out capabilities** 已事先烹煮好, 购买后即可食用的外带食物的消费日益增多
- **Variety and ethnic foods are in demand** 各种不同产品, 特别是具各国特色的美食需求增加
- **Size selection is increasing from single households to banquet** 产品量的选择更多元化, 从适合小家庭的量, 直到宴会所需之量皆可。

Animal Pollution Problems

动物污染之难题

题

- **Odors – a good handling system is important and communication with neighbors is critical, don't haul manure during their outdoor activities.**
不良气味：一套很好的处理系统及邻居良好的沟通与互动是非常重要的
- **Waste water, feed lot runoff, liquid manure, silage leakage, getting into ditches and streams, management critical** 废水、剩余饲料、粪尿、外漏青贮饲料等污染溪流或沟渠
- **Tracking waste onto road – management** 废弃物运输追踪管理
- **Fish kill down stream – management** 溪流中死鱼之处理
- **Dead animals in sight – management** 死亡禽畜尸体之处理

Restaurant consumption is increasing

餐厅进食的人口增加

- **Fancy, white table cloth for the affluent and special occasions** 新颖、高档的餐饮内容，例如：特别丰盛的餐点或是特别场合及时间之聚餐
- **Fast food with variety (hamburger, pizza, chicken, fish, desserts) food and ethnic choices** 各式快餐餐厅(例如：汉堡、披萨、鸡肉、鱼肉、甜点及异国美食等)
- **Fast food is also trying to cater to the health concupiscence crowd with lower calorie offering and to the over eaters by offering king sizes** 快餐餐厅亦有所转变，例如：提供低卡热量之餐点，不同份量需求(例如：King size大份量的餐点提供给食量大之顾客)
- **This industry is also driving many reforms such as animal welfare, elimination of some additives, elimination of trans-fatty acids, no smoking and etc.** 快餐餐厅受到许多外在因素影响，也必须有所调整，例如：动物福祉考虑、减少特定添加物之添加量、不使用反式脂肪酸、餐厅内禁烟等。

Beverages 饮料

- **Beer is favorite drink particularly of the college group, sports enthusiast, physical labors** 啤酒是最受欢迎的含酒精饮料，大学生、球迷及劳工等特别喜欢饮用啤酒
- **Wine is gaining in popularity, and is considered a more sophisticated drink** 酒精含量较高之酒类的消费量日增，而且饮酒文化更复杂多元
- **Soft drinks are consumed in great quantities, and is usually offered on both sweet and diet formats in a large number of flavors** 软性饮料(指不含酒精之饮料)消费量大幅增加，目前除一般普通甜度外，各种口味的代糖(或低热量)饮料也渐受欢迎
- **Coffee and tea is also consumed in large quantities with some coffee houses offering special flavors and internet connections** 咖啡及茶消费量也很大。有些咖啡厅不仅供应各种口味之特调咖啡，也提供消费者网络上网之服务。

Sweets and salted 各式甜、咸点心

- Candy, cookies, cakes, pies in all types of combination and flavors. Available in ready to eat or box mixes or cook at home.
各式各样糖果、饼干、蛋糕及派等组合。购买时可单独购买或是混合选购，带回家可即食或是简单料理即可食用
- Peanuts (or other nuts), popcorn, pretzels, potato chips, puffed items often cheese flavored, party mixes, pork rinds are all popular snacks 花生(或其它坚果类)、爆米花、椒盐脆饼、洋芋片、各式填充起司的点心、派对上吃的小点心等都很受到消费者的喜爱

Frozen foods and TV dinners

冷冻食品与电视餐 (TV dinner)

2007

- Variety here is also important, prepackaged ready to cook (microwave or boil in bag), vegetables, pizza, breads, desserts. meats and meals 多样化非常重要，事先包装好，买回家简单料理(例如：微波炉加热或直接原包装放入热水中加热)即可食用，例如：蔬菜、披萨、面包、点心、肉类及餐盒等
- Locker plants have diminished in number but some are still very popular where you can purchase a whole animal, have it cut packaged and frozen to your specifications and take it with you to your locker or rent frozen storage at the plant. “Locker plant”型态的工厂数目日益减少，但仍有部分存在(locker 原亦是指置物柜，此指肉品屠宰加工厂内之低温贮藏库)在厂内，消费者可先购买整头家畜屠体，然后依据消费者个人的喜好与规格要求，进行分切、包装、冻藏，消费者再将其带回家或是存放在工厂内的冷冻库中。

American Agriculture - Animals by Professor Ockerman & Lopa Basu

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USDA
<http://www.ars.usda.gov/is/graphics/photos/>



Round bales of hay

2007

2007

Corn



Soybean harvest

2007





Fermented Feed Storage

2007



PASTURE

2007

2007

Alfalfa-pasture/hay

2007



Beef



Angus Beef

2007

2007

Roundup



2007



Beef Feedlot



**OSU
Meat
Lab**

2007

Meat Case



2007

Meat



2007

Dairy Farm

2007





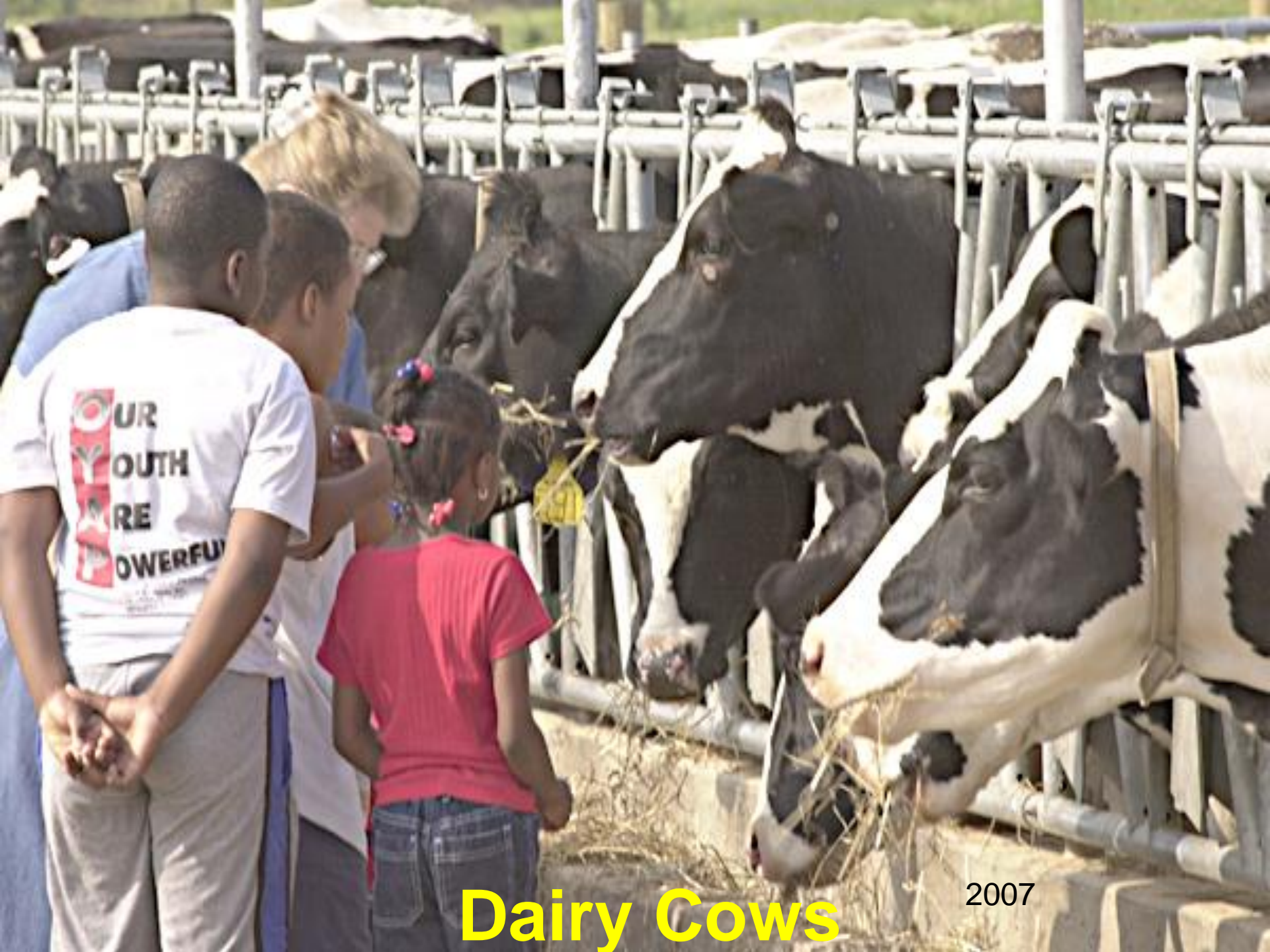
Dairy Calf

2007

Dairy Farm

2007





OUR
YOUTH
ARE
POWERFUL

Dairy Cows

2007



Young pigs

2007



Pigs

2007



Sheep

2007



Sheep

2007

2007





Sheep barn

2007



2007

Hatched Chickens

2007



Mature Chickens



Eggs

2007

Chicken meat



2007



Turkeys

2007



2007



Fish Farmed Wild

2007



2007

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Farm

2007

Farm

2007



2007

Farm



2007

Barns



Dairy Farm

2007



Farm

2007



Barn



2007

An aerial photograph of a large farm complex. The central area contains several large, white-roofed buildings, likely barns or processing facilities, and several tall, cylindrical metal silos. A dirt road winds through the property, connecting different sections. Surrounding the farm are vast green pastures and brown, tilled agricultural fields. In the background, there are clusters of trees, some with autumn-colored foliage. The overall scene depicts a well-maintained and active agricultural operation.

Farm

2007

Farm



2007



Family farm

2007

2007

Farm





Barnyard Hay

2007



**Stairs on
side of
grain bin**

Silios

2007



Silos

2007



Filling Silos

2007

Silos





Silos & Feed Wagon

2007

Grain Bins



2007



Grain Bins

2007



Milking Parlor

2007

Equipment Shed



2007



Greenhouses

2007

Greenhouse

2007



2007





2007



Lighted Greenhouses

2007



HARVESTING AND MILLS

2007

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2007

Farm Science Review



2007



Yesterday

2007



Soil Sampling Equipment

2007



Disk

2007

Planting Equipment

2007





Combine

2007

Winrowing wheat



Harvester



2007

Corn harvest



2007



Harvest Soybeans

2007

Harvest soybeans

2007





2007

Robot Tomato Picker

Tomato picker



2007

Egg Breaking Equipment

2007



Satellite Controlled Tractor



2007

No Till Drill

2007

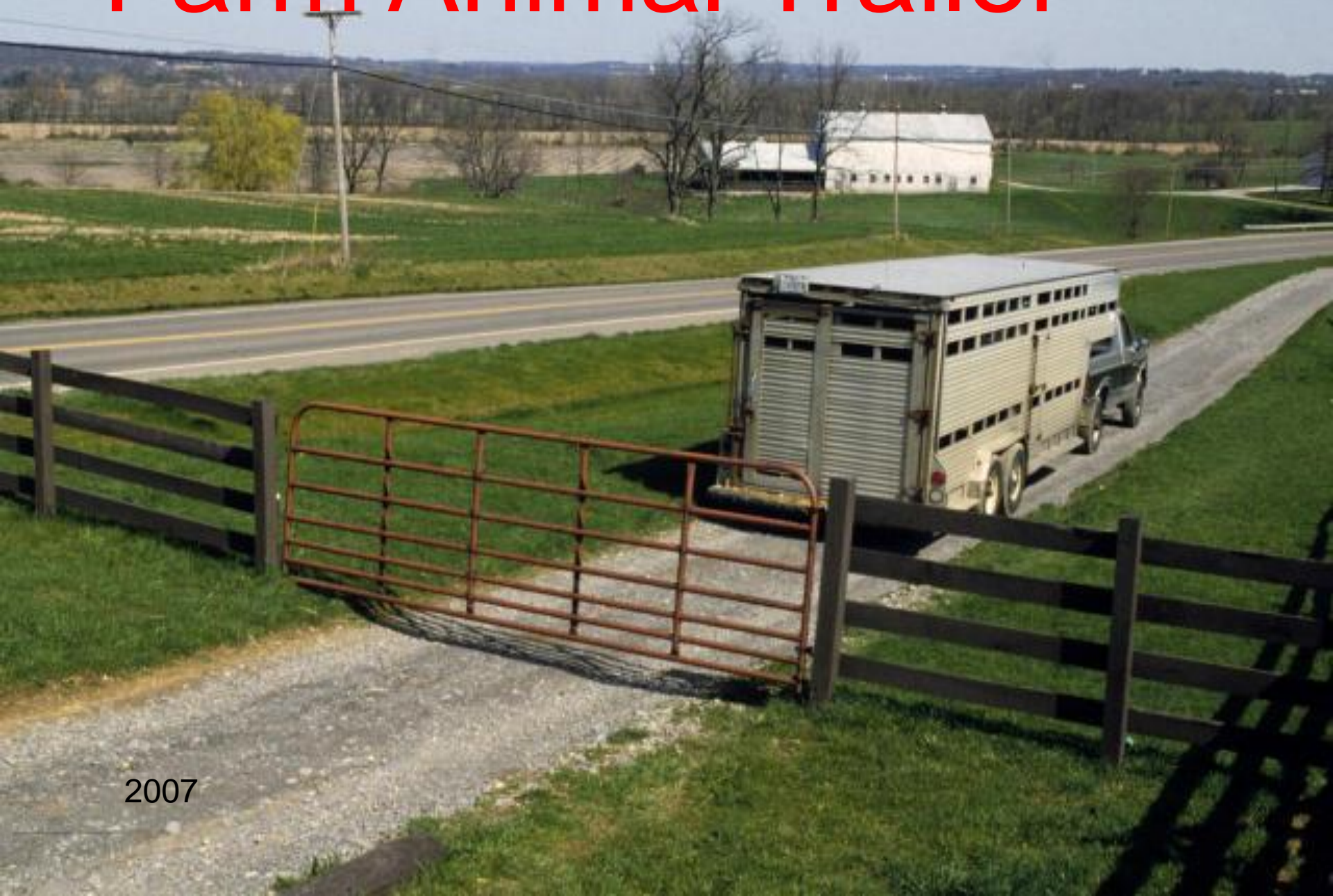


2007



Round baled hay

Farm Animal Trailer



2007

2007

Computer for Tractor



Meter for Tractor



2007



Power Washing

2007



Sprayer

2007



Spraying trees

2007



Spraying

2007

American Agriculture - Extension by Professor Ockerman & Lopa Basu

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Community Development

2007

Introduction to Poultry

2007





Raising Ducks

2007

Daughter day



2007

2007


Fish Demonstration



Ear tag

2007

Food Science Lab



2007

2007



Sewing

2007



Turf grass

Gardening

2007



Wind Power

2007





Soil Sampling

2007



Pollution Pollution Control

2007



Health

2007



4H Camp

2007

Farm Science Review

2007





Farm Science Review

2007

Farm Science Review



2007

Farm Science Review

2007



Farm Science Review

2007



Farm Science Review



2007

Farm Science Review



2007

Farm Science Review



2007



Woodworking Class

2007



Electronic Nose

2007



Land Survey

2007

Safe Travel

is a decision you make every time you drive

Motorists

- Don't follow too closely
- Only pass when legal



NEW MESSAGE AND COLLATIVE MATERIAL

FREE TAKE ONE

2007

Slow farm equipment



Safety



2007

4-H Quilt



Bee Keeping

2007



Awards



2007



2007

Agriculture Conference

Dairy Conference



2007

Showing at the State Fair



Award



T • H • E
**OHIO
STATE**
UN
EX



2007

2007

Ag Day at the University



Buy Ohio Day



2029

ANIMAL SCIENCE

Welcome Intro...

1960
2007

Volunteerism



2007

2007



Judging Pigs

2007

Food Pyramid



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Diesel + Biodiesel – from Soybeans

2007

2007

Plowing



Contour Cropping



2007



Spraying Soybeans for Corn Root Worm

2007



Soybean ready for harvest

2007



Mature Soybean

2007

2007

Wheat

Wheat

2007



Wheat



2007

2007



Bread

2007

Corn





Corn Field

2007



Mature Corn

2007

Corn Harvest



2007



Shelled Corn Harvest

2007

Loading Corn

2007





2007

Grain Train



Corn Storage

2007

Sweet Corn



2007

Sweet Corn



2007

Wheat





Wheat

2007

A close-up photograph of many light-brown, oval-shaped potatoes, likely Russet Burbank, filling the entire frame. The potatoes are piled together, showing their characteristic skin texture and shape. The lighting is even, highlighting the natural color and slight variations in size and shape of the tubers.

Potatoes

2007

Pumpkin





Strawberries

2007



Strawberry Harvest



Apple and Pear



Apple

2007

A close-up photograph of two ripe pears hanging from a tree branch. The pears are yellowish-green with a reddish-brown blush. The background is filled with green leaves and other pears, some of which are out of focus. The word 'Pear' is written in a stylized, yellow, dotted font with a black outline in the upper right corner.

Pear

2007

Tomatoes



2007

Picking tomatoes

2007



2007

Greens





SWAY BEATS



Center Pivot Irrigation

2007

Watershed Management

An aerial photograph of a rural watershed. The landscape is dominated by agricultural fields in various stages of growth and harvest, showing shades of green, yellow, and brown. A winding stream or river flows through the center of the watershed, bordered by trees and vegetation. In the background, a small town or village is visible with several buildings and more developed areas. The overall scene depicts a typical agricultural watershed.

2007

Cranberry Harvest

2007





Cotton Stalk Puller

2007

Cotton Harvested



2007



**Cotton
Ginned**

2007

Composting



2007