12. Marketing and Regulatory Programs

Animal and Plant Health Inspection Service: Protecting Agricultural Health and Productivity

Why are the farmers and ranchers of the United States able to produce so much food for the tables of America's consumers? One key to our plentiful food supply is our healthy crops and livestock.

And this is no accident. America's agricultural health is a result of a team effort—good husbandry by farmers and ranchers plus an organized effort to control and eradicate pests and disease and to prevent the entry of devastating foreign plagues.

Pests and diseases—just like frosts, floods, and droughts— can wreak havoc on agricultural productivity, depressing farm incomes and driving up food costs for consumers in the process. Nobody can prevent weather-related disasters, but USDA can and does play a vital role in protecting our country's agricultural health. The result is a more abundant, higher quality, and cheaper food supply than is found anywhere else in the world.

With the advent of free trade initiatives, a global network of countries has agreed that valid agricultural health concerns—not politics, not economics—are the only acceptable basis for trade restrictions. In this environment, our country's agricultural health infrastructure will be our farmers' greatest ally in seeking new export markets.

Excluding Foreign Pests and Diseases

Agricultural Quarantine Inspection

Agriculture, America's biggest industry and its largest employer, is under constant threat of attack. The enemies are countless and often microscopic, and they gain access to our country in surprising ways. Their potential allies are every traveler entering the United States and every American business importing agricultural products from other countries.

Many passengers entering the United States don't realize that one piece of fruit packed in a suitcase has the potential to cause millions of dollars in damage to U.S. agriculture. Forbidden fruits and vegetables can carry a whole range of plant diseases and pests. Oranges, for example, can introduce diseases like citrus canker or pests like the Mediterranean fruit fly (Medfly).

Similarly, sausages and other meat products from many countries can contain animal disease organisms that can live for many months and even survive processing. Meat scraps from abroad could end up in garbage that is fed to swine. If the meat

came from animals infected with a disease, such as African swine fever, hog cholera, or foot-and-mouth disease, it easily could be passed to domestic swine, and a serious epidemic could result.

Agricultural quarantine inspection is the first line of defense against foreign pests and diseases. Seven days a week, around 1,300 inspectors with USDA's Animal and Plant Health Inspection Service (APHIS) are on duty at international airports, seaports, and border stations to inspect passengers and baggage for plant and animal products that could be harboring pests or disease organisms. These APHIS Plant Protection and Quarantine inspectors check millions of passengers and their baggage each year for plant or animal pests and diseases that might harm U.S. agriculture. They also inspect ship cargoes, rail and truck freight, and mail from foreign countries.

The following table provides selected inspection and interception data:

Table 12-1.

FY	*1990*	*1991*	*1992*	*1993*	*1994*
Ships inspected	53,795	52,119	53,374	47,887	53,270
Aircraft inspected	356,434	356,915	378,643	378,634	451,342
Passengers and crew inspected	54,092,706	53,999,523	58,103,711	56,920,156	62,548,979
Interceptions, plant material	1,667,201	1,527,922	1,723,004	1,474,569	1,442,214
Interceptions of pests	57,856	56,213	54,831	51,829	54,831
Interceptions, meat/poultry products	166,520	205,407	246,878	224,340	281,230
Baggage civil penalties -number	n/a	29,089	29,700	27,137	22,164
Baggage civil penalties -Amount of fines	n/a	$1,299,270	$1,537,590	$1,407,000	$1,186,310

From high-tech to a keen nose, APHIS uses a variety of means to exclude foreign pests and protect American agriculture. Inspectors augment visual inspection with some 75 x-ray units that help check passenger baggage and mail for prohibited agricultural materials.

They also have enlisted trained detector dogs and their keen sense of smell to help sniff out prohibited fruit and meat. On leashes and under the constant supervision of their handlers, the friendly beagles in USDA's "Beagle Brigade" have checked the baggage of passengers arriving from overseas for the past 10 years.

Currently, APHIS has 37 canine teams at 19 airports, including 18 of America's 20 busiest international airports. Dogs also are used at three post offices. In addition to their actual function, the Beagle Brigade serves as an effective symbol of the need to protect American agriculture and the Nation's food supply from foreign pests. The Beagle Brigade program was responsible for approximately 60,000 seizures of prohibited agriculture products in FY 1994.

From Tex at Houston, Sparky in Chicago, and Taffy in Los Angeles to Abbot in Miami and Jackpot in Washington, DC, the Beagle Brigade spans the United States. These five dogs provide a good sample of what our Beagle Brigade dogs are like.

***Texanna (nickname—Tex)** is 4 years old and stationed at Houston's Intercontinental Airport. Her favorite smell is apples and in 1994 she worked 322 flights and made 460 seizures. Her proudest moments include finding 5 pounds of olives, 21 pounds of wheat, and a large quantity of pork. Tex's hobbies are chasing a ball and playing with her colleagues, and her pet peeve is people thinking she's a boy and calling her "fellah."*

***Sparky** is 7 1/2 years old and stationed at Chicago O'Hare International Airport. Adopted from a family in Miami, he has worked for USDA since August 1988. In FY 1994, he worked 1,619 flights and made 3,150 seizures. His proudest moments are when he finds smuggled birds; one month he found 362 pounds of meat. Sparky's hobbies are running loose at the kennel and playing with fellow O'Hare beagle Phyto. His pet peeve is people trying to distract him when he's working.*

*At Los Angeles International airport, beagle **Taffy** is 2 years old and was trained last year at John F. Kennedy International Airport, NY. Her favorite treats are rawhide treats, and she likes looking for apples and oranges. In FY 1994, Taffy worked 688 flights and made 491 seizures. Her hobbies are playing with colleagues, especially fellow USDA detector dog Kojak, and her best trick is shaking hands.*

***Abbott** (nickname, "The Little Prince of PPQ") is 4 years old and he works at Miami International Airport. His favorite smells are beef*

and pork, and in 1994 he worked 812 flights and made 1,308 seizures. Abbott's proudest moments include finding 30 pounds of pork and a 25-pound ham; his pet peeve is that when he finds something good and smelly to roll in, he then has to have a bath. His best trick is the belly crawl.

Finally, at Washington, DC's Dulles International Airport, ***Jackpot****, 5 years old, is hard at work. He loves looking for meat, and bits of pepperoni are his favorite treat. In FY 1994 he worked 1,052 flights and made 1,463 seizures. Jackpot is proud every time he finds something. He enjoys playing hide and seek, and his best trick is pointing out a suitcase with his paw.*

Preclearance—Checking at the Source

In addition to domestic exclusion efforts, APHIS' International Services has a corps of experts stationed overseas to bolster the Nation's defenses against exotic pests and diseases. Often it is more practical and effective to check and monitor commodities for pests or diseases at the source through preclearance programs. APHIS has special arrangements with a number of countries for preclearance programs, summarized in the following table.

Country	Commodities
Australia	Apples, pears, grapes
Belgium	Bulb inspection
Brazil	Mangoes (hot water treatment)
Chile	Stonefruit, berries, grapes, cut flowers, fruits, and vegetables
Costa Rica	Papaya
Ecuador	Mangoes (hot water treatment); melons (free zone)
Great Britain	Bulb inspection
Guatemala	Mangoes (hot water treatment)
Ireland	Bulb inspection
Israel	Bulb inspection
Japan	Sand pears, Unshu oranges
Korea	Sand pears, tangerines
Mexico	Mangoes (hot water treatment)
New Zealand	Apples, pears, Nashi pears
The Netherlands	Bulb inspection
Nicaragua	Mangoes (hot water treatment)
Peru	Mangoes (hot water treatment)
South Africa	Apples, pears
Spain	Lemons, clementines, Valencia oranges
Taiwan	Mangoes (hot water treatment), litchi (vapor heat)
Turkey	Bulb inspection
Venezuela	Mangoes (hot water treatment)

International Programs

Through direct overseas contacts, APHIS employees gather and exchange information on plant and animal health; work to strengthen national, regional, and international agricultural health organizations; and cooperate in international programs against certain pests and diseases that directly threaten American agriculture. Two of the latter are the MOSCAMED program—which combats Medfly infestations in Mexico and Guatemala—and a program to eradicate screwworms, a parasitic insect of warmblooded animals. Screwworm flies lay their eggs on the edge of open wounds, and the developing larvae feed on the living flesh of the host. Left untreated, the infestation can be fatal.

Screwworms were eradicated from the United States through the use of the sterile insect technique. With this method, millions of screwworm flies are reared in captivity, sterilized, and then released over infested areas to mate with native fertile flies. Eggs produced through such matings do not hatch, and the insect literally breeds itself out of existence.

To provide further protection to U.S. livestock, starting in 1972 eradication efforts were moved southward from the U.S.-Mexico border, with the eventual goal of establishing a barrier of sterile flies across the Isthmus of Panama. To date, screwworms have been eradicated from Mexico, Guatemala, Belize, Honduras, and El Salvador. Eradication efforts continue in Nicaragua, and agreements have been signed to start programs in Costa Rica and Panama. A production plant at Tuxtla-Gutierrez in Chiapas in southern Mexico can produce up to 500 million sterile flies weekly.

APHIS also works to prevent foot-and-mouth disease from entering Mexico, Central America, and Panama and works with Colombia to eliminate this disease from the northern part of that country.

Coping with Invasions

If, despite our best efforts, foreign pests or diseases do manage to slip past our border defenses, APHIS conducts appropriate control and eradication measures. Examples include Mediterranean fruit fly eradication projects in California in the early 1990's and outbreaks of exotic Newcastle disease in pet birds in several States during the 1980's.

APHIS has a special cadre of people who deal with introductions of exotic plant pests. Known as PEPPA—for "Preparedness for Emergency Plant Pest Actions"—these teams have been mobilized on several occasions to combat costly infestations of Medflies.

Early detection of exotic animal diseases by alert livestock producers and practicing veterinarians who contact specially trained State and Federal veterinarians is the key to their quick detection and elimination. More than 300 such trained veterinarians are located throughout the United States to investigate suspected foreign diseases. Within 24 hours of diagnosis, one of four specially trained task forces in APHIS' Veterinary Services can be mobilized at the site of an outbreak to implement the measures necessary to eradicate the disease.

Import-Export Regulations

APHIS is responsible for enforcing regulations governing the import and export of plants and animals and certain agricultural products.

Import requirements depend on both the product and the country of origin. Plants and plant materials usually must be accompanied by a phytosanitary certificate issued by an official of the exporting country. Livestock and poultry must be accompanied by a health certificate, also issued by an official of the exporting country. Animal products, such as meats and hides, are restricted if they originate in countries that have a different disease status than the United States.

APHIS regulates the importation of animals that enter the country through land ports along the borders with Mexico and Canada. Imports of livestock and poultry from other countries must be quarantined at one of four animal import centers: Newburgh, NY; Miami, FL; Los Angeles, CA; and Honolulu, HI

Personally owned pet birds can enter through one of six USDA-operated bird quarantine facilities: New York, NY; Miami, FL; San Ysidro, CA; Hidalgo, TX; Los Angeles, CA; and Honolulu, HI.

Pet birds from Canada can enter without quarantine because Canada's animal disease programs and import rules are similar to those of the United States. Commercial shipments of pet birds can enter through one of 60 privately owned, APHIS-supervised quarantine facilities. A special high-security animal import center at Key West, FL, provides a safe means of importing animals from countries infected with foot-and-mouth disease.

APHIS cooperates with the U.S. Department of the Interior in carrying out provisions of the Endangered Species Act that deal with imports and exports of endangered plant, animal, and bird species. Also, at many ports, APHIS officers inspect and sample seed imported from foreign countries to ensure that it is accurately labeled and free of noxious weeds.

APHIS also maintains 14 plant introduction stations, the largest of which is at Miami, FL, for commercial importation of plant materials. Smaller stations are at Orlando, FL; San Juan, PR; JFK International Airport, Jamaica, NY; Hoboken, NJ; Houston, El Paso, and Los Indios (Brownsville), TX; Nogales, AZ.; San Diego, Los Angeles, and San Francisco, CA; Seattle, WA; and Honolulu, HI.

To facilitate agricultural exports, APHIS officials certify the health of both plants and animals that are shipped to foreign countries. APHIS assures that U.S. plants and plant products meet the plant quarantine import requirements of foreign countries. This assurance is in the form of a phytosanitary certificate, issued by APHIS or State cooperators. During FY 1994, 271,000 phytosanitary certificates were issued for exports of plants and plant products worth $23 billion.

APHIS' Veterinary Services officials and its National Center for Import and Export provide health certification for animals and animal products designated for export. Examinations and tests—usually done by USDA-accredited veterinarians—cover both U.S. export health requirements and the frequently complex import requirements of the receiving nation. An APHIS veterinarian endorses export health certificates after all tests and other requirements have been met. Then a final examination is conducted by an APHIS veterinarian at the port of export before the livestock

or poultry leaves the country. During 1994, livestock exports increased by 30 percent over the previous year.

Domestic Plant Health Programs

In most cases, plant pest problems are handled by individual farmers, ranchers, and other property owners and their State or local governments. However, when an insect, weed, or disease poses a particularly serious threat to a major crop, the Nation's forests, or other plant resources, APHIS may join in the control work.

Most pests and weeds that are targets of APHIS' Plant Protection and Quarantine programs are not native to America. They gained entry into this country through commercial trade channels, international travelers, or other means.

When pests are new to this country, control techniques may not be available. In any case, APHIS applies interstate quarantines and takes other steps to prevent spread until effective control measures can be developed.

In many cases, foreign pests are only minor problems in their native lands because they are kept in check by native parasites, predators, and diseases. Since many of these natural enemies may not exist in the United States, one of APHIS control techniques—in cooperation with USDA's Agricultural Research Service—is the importation, rearing, and release of parasites and other biological control organisms.

Biocontrol: Nature's Way

Biological control means using predators, parasites, and pathogens to combat plant pests. Predators and parasites include insects, mites, and nematodes that naturally attack a target pest. Pathogens include bacteria, viruses, or fungi that cause diseases specifically injurious to a target pest.

Biological control was first put to broad, practical use in the United States in the 1880's. At that time, California citrus groves were being devastated by an exotic insect, the cottony-cushion scale. A USDA scout working in Australia found the vedalia beetle feeding on the scale insect. The beetle, part of the lady beetle family, was successfully introduced into California and other citrus-growing regions and has kept the scale insect from causing economic damage ever since.

To coordinate the important search for new and better biocontrol opportunities, APHIS established the National Biological Control Institute in 1989. Its mission is to promote, facilitate, and provide leadership for biological control. Its main work is to compile and release technical information and coordinate the work needed to find, identify, and augment or distribute new biological control agents.

The Institute relies on scientists from ARS and elsewhere to identify potentially useful biological control agents. These agents are carefully screened at quarantine centers before being put to use.

Various agencies have successfully cooperated on biocontrol projects. For example, several decades ago, ARS scientists found six species of stingless wasps in Europe that keep alfalfa weevils in check. In 1980, APHIS took on the job of establishing these beneficial wasps across the land. Between 1980 and 1989, APHIS and its cooperators raised and distributed about 17 million wasps, and today there are beneficial wasps within reach of virtually every alfalfa field in the country. It's esti-

mated that the benefits of the alfalfa weevil biocontrol program amount to about $88 million per year, representing a return of about $87 for each $1 spent on the project.

Other APHIS biocontrol programs currently underway in cooperation with State agencies include efforts against the cereal leaf beetle, sweet potato whitefly, Russian wheat aphid, Colorado potato beetle, euonymus scale, brown citrus aphid, leafy spurge, diffuse and spotted knapweed, and common crupina. Promising biocontrol agents for other pests are being tested at APHIS biocontrol labs in Mission, TX; Niles, MI; and Bozeman, MT.

"See No Weevil" Boll Weevil Eradication

One major domestic program that APHIS coordinates is the effort to eradicate boll weevils from the United States. The boll weevil entered this country from Mexico in the late 1890's and soon became a major pest of cotton. It has caused an estimated $12 billion in losses to the Nation's economy. In 1973, it was estimated that insecticides applied to control boll weevils accounted for about one-third of the total applied to agricultural crops in the United States.

The success of a 1971-73 cooperative boll weevil eradication experiment in portions of Mississippi, Louisiana, and Alabama involving Federal and State agencies and grower associations led to two additional 3-year experiments. One was an eradication trial in North Carolina and Virginia; the second was an optimum pest management trial in Mississippi.

The current boll weevil eradication effort judiciously applies pesticides based on the number of adult weevils trapped around cotton fields. The traps contain a pheromone (insect attractant) and a small amount of insecticide that kills all captured weevils. In eradication program areas, one to three traps are placed per acre and are checked weekly. Pesticides are applied only to fields that reach a predetermined number of trapped weevils. This selective use of pesticides results in fields requiring minimal pesticide applications—sometimes none—during the growing season. After several seasons, the weevils are eradicated within the defined program area, eliminating any further need to spray for this pest.

The following table shows progress in eradicating boll weevils from U.S. cotton-growing areas.

	States involved	Eradication acres	Weevil-free acres
1983	VA/NC/SC	93,090	34,425
1987	+GA/FL/AL	405,225	174,720
1994	+MS/TN/TX	615,580	1,813,420
1995 (est.)	Same	1,089,450	2,363,235

In the cooperative boll weevil eradication program, APHIS supplies equipment, technical and administrative support, and a portion of program funds. Grower assessments and/or State appropriations finance the great majority of the program—70 percent or more.

The success of the program has brought a resurgence of cotton production. Planting intentions reported by the National Cotton Council indicated more than a 13.5-percent increase in cotton acreage in 1995 compared with 1994.

Witchweed: A Success Story

Witchweed is a parasitic plant that attaches itself to the roots of crops such as corn, sorghum, sugar cane, and other members of the grass family, robbing them of water and vital nutrients. Each plant can produce up to 500,000 seeds per year, and the seeds can remain viable in the soil for up to 15 years, germinating only when they come into contact with the root of a host plant.

Witchweed was introduced into the Carolinas from Africa in the mid-1950's. When the parasite first struck, corn plants mysteriously withered and died. A student visiting from India recognized the weed and told U.S. agricultural experts what it was.

Over the course of an eradication effort that began in 1974, some 450,000 acres have been infested. The eradication program was based on surveillance to locate infested fields, quarantines to prevent spread, and a combination of herbicides and germination stimulants to actually eradicate the weed.

At the beginning of FY 1995, with fewer than 28,000 infested acres remaining, APHIS turned operation of the program over to North Carolina to complete eradication there, but continues to help finish the eradication effort in South Carolina.

Grasshoppers and IPM

APHIS was the lead agency in a cooperative Integrated Pest Management (IPM) initiative for grasshopper control in the Western United States. This IPM project, which began in 1987 and closed down in 1994, was aimed at finding better and more acceptable ways of preventing grasshopper damage, while protecting the environment. Activities included developing means to predict and manage grasshopper outbreaks, developing biological control alternatives that minimize the use of chemicals, and integrating proven control techniques into guidelines for APHIS rangeland grasshopper programs.

Other domestic Plant Protection and Quarantine programs include a quarantine program to prevent the artificial spread of the European gypsy moth from infested areas in the northeastern United States through movement of outdoor household goods and other articles, quarantines to prevent the spread of imported fire ants through movement of plant nursery material from infested areas, and releasing irradiated sterile pink bollworm moths to keep this insect out of cotton in California's San Joaquin Valley.

Domestic Animal Health Programs

Protecting the health of the Nation's livestock and poultry industries is the responsibility of APHIS' Veterinary Services.

Veterinary medical officers and animal health technicians work with their counterparts in the States and with livestock producers to carry out cooperative programs to control and eradicate certain animal diseases. The decision to begin a nationwide campaign against a domestic animal disease is based on a number of factors, the most important of which is: "Are producers and the livestock industry a leading force in the campaign?"

This organized effort against livestock diseases began in 1884 when Congress created a special agency within USDA to combat bovine pleuropneumonia—a dreaded cattle disease that was crippling exports as well as taking a heavy toll on domestic cattle. Within 8 years, contagious bovine pleuropneumonia had been eradicated, and this campaign set the pattern for subsequent animal disease control and eradication programs.

To date, 13 serious livestock and poultry diseases have been eradicated from the United States. They are:

Table 12-2.

Diseases eradicated from the United States

Year	*Disease*
1892	Contagious bovine pleuropneumonia
1929	Foot-and-mouth disease
1929	Fowl plague
1934	Glanders
1942	Dourine
1943	Texas cattle fever
1959	Vesicular exanthema (VE)
1959 & 66	Screwworms (Southeast & Southwest)
1971	Venezuelan equine encephalitis
1973	Sheep scabies
1974	Exotic Newcastle disease
1978	Hog cholera
1985	Lethal avian influenza

Current disease eradication programs include cooperative State-Federal efforts directed at cattle and swine brucellosis, bovine tuberculosis, and pseudorabies in swine (see table).

Table 12-3.

Status of States in cattle and swine brucellosis, bovine tuberculosis, and pseudorabies in swine

State	Cattle Brucellosis*	Swine Brucellosis**	TB***	Cattle Pseudorabies****
AL	Class A	Stage 2	Free	Stage 3
AK	Free	Free	Free	Free
AZ	Free	Free	Free	Stage 3
AR	Class A	Stage 2	Free	Stage 3
CA	Class A	Free	M-A	Stage 3
CO	Free	Free	Free	Stage 4
DE	Free	Free	Free	Stage 4
FL	Class A	Stage 1	Free	Stage 2
GA	Class A	Stage 2	Free	Stage 3
HI	Free	Free	Free	Stage 3
IL	Free	Free	Free	Stage 2
IN	Free	Free	Free	Stage 2/3
IA	Class A	Free	Free	Stage 2
KS	Class A	Free	M-A	Stage 2
KY	Class A	Free	Free	Stage 3
LA	Class A	Stage 2	Free	Stage 3
ME	Free	Free	Free	Free
MD	Free	Free	Free	Stage 3
MA	Free	Free	Free	Stage 3
MI	Free	Free	Free	Stage 2/3
MN	Free	Free	Free	Stage 2/3
MS	Class A	Free	Free	Free
MO	Class A	Free	Free	Stage 3
MT	Free	Free	Free	Free
NE	Class A	Free	Free	Stage 2/3
NV	Free	Free	Free	Free
NH	Free	Free	Free	Stage 3
NJ	Free	Free	Free	Stage 3
NM	Class A	Free	M-A	Free
NY	Free	Free	Free	Free
NC	Free	Free	M-A	Stage 2/3
ND	Free	Free	Free	Free
OH	Free	Free	Free	Stage 3
OK	Class A	Stage 2	M-A	Stage 3
OR	Free	Free	Free	Free
PA	Free	Free	M-A	Stage 2
PR	Free	Free	M-A	Stage 2
RI	Free	Free	Free	Stage 2
SC	Free	Stage 1	Free	Stage 4
SD	Class A	Free	Free	Stage 3
TN	Class A	Free	Free	Stage 3
TX	Class A	Stage 2	M-A	Stage 3

Table 12-3 continued.

Status of States in cattle and swine brucellosis, bovine tuberculosis, and pseudorabies in swine

State	Cattle Brucellosis*	Swine Brucellosis**	TB***	Cattle Pseudorabies****
UT	Free	Free	Free	Free
VT	Free	Free	Free	Stage 4
VI	Free	Free	Free	Stage 2
VA	Free	Free	M-A	Stage 4
WA	Free	Free	Free	Free
WV	Free	Free	Free	Stage 3
WI	Free	Free	Free	Stage 3/4
WY	Free	Free	Free	Free

* Class A (less than .25 percent herd infection rate) or Class Free
** Stage 1, 2 or Free
*** Modified Accredited (M-A) or Accredited Free (Free)
**** Stage 1, 2, 3, 4 or Free

Disease control and eradication measures include quarantines to stop the movement of possibly infected or exposed animals, testing and examination to detect infection, destruction of infected (and sometimes exposed) animals to prevent further disease spread, treatment to eliminate parasites, vaccination in some cases, and cleaning and disinfection of contaminated premises. In addition to the programs listed above, APHIS also cooperates with the States in a Voluntary Flock Certification Program to combat scrapie in sheep and goats.

APHIS animal health programs are carried out by a field force of about 250 veterinarians and 360 lay inspectors working out of area offices (usually located in State capitals). Laboratory support for these programs is supplied by APHIS' National Veterinary Services Laboratories at Ames, IA, and Plum Island, NY, which are centers of excellence in the diagnostic sciences and integral parts of APHIS' animal health programs.

Under the Virus-Serum-Toxin Act of 1913, APHIS enforces regulations to assure that animal vaccines and other veterinary biologics are safe, pure, potent, and effective. Veterinary biologics are products designed to diagnose, prevent, or treat animal diseases. They are used to protect or diagnose disease in a variety of domestic animals, including farm animals, household pets, poultry, fish, and fur bearers.

In contrast to animal medicines, drugs, or chemicals—all of which are regulated by the U.S. Food and Drug Administration—veterinary biologics are derivatives of living organisms. Unlike some pharmaceutical products, most biologics leave no chemical residues in animals. Furthermore, most disease organisms do not develop resistance to the immune response produced by a veterinary biologic.

Veterinarians and other professionals in APHIS' Biotechnology, Biologics, and Environmental Protection regulate and license all veterinary biologics as well as the facilities where they are produced. They also inspect and monitor the production of

veterinary biologics, including both genetically engineered products and products produced by conventional means. Necessary tests of veterinary biologics are conducted at the APHIS National Veterinary Services Laboratories at Ames, IA.

More than a half-century ago, there were perhaps a half a dozen animal vaccines and other biologics available to farmers. Now there are 2,144 active product licenses and 116 licensed manufacturers.

Monitoring Plant and Animal Pests and Diseases

In order to combat plant pests and animal diseases, it's important to know their number and where they are located.

To monitor plant pests, APHIS' Plant Protection and Quarantine unit works with the States in a project called the Cooperative Agricultural Pest Survey, which started in 1982 as a pilot project. Survey data on weeds, insects, plant diseases, and pests are entered into a nationwide database, the National Agricultural Pest Information System (NAPIS). This database can be accessed from anywhere in the country by persons with an authorized account.

By accessing NAPIS, users can retrieve the latest data on pests. NAPIS data can assist pest forecasting, early pest warning, quicker and more precise delimiting efforts, and better planning for plant pest eradication or control efforts. Survey data—which can reflect the absence as well as the presence of pests—also helps U.S. exports, assuring foreign countries that our commodities are free of specific pests and diseases.

There are more than a million records in the NAPIS database. Approximately 200 Federal and State agencies use NAPIS. NAPIS contains survey data files as well as text and graphics files. The data can be downloaded and analyzed with geographic information systems to provide graphic representation of information. For example, locations of pine shoot beetle detections can be shown graphically as well as where and how often surveys have been conducted for the beetle. This information is used by the State and Federal agencies regulating this pest.

Describing animal health and management in the United States is the goal of the APHIS National Animal Health Monitoring System (NAHMS). This program, which is conducted by APHIS' Veterinary Services, began in 1983.

NAHMS compiles statistics and information from existing data bases and gathers new data through short- and long-term targeted studies to present a baseline picture of animal agriculture. This information then can be used to predict trends and improve animal production efficiency and food quality. NAHMS provides statistically sound data concerning U.S. livestock and poultry diseases and disease conditions, along with their costs and associated production practices. Information from NAHMS aids a broad group of users throughout agriculture.

Baseline animal health and management data from NAHMS national studies are helping analysts identify associations between *Escherichia coli 0157:H7* and calf management. State and National officials, industry groups, and producers applied NAHMS national study data and information NAHMS compiled from State veterinary diagnostic laboratory reports to address a 1994 outbreak of acute bovine viral diarrhea disease.

Regulating Biotechnology in Agriculture

Scientists use agricultural biotechnology with a variety of laboratory techniques, such as genetic engineering, to improve plants, animals, and micro-organisms. Recent discoveries have led to virus-resistant crops such as cucumbers, tomatoes, and potatoes; to better vaccines and diagnostic kits used for diseases of horses, chickens, and swine; and even to new and improved varieties of commercial flowers.

APHIS' role in agricultural biotechnology is to manage and oversee regulations to ensure the safe and rapid development of the products of biotechnology. Applicants under APHIS' effective regulations and practical guidelines can safely test genetically engineered organisms and products—outside of the physical containment of the laboratory.

APHIS officials issue permits or acknowledge notification for the importation, interstate movement, or field testing of genetically engineered plants and microorganisms that are or may be plant pests.

Since 1987, APHIS has issued 1,287 interstate movement permits, 308 importation movement permits, 79 courtesy (nonregulated article) permits, and 585 release permits. Under a notification system begun in May 1993, 660 release/interstate movement, 531 movement, and 133 importation notifications have been acknowledged respectively. To date, with more than 1,700 field tests at more than 6,500 sites, no environmental problems have resulted from field tests of any of these organisms.

These biotechnology regulations also provide for an exemption process once it has been established that a genetically engineered product is safe and no longer needs to be regulated. Under this process, companies can petition APHIS for a determination of nonregulated status for specific genetically engineered products.

To date, there are eight genetically engineered plant lines that have been proven safe and no longer need to be regulated by APHIS. They are:

Year	Company	Plant/enhanced trait
1995	Ciba Seeds	An insect-resistant corn line
1995	Monsanto Co.	Russet Burbank potato lines resistant to Colorado potato beetles
1995	DNA Plant Technology Corp.	Delayed-ripening tomato line 1345-4
1994	Asgrow Seed Co. (Upjohn)	ZW-20 yellow crookneck squash resistant to certain mosaic virus diseases
1994	Calgene, Inc.	Laurate-producing canola lines
1994	Monsanto Co.	Soybeans tolerant of the herbicide glyphosate
1994	Calgene, Inc.	Cotton tolerant of the herbicide bromoxynil
1992	Calgene, Inc.	Flavr-Savr tomato (delayed ripening)

APHIS also regulates the licensing and production of genetically engineered vaccines and other veterinary biologics. These products range from diagnostic kits for feline leukemia virus to genetically engineered vaccines to prevent pseudorabies, a serious disease affecting swine. With the pseudorabies vaccines, tests kits have been developed to distinguish between infected animals and those vaccinated with genetically engineered vaccines.

Since the first vaccine was licensed in 1979, a total of 49 genetically engineered biologics have been licensed; all but 8 are still being produced.

Controlling Wildlife Damage

The mission of APHIS' Animal Damage Control program is to provide Federal leadership in managing problems caused by wildlife. Wildlife is a significant public resource that Americans greatly value. But by its very nature, wildlife also can damage agricultural and industrial resources, pose risks to human health and safety, and affect other natural resources. APHIS helps solve problems that occur when human activity and wildlife are in conflict with one another. In doing so, APHIS attempts to develop and use wildlife management strategies that are biologically, environmentally, and socially sound.

The need for effective and environmentally sound wildlife damage management is rising dramatically. One reason is that increasing suburban development intrudes upon traditional wildlife habitats. Also, population explosions of some adaptable wildlife species, such as coyotes and deer, pose increasing risks to human activities. However, advances in science and technology are providing alternative methods for solving wildlife problems.

APHIS' Denver Wildlife Research Center is the world's only research facility devoted entirely to developing methods for managing wildlife damage. Established in the 1920's, this facility has an integrated, multidisciplinary research program that is uniquely suited to provide scientific information and solutions to wildlife damage problems.

Here are a few examples of its current projects:

- Developing chemosensory repellants and attractants for birds and mammals,
- Finding methods to reduce threats to human safety when birds collide with airplanes,
- Finding ways to control the brown tree snake in Guam,
- Engineering an immunocontraceptive vaccine and delivery system to help resolve problems caused by wildlife overpopulation,
- Reducing bird damage to fish hatcheries and cereal crops,
- Studying coyote biology and behavior to develop techniques for protecting livestock from these predators, and
- Looking at ways to solve wildlife problems in urban areas, such as deer in backyards, raccoons in gardens, squirrels in attics, and geese on golf courses.

More than half of U.S. farmers experience economic loss from animal damage. In 1990, sheep and goat producers lost an estimated $27.4 million due to predation. In 1991, cattle producers' losses to predators were worth $41.5 million. Coyotes

alone caused $13.5 million in sheep losses, $5.6 million in goat losses, and $24.3 million in cattle losses nationwide.

Additionally, beavers in the Southeastern United States cause an estimated $100 million in damage each year to public and private property, while Mississippi catfish farmers lose nearly $6 million worth of fingerlings to fish-eating birds. During 1 year

- *APHIS deals with a wide variety of problems, ranging from coyote attacks on lambs to protecting endangered species from predation by other wildlife. Animal Damage Control efforts include these:*
  - *A farmer in Washington requested assistance after thousands of Canada geese congregated on his 43-acre field of carrots and began eating his crop, which had a potential market value of more than $7,000 an acre. Noise-making devices and other scare tactics recommended by APHIS were successful in frightening the geese and keeping them out of his field.*
  - *A mountain lion that killed a dog and attacked another dog and a mule in Colorado was captured by an APHIS specialist and officials from the Colorado Division of Wildlife. The lion was released unharmed in a remote site about 165 miles from the community where the attacks occurred.*
  - *In 1991, a plane carrying 350 passengers aborted takeoff at JFK International Airport after gulls were drawn into one of its engines. Although no one was seriously injured, the aircraft lost its brakes and 10 tires in the accident. Between 1988 and 1990, there were an average of 170 bird strikes against airplanes per year at this airport. After APHIS became involved in managing bird populations at the airport in 1990, laughing gull strikes were reduced by 66 percent in 1991, and by 89 percent in 1992 compared with the previous 2-year period.*
  - *Livestock guarding dogs, predator-proof fencing, and the "Electronic Guard" (a device developed by APHIS that combines a flashing strobe light and a siren to scare coyotes) are examples of nonlethal ways to minimize damage from predators.*
  - *ADC helps protect many threatened or endangered species from predation, including the California least tern and lightfooted clapper rail, the San Joaquin kit fox, the Aleutian Canada goose, the Louisiana pearlshell (mussel), and two species of endangered sea turtles.*
  - *In 1995, APHIS cooperated with Texas officials to help combat a rabies epidemic in the southern part of that State. Coyote baits laced with a genetically engineered rabies vaccine approved by APHIS for use in the project were dropped over a 14,400-square-mile area stretching from Maverick County, at the Mexican border, to Calhoun County, on the Gulf Coast. The goal of the project is to create a buffer zone of immunized coyotes to help prevent the further spread of canine rabies across Texas into more heavily populated areas.*

in Pennsylvania, white-tailed deer caused crop losses totalling $30 million. Overall bird populations cause an estimated annual loss to U.S. agriculture of $100 million. In total, the annual dollar loss to agriculture in the United States from wildlife exceeds $500 million.

Humane Care of Animals

A number of local, State, and Federal laws deal with the humane treatment and care of animals.

An important Federal law in this area is the Animal Welfare Act, which regulates the care and treatment of animals that are used for research or exhibition or are sold as pets at the wholesale level. This Act, which APHIS administers, does not cover retail pet stores. The Act also specifically excludes animals raised for food or fiber (including fur-bearing animals).

USDA has long had a concern for the health and well-being of animals. The first Federal humane law, which mandated feed and water for farm animals being transported by barge or rail, was passed in 1873. In 1966, responding to complaints about suffering and neglected dogs and cats supplied to research institutions and focusing on the problem of "petnapping," Congress passed the Laboratory Animal Welfare Act.

Four years later, a much more comprehensive piece of legislation—the Animal Welfare Act—was enacted. This law expanded coverage to most other warmblooded animals used in research, animals in zoos and circuses, marine mammals in sea life shows and exhibits, and animals sold in the wholesale pet trade. The law does not cover retail pet shops, game ranches, livestock shows, rodeos, State or county fairs, or dog and cat shows.

The Animal Welfare Act has been amended three times. A 1976 amendment extended the scope of the Act to include care and treatment while animals are being transported via common carriers. It also outlawed animal fighting ventures, such as dog or cock fights, unless specifically allowed by State law.

A 1985 amendment focused on research animals. It called for establishment of special committees at every research facility to oversee animal use and for regulations to provide for exercise of dogs and the psychological well-being of nonhuman primates.

In 1993, the act was further amended to help prevent the use of lost and stolen pets in research by giving pet owners more time to find their pets and by requiring more documentation from dealers who sell animals to researchers. Under the newest regulations, pounds and animal shelters must hold dogs and cats for at least 5 days, including a Saturday, before releasing them to dealers.

The following table shows some animal welfare statistics for FY 1994.

Table 12-4.

Animal welfare accomplishments, FY 1994:

Animals used in research:	1,618,194
Registered research facilities:	1,380
Licensed animal dealers:	4,238
Licensed and registered exhibitors:	1,896
Compliance inspections:	14,778

Regulatory Enforcement and Animal Care officials in APHIS enforce the Animal Welfare Act through a system of licensing and registering regulated businesses. Inspectors check to make sure that licensees and registrants are complying with the standards for proper care and handling of animals covered by the Act.

If violations are noted, inspectors set deadlines for correcting the situation. In extreme situations, APHIS can seize and take custody of animals whose safety is in imminent danger. If the problem isn't corrected, the person responsible may be charged with a violation and prosecuted through civil procedures. Penalties include fines, suspension or revocation of licenses, and cease-and-desist orders to prevent future violations. The table below summarizes penalties over the past 3 fiscal years.

Table 12-5.

Animal welfare sanctions imposed, FY 1992-94

	1992	*1993*	*1994*
Fines imposed	$286,450	$165,250	$345,900
License revocations,suspensions, and refusals	20	13	23

Here are some examples of APHIS enforcement actions in 1994:

- A commercial airline was fined $60,000 for inhumane transportation of dogs when 32 puppies died because of faulty ventilation on a flight from St. Louis to Salt Lake City.
- A Mississippi dog dealer was fined $5,000 and had his dealer's license revoked for failing to properly identify animals and several other violations of the Act.
- In April 1995, two Iowa dog dealers had their license permanently revoked and were fined $200,000 for failing to maintain proper records, identify animals properly, maintain structurally sound and sanitary housing facilities, and several other violations of the Act.

APHIS also enforces the Horse Protection Act, which prohibits the cruel practice of "soring" show horses. The primary enforcement tool is inspection of horses at

shows by APHIS personnel and by "Designated Qualified Persons" who are licensed by industry organizations and certified and monitored by APHIS.

Agricultural Marketing Service

When you visit the grocery store, you know you'll find an abundance and variety of top-quality produce, meats, and dairy products. If you're like most people, you probably don't give a second thought to the marketing system that brings that food from the farm to your table. Yet, this state-of-the-art marketing system makes it possible to pick and choose from a variety of products, available all year around, tailored to meet the demands of today's lifestyles. Millions of people—from grower to retailer—make this marketing system work. Buyers, traders, scientists, factory workers, transportation experts, wholesalers, distributors, retailers, advertising firms—in addition to the Nation's farmers—all help create a marketing system that is unsurpassed by any in the world. And USDA's Agricultural Marketing Service (AMS) helps make sure the U.S. marketing system remains world-class.

Services to Promote Quality: Grading, Quality Standards, and Certification

Wherever or whenever you shop, you expect good, uniform quality and reasonable prices for the food you purchase. AMS quality grade standards and grading services are two voluntary tools that industry can use to help promote quality, and to communicate that quality to consumers. Industry pays for these services and they are voluntary, so their widespread use by industry indicates they are valuable tools in helping market their products.

USDA quality grade marks are easily seen on beef, lamb, chicken, turkey, butter, and eggs. For many other products, such as fresh and processed fruits and vegetables, the grade mark isn't always visible on the retail product. In these commodities, the grading service is used by wholesalers, and the final retail packaging may not include the grade mark. However, quality grades are widely used—even if they are not prominently displayed—as a "language" among traders. They make business transactions easier whether they are local or made over long distances. Consumers, as well as those involved in the marketing of agricultural products, benefit from the greater efficiency permitted by the availability and application of grade standards.

Grading is based on standards, and standards are based on measurable attributes that describe the value and utility of the product. Beef quality standards, for instance, describe attributes such as marbling (the amount of fat interspersed with lean meat), color, firmness, texture, and age of the animal, for each grade. In turn, these factors are a good indication of tenderness, juiciness, and flavor of the meat—all characteristics important to consumers. Prime, Choice, and Select are all grades familiar to consumers of beef.

Standards for each product describe the entire range of quality for a product, and the number of grades varies by commodity. There are eight grades for beef, and three each for frying chickens, eggs, and turkeys. On the other hand, there are 39 grades for cotton, and more than 300 fruit, vegetable, and specialty product standards.

■ ***Facts about grading:*** *From October 1993 through September 1994, USDA graded 37 percent of the shell eggs and 95 percent of the butter produced in the United States. Almost 85 billion pounds of fresh fruits and vegetables and over 10 billion pounds of processed fruits and vegetables received a USDA grade mark. Nearly all of the meat industry requests AMS grading services: USDA grades were applied to 82 percent of all beef, 88 percent of all lambs, 19 percent of all veal and calves, 78 percent of all turkeys, and 54 percent of all chickens and other poultry marketed in this country. USDA also graded more than 98 percent of the cotton and 97 percent of the tobacco produced in the United States.*

In addition to grading services, USDA provides certification services, for a fee, that facilitate ordering and purchase of products used by large-volume buyers. Certification assures buyers that the products they purchase will meet the terms of the contract—with respect to quality, processing, size, packaging, and delivery. If a large buyer—such as a school district, hospital, prison, or the military—orders huge volumes of a particular product such as catsup or processed turkey or chicken, it wants to be sure that the delivered product meets certain needs. Too much money is involved to risk getting tomato soup when you need catsup, and meals can't be postponed while the mistake gets corrected. Graders review and accept agricultural products to make sure they meet specifications set by private-sector purchasers. They also certify food items purchased for Federal feeding programs.

Spreading the News

Farmers, shippers, wholesalers, and retailers across the country rely on AMS Market News for up-to-the-minute information on commodity prices, demand, movement, volume, and quality. Market News helps industry make the daily critical decisions about where and when to sell, and what price to expect. Because this information is made so widely available, farmers and those who market agricultural products are able to better compete, ensuring consumers a stable and reasonably priced food supply.

Approximately 600 reports are generated daily, collected from more than 100 U.S. locations. Reports cover local, regional, national, and even international markets for dairy, livestock, poultry, grain, fruit, vegetables, tobacco, cotton, and specialty products. Weekly, biweekly, monthly, and annual reports track the longer range performance of cotton, dairy products, poultry and eggs, fruits, vegetables, specialty crops, livestock, meat, grain, floral products, feeds, wool, and tobacco. Periodically, AMS issues special reports on such commodities as olive oil, peanuts, and honey.

USDA's commodity market information in Market News is easily accessible—via newspapers, television, and radio; printed reports mailed or faxed directly to the user; telephone recorders; electronic access through Sprint and the Internet; and by direct contact with USDA reporters.

Buying Food: Helping Farmers and Needy Persons

AMS serves both farmers and those in need of nutrition assistance through its commodity procurement programs. By purchasing wholesome, high-quality food products that are in abundance, AMS helps provide stable markets for producers. The Nation's food assistance programs benefit from these purchases, as these foods go to low-income individuals who might otherwise be unable to afford them.

Some of the programs and groups that typically receive USDA-purchased food include: children in the National School Lunch, Summer Camp, and School Breakfast Programs; Native Americans participating in the Food Distribution Program on Indian Reservations; older Americans through the Nutrition Program for the Elderly; and low-income and homeless persons through the Commodity Supplemental Food Program and the Emergency Food Assistance Program. In addition, USDA helps provide disaster relief by making emergency purchases of commodities for distribution to disaster victims.

Once USDA determines that a purchase is appropriate, AMS publicly invites bids to supply a maximum quantity, and makes sure that the food it purchases meets quality and nutrition standards. Often, AMS specifies that foods be low in fat, sugar, and sodium. By law, AMS only purchases products that are 100 percent domestic in origin.

Pesticides: Information and Records

Many Americans are concerned about the use and potential negative effects of agricultural pesticides on health and environmental quality. Chemical residues on domestic and imported food—especially produce—have received particular attention. Recognizing this concern, AMS began coordinating a Pesticide Data Program (PDP) in 1991. Through agreements with nine States, AMS collects and analyzes samples of fresh and processed produce and grain for potential pesticide residues. In 1996, dairy commodities will be added to the program. The PDP generates objective data that support government decisions, while also serving to keep the public informed about the safety of the Nation's food supply. The Environmental Protection Agency (EPA) uses PDP data to support pesticide reregistration and special review decisions, and the Food and Drug Administration (FDA) uses PDP data to enforce EPA-established tolerances and FDA administrative guidelines for food.

In addition to the PDP, AMS also has the primary responsibility for the Pesticide Recordkeeping Program. This program requires all certified private applicators of federally restricted-use pesticides to maintain records of all applications. The records will be put into a data base to help analyze agricultural pesticide use, but the data can also be helpful to health care professionals when treating individuals who may have been exposed to an agricultural chemical. AMS strives to provide outreach and educational support to States and private applicators, to broaden their understanding and participation in the program and to promote the safe use and treatment of agricultural pesticides.

Helping Farmers Promote Their Products

"The Touch...the Feel of Cotton...the Fabric of Our Lives," "Beef...It's What's for Dinner," "Milk—What A Surprise!" If you've watched television or read magazines lately, you've probably heard or read these slogans and others, for a host of

agricultural commodities. All of these promotional campaigns are part of the research and promotion programs that AMS oversees.

Federal research and promotion programs, each authorized by separate legislation, are designed to improve farmers' incomes by allowing them to promote their products. The programs are all fully funded by industry assessments. Board members are nominated by industry and appointed officially by the Secretary of Agriculture. AMS oversees the activities of the boards or councils and approves budgets, in order to assure compliance with the legislation.

Currently, there are research and promotion programs for beef, pork, cotton, cut flowers and greens, dairy products, eggs, fluid milk, honey, lamb, limes, wool and mohair, potatoes, soybeans, and watermelon.

But, while advertising is one part of these programs, product research and development is also a major focus. Permanent press cotton and low-cholesterol, low-fat dairy products are just two examples of how these programs have benefitted consumers and expanded markets for producers.

■ ***Fact about marketing**: The national Fluid Milk Processors Promotion program began its "Milk—What A Surprise!" campaign in 1994, featuring photographs of famous personalities wearing "milk mustaches." The board estimates that 147 million consumers have already been reached by this promotion.*

Marketing Orders: Solving Producers' Marketing Problems

Marketing agreements and orders help dairy, fruit, vegetable, and peanut producers come together to work at solving marketing problems they cannot solve individually. Marketing orders are flexible tools that can be tailored to the needs of local market conditions for producing and selling. But they are also legal instruments that have the force of law, with USDA ensuring an appropriate balance between the interests of producers looking for a fair price and consumers who expect an adequate, quality supply at a reasonable price.

Federal milk marketing orders, for example, establish minimum prices that milk handlers or dealers must pay to producers for milk, depending on how that milk will be used—for example as fluid milk or cheese. Federal milk orders help build more stable marketing conditions by operating at the first level of trade, where milk leaves the farm and enters the marketing system. They are flexible in order to cope with market changes. They assure that consumers will have a steady supply of fresh milk at all times.

Marketing agreements and orders also help provide stable markets for fruit, vegetable, and specialty crops like nuts and raisins, to the benefit of producers and consumers. They help farmers produce for a market, rather than having to market whatever happens to be produced. There is no control of pricing or production. A marketing order may also help an industry smooth the flow of crops moving to market, to alleviate seasonal shortages and gluts. In addition, marketing orders help

maintain the quality of produce being marketed; standardize packages or containers; and authorize advertising, research, and market development. Each program is tailored to the individual industry's marketing needs.

Ensuring Fair Trade in the Market

AMS also administers several programs that ensure fair trade practices among buyers and sellers of agricultural products.

The Perishable Agricultural Commodities Act (PACA) program promotes fair trading in the fresh and frozen fruit and vegetable industry. Through PACA, buyers and sellers are required to live up to the terms of their contracts, and procedures are available for resolving disputes outside the civil court system.

Fruit and vegetable buyers and sellers need this assurance because of the highly perishable nature of their products. Trading in produce is considerably different than trading for a car, a computer, or even grain. When a vegetable grower doesn't get paid, the product usually can't be reclaimed before it spoils—or before it has already been consumed.

Although PACA was initiated to protect producers, it benefits consumers and the entire produce industry. Over the past decade, AMS has handled nearly 40,000 PACA complaints, not just from growers, but also from grower-agents, grower-shippers, brokers, retailers, and processors. PACA is funded by license fees paid by industry, but the bottom line is that fair trade and resolved disputes mean businesses of any size can operate in a better trade environment and consumers can get a wider choice of reasonably priced, high-quality fruits and vegetables.

The Federal Seed Act (FSA) protects everyone who buys seed by prohibiting false labeling and advertising of seed in interstate commerce. The FSA also complements State seed laws by prohibiting the shipment of seed containing excessive noxious weed seeds. Labels for agricultural seed must state such information as the kinds and percentage of seed in the container, percentages of foreign matter and weed seeds, germination percentage and the date tested, and the name and address of the shipper.

The Plant Variety Protection Act provides patent-like protection to breeders of plants that reproduce sexually, that is, through seeds. Developers of new plant varieties can apply for certificates of protection. This protection enables the breeder to market the variety exclusively for 20 years and, in so doing, creates an incentive for investment in the development of new plant varieties. Since 1970, AMS' Plant Variety Protection Office has issued more than 3,000 certificates of protection.

The Agricultural Fair Practices Act allows farmers to file complaints with USDA if a processor refuses to deal with them because they are members of a producers' bargaining or marketing association. The act makes it unlawful for handlers to coerce, intimidate, or discriminate against producers because they belong to such groups. USDA helps to institute court proceedings when farmers' rights are found to be so violated.

Organic Certification

AMS is responsible for developing and implementing an organic certification program, authorized by the Organic Foods Production Act as part of the 1990 Farm Bill.

The goals of the organic certification program are to:

- Establish national standards governing the marketing of certain products as organically produced,
- Assure consumers that organically grown products meet consistent standards, and
- Facilitate interstate commerce in fresh and processed food that is organically produced.

Under the act, the first National Organic Standards Board was appointed in January 1992. Its job is to help develop standards for substances to be used in organic production. Existing organic programs will have to conform with the national program once it is in place.

Direct Marketing and Wholesale Market Development

AMS continually seeks ways to help farmers and marketers improve the U.S. food marketing system. For example, AMS' Federal-State Marketing Improvement Program (FSMIP) provides matching funds to State departments of agriculture to conduct research that will help develop or improve local marketing systems. The aim of the program is to reduce costs or expand markets for producers, ultimately benefiting consumers through lower food costs and more food choices. Projects include research on innovative marketing techniques, taking those research findings into the marketplace to "test market" the results, and developing State expertise in providing service to marketers of agricultural products. In FY 1994, FSMIP funded 32 projects in 24 States for $1.3 million.

The Wholesale Market Development Program works to improve the handling, processing, packaging, storage, and distribution of agricultural products. AMS researchers work with local governments and food industry groups to develop modern, efficient, wholesale food distribution centers and farmers markets.

> ***Fact about farmers markets:*** *USDA defines a farmers market as a group of farmers and vendors leasing or renting space in a common facility on a temporary basis, with an emphasis on the sale of fresh farm products, crafts, and other locally produced items. USDA estimates there are currently 1,755 farmers markets in the United States.*

Efficient Transportation for Agriculture

Without efficient transportation of agricultural products, our food marketing system would not work. Transportation ties all the components of our marketing system together.

AMS, through its Transportation and Marketing Division, is constantly monitoring such issues as waterway user fees; the condition of rural roads and bridges; the impact of rail and truck deregulation on agriculture; and the situation of rail, truck, and marine shipping for export promotion. It also analyzes local and national transportation situations, and provides information and recommendations to policymakers and in regulatory forums. Producers, producer groups, shippers, exporters, rural communities, carriers, government agencies, and universities all benefit from the technical assistance and information provided.

AMS also conducts research on such new technologies as improved handling and packaging for perishables, cryogenic refrigeration (use of carbon dioxide snow) for transporting frozen foods, new handling procedures for the air shipment of bees, and handling and regulatory requirements for shipping livestock.

Produce Locally, Think Globally

To remain competitive in today's world, American agriculture has become more global, and AMS has striven to be a strong partner in expanding markets for U.S. agricultural products.

The AMS role in import and export of commodities centers on its quality grading and certification programs, which are user-funded. Grading involves determining whether a product meets a set of quality standards. Certification ensures that contract specifications have been met—in other words, that the buyer receives the product in the condition and quantity described by the terms of the contract. AMS commodity graders frequently support other USDA agencies involved in export assistance, such as the Consolidated Farm Service Agency and the Foreign Agricultural Service.

U.S. companies often request certification services when exporting to a country that has specific import requirements. Certification services provided by AMS help avoid rejection of shipments or delay in delivery once the product reaches its foreign destination. Delays lead to product deterioration and, ultimately, affect our image for quality. One example of this type of program is the AMS Quality Systems Certification Program, a user-funded service for the meat industry, which provides independent, third-party verification of a supplier's documented quality management system. The program was developed to promote world-class quality and to improve the international competitiveness of the U.S. livestock and meat industry.

For selected fruits and vegetables, the grading of imports is mandatory. But for the most part, firms importing agricultural products into the United States use grading services voluntarily. AMS graders are also often asked to demonstrate commodity grading to foreign firms and governments.

In 1994, AMS and industry sponsored an international beef quality audit to identify the quality components that would enhance the desirability of U.S. beef in the global marketplace. Interviews were conducted with nearly 300 businesses and organizations in 20 countries. Results were shared with producers, exporters, and others in the industry, and will help the U.S. meat industry market its products better in growing markets.

In addition to grading and certification services, AMS Market News offices provide information on sales and prices of both imports and exports. Today, U.S. market participants can receive market information on livestock and meat from Venezuela,

Japan and other Pacific Rim markets, Mexico, Canada, Australia, and New Zealand; fruits and vegetables from France, Great Britain, Bulgaria, Poland, Mexico, New Zealand, and Canada; ornamentals from Germany, France, and Mexico; and a host of products from Kazakhstan and Russia.

AMS participates in a number of international forums that aim to facilitate world agricultural trade and avoid potential trade barriers, and it administers the Agreement on the International Carriage of Foodstuffs and the Economic Commission for Europe treaty. In 1994, AMS continued to provide eastern Europe and other countries with technical assistance to improve transportation and distribution of their agricultural commodities.

Whether at home or abroad, AMS strives to help U.S. agriculture market its abundant, high-quality products. And AMS will continue to work to help U.S. agriculture strategically market its products in growing world markets, while assuring U.S. consumers an abundant supply of high-quality, wholesome food at reasonable prices.

Grain Inspection, Packers, and Stockyards Administration

The Grain Inspection, Packers, and Stockyards Administration (GIPSA) was established October 20, 1994, under the authority of the Federal Crop Insurance and Department of Agriculture Reorganization Act of 1994, to administer the programs and functions of two predecessor agencies—the Federal Grain Inspection Service and the Packers and Stockyards Administration. GIPSA's two program activities—the Grain Inspection program and the Packers and Stockyards program—help promote a competitive, efficient market structure and facilitate the marketing of grains, oilseeds, pulses, rice, livestock, meat, and poultry in domestic and international markets.

Federal Grain Inspection Program

The Grain Inspection program plays a critical role in American grain trade. Its mission is to:

- Facilitate the marketing of grain, oilseeds, pulses, rice, and related commodities by establishing descriptive standards and terms,
- Certify quality accurately and consistently,
- Provide for uniform official inspection and weighing,
- Carry out assigned regulatory and service responsibilities, and
- Provide the framework for commodity quality improvement incentives to both domestic and foreign buyers.

This program serves American agriculture by providing descriptions (grades) and testing methodologies for measuring the quality and quantity of grain, rice, edible beans, and related commodities, and by providing an array of inspection and weighing services, on a fee basis, through a unique partnership of Federal, State, and private laboratories.

By serving as an impartial third party, GIPSA and the official grain inspection and weighing system ensure that the Official U.S. Standards for Grain are applied and that weights are recorded fairly and accurately. In this way, GIPSA advances the orderly and efficient marketing and effective distribution of U.S. grain and other assigned commodities from the Nation's farms to domestic and foreign buyers.

The Grain Inspection program administers the provisions of the U.S. Grain Standards Act, and those provisions of the Agricultural Marketing Act of 1946 that relate to inspection of rice, pulses, lentils and processed grain products. To facilitate the marketing of U.S. grain and related commodities, the program:

- Establishes official U.S. grading standards and testing procedures for eight grains (barley, corn, oats, rye, sorghum, triticale, wheat, and mixed grain), four oilseeds (canola, flaxseed, soybeans, and sunflower seed), rice, lentils, dry peas, and a variety of edible beans.
- Provides American agriculture and customers of U.S. grain around the world with a national inspection and weighing system that applies the official grading and testing standards and procedures in a uniform, accurate, and impartial manner.
- Inspects and weighs exported grain and oilseeds. Domestic and imported grain and oilseed shipments, and crops with standards under the AMA, are inspected and weighed upon request.
- Monitors grain handling practices to prevent the deceptive use of the grading standards and official inspection and weighing results, and the degradation of grain quality through the introduction of foreign material, dockage, or other nongrain material to grain.

Through these permissive and mandatory programs, the Federal Grain Inspection program promotes efficient and effective marketing of U.S. grain and other commodities from farmers to end users.

Packers and Stockyards Programs

In the Packers and Stockyards program, GIPSA's mission is:

- To promote fair business practices and a competitive marketing environment for the marketing of livestock, meat, and poultry by fostering fair and open competition and guarding against deceptive and fraudulent practices affecting the movement and price of meat animals and their products; and
- To protect consumers and members of the livestock, meat, and poultry industries from unfair business practices which can unduly affect meat and poultry distribution and prices.

GIPSA's Packers and Stockyards program administers the Packers and Stockyards (P&S) Act of 1921. The purpose of the act, which has been amended to keep pace with changes in the industry, is to assure fair competition and fair trade practices, safeguard farmers and ranchers, and protect consumers and members of the livestock, meat, and poultry industries from unfair business practices that can unduly affect meat and poultry distribution and prices.

Payment Protection

The P&S Act requires prompt payment for livestock purchased by dealers, market agencies, and packers whose operations are subject to the act. Every dealer, order buyer, packer, commission firm, and auction market must pay for livestock before the close of the next business day following the purchase and transfer of possession. In addition, the act establishes specific payment delivery requirements for livestock purchased for slaughter.

Other means of assuring payment protection include annual and special reports required of packers, live poultry dealers, stockyard owners, market agencies, and dealers. These reports help monitor compliance with the financial requirements of the P&S Act. Also, each packer, market agency, and dealer operating in commerce is required to file a surety bond or its equivalent. During FY 1994, 300 claimants were paid $2.3 million from bond proceeds of dealers and market agencies that failed financially; 9 claimants were paid $50 million from packer bonds.

One way the P&S program assures the integrity of the livestock, meat, and poultry markets is through programs that provide payment protection for sellers of livestock, meat, and poultry. For example, P&S emphasizes custodial account investigations as a means of payment protection for consignors of livestock. All market agencies selling on a commission basis are required to establish and maintain a separate bank account designated as "Custodial Account for Shippers' Proceeds," to be used for deposits from livestock purchasers and disbursements to consignors of livestock.

The P&S custodial audit program provides for auditing each auction market and commission firm's custodial account at least once every 3 years. During the past 4 years, livestock consignors, on average, have recovered 80 percent of their losses from auction markets that failed financially.

Packer & Poultry Trust Activities

If a meat packer fails to pay for livestock or a live poultry dealer for live poultry, then receivables, inventories, and proceeds derived from such purchases in cash sales or by poultry growing arrangement become trust assets by operation of law. These assets are held by the meat packer or live poultry dealer for the benefit of all unpaid cash sellers and/or poultry growers. Cash sellers of livestock and poultry growers are legally in a priority payment position in bankruptcy or in claims against trust assets in the event of business failure.

Since the 1976 amendments to the P&S Act, cash sellers have been paid $46.9 million under the statutory trust provision. During FY 1994, 11 packer firms paid out $2.0 million.

A statutory trust provision offering protection to live poultry growers and sellers became effective in February 1988. Since then, P&S has investigated 28 poultry failures, with 17 resulting in payments totalling $6.1 million.

Open Competition

Competition for livestock, either in direct trading or at public markets, should be open and free of restrictions. Any practice, agreement, or understanding that excludes potential buyers from bidding in open competition would be considered a restraint on competition. Practices resulting in the lessening of competition for producers' livestock include apportioning of territories, price agreements or arrangements not to compete, and payoffs or kickbacks to buyers. GIPSA staff members immediately investigate any practice that indicates a possible restriction of competition.

Scales & Weighing Activities

GIPSA is concerned with two different elements that affect the integrity of transactions: (1) the accuracy of scales used for weighing livestock, meat, and poultry, and (2) the proper and honest operation of scales to assure that the weight on which a transaction is based is accurate.

The major emphasis in the scales and weighing program is on detection of improper and fraudulent use of scales. An investigative program uses several different procedures to determine whether weighing activity is proper and honest.

A total of 551 livestock weighing investigations were conducted in FY 1994, and approximately 10 percent of the investigations disclosed false weighing. More than 17,300 head of livestock were checkweighed by GIPSA personnel in these investigations.

Animal Care & Handling

GIPSA also has jurisdiction over livestock marketing at stockyards. If the care and handling of livestock at a stockyard are found to be unjust, unreasonable, or discriminatory, then rules, regulations, and practices can be prescribed for handling such livestock to protect the quality and value of the animals. GIPSA requires stockyard owners and packers to exercise reasonable care and promptness with respect to handling livestock to prevent shrinkage, injury, death, or other avoidable loss. The agency also has a surveillance program to review handling practices, services, and facilities at stockyards.

Fair Treatment for Poultry Growers

GIPSA carries out enforcement of the trade practice provisions of the P&S Act relating to live poultry dealers. Its review program extensively examines the records of poultry integrators to assure compliance with the trade practice provisions of the P&S Act.

Carcass Merit Purchasing

P&S monitors the use of electronic evaluation devices by hog slaughterers who purchase hogs on a carcass merit basis, in order to ensure that the electronic measuring is accurate and properly applied, and that the producer receives an accurate accounting of the sale. The accuracy rate for the application of the devices is about 97 percent.

Analysis of Structural Change

P&S examines structural changes in the livestock, meat packing, and poultry industries, and analyzes the competitive implications of these structural changes. The analyses assist in enforcing the P&S Act and in addressing public policy issues relating to the livestock and meat industries.

Congress recently directed P&S to undertake a major study of concentration in the red meat packing industry. The study, scheduled for completion late in 1995, will define relevant cattle procurement markets, examine cattle and hog procurement patterns, analyze the effects of concentration on cattle prices, and examine the implications of vertical coordination arrangements in beef and hog production.

Clear Title

The Clear Title provisions of the Food Security Act of 1985 permit States to establish central filing systems to inform parties about liens on farm products. The purpose of this program is to remove an obstruction to interstate commerce in farm products. GIPSA certifies when a State's central filing system complies with the act.