

Agricultural Chemical Usage

Postharvest Applications – Oats Summary

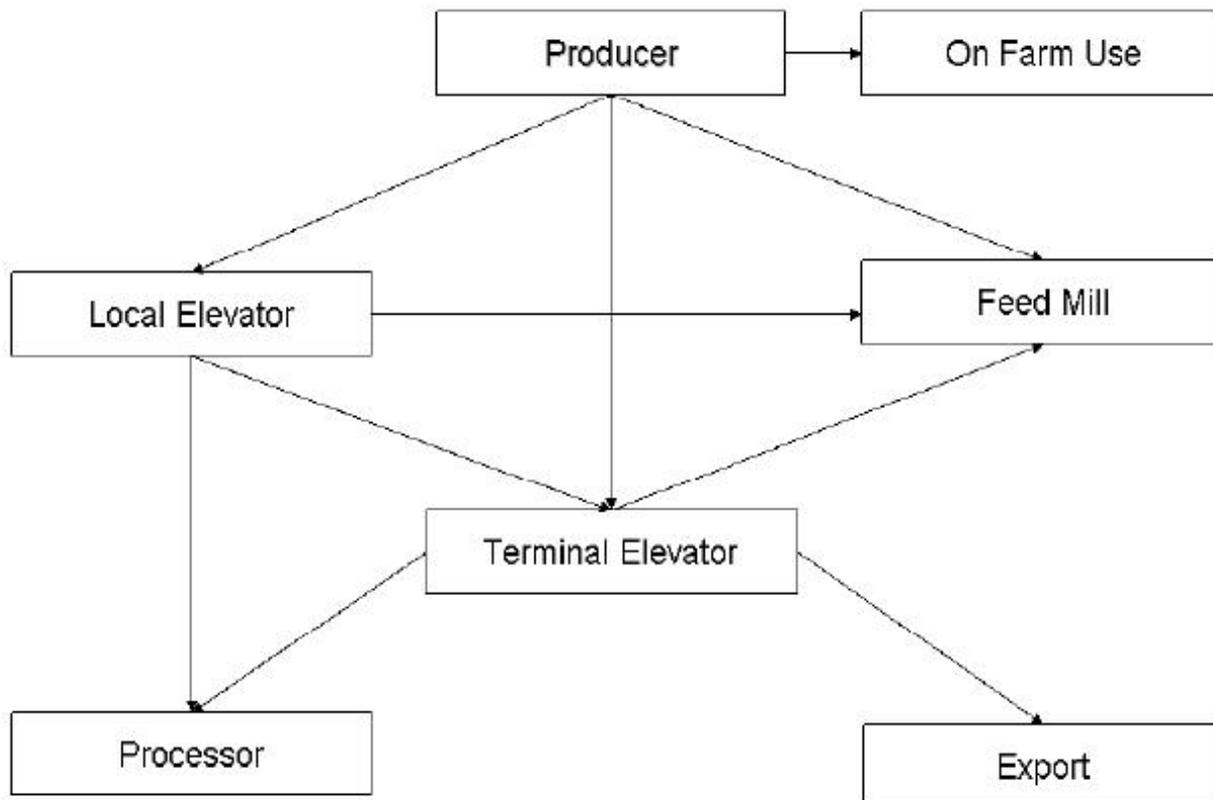
By Pamela K. Kanagy

After harvest, oats are generally marketed through local and/or terminal elevators, except those which are used on the farm. The diagram below shows the traditional postharvest marketing channels for oats. Most oats are used for livestock feed. This grain may be pulled out of the marketing channel at any point. Processors are also recipients of the grain at any point along the marketing channel.

Oats moving from a local elevator to a terminal elevator were duplicated in the total amount handled. The intent of the survey was to obtain the entire amount of chemicals applied to the stored oats; therefore, this duplication in quantity handled is necessary.

In addition to chemical applications, grain storage operators were also asked a series of questions pertaining to their pest management practices. Answers to these questions are summarized and included in the report.

Oat Postharvest Market Channels



Oats: Postharvest Chemical Applications,
Program States, 2005-06 Marketing Year

| Agricultural Chemical | Volume Treated | Applications | Rate Per Application | Rate Per Market Year | Total Applied |
|-----------------------|----------------|---------------|-----------------------------|----------------------|-------------------|
| | <i>Percent</i> | <i>Number</i> | <i>Pounds Per 1,000 Bu.</i> | | <i>1,000 Lbs.</i> |
| Insecticides: | | | | | |
| Aluminum phosphide | 5.1 | 1.0 | 0.057 | 0.057 | 0.4 |
| Malathion | 0.7 | 1.0 | 0.415 | 0.415 | 0.4 |

Pennsylvania: Oats - Postharvest Chemical Applications,
Percent Treated and Total Applied, 2005-06 Marketing Year ¹

| Volume Handled | Percent Treated and Total Applied | | | | | |
|------------------|-----------------------------------|-------------------|----------------|-------------------|----------------|-------------------|
| | Insecticide | | Fungicide | | Other Chemical | |
| <i>1,000 Bu.</i> | <i>Percent</i> | <i>1,000 Lbs.</i> | <i>Percent</i> | <i>1,000 Lbs.</i> | <i>Percent</i> | <i>1,000 Lbs.</i> |
| 2,867 | * | * | | | | |

* Insufficient reports to publish data. ¹ Blank cells represent no data reported for the item.

Pennsylvania: Oats – All Grains Handled: Pest Management Practices,
Percent of Operations Utilizing Practice, 2005-06 Marketing Year ¹

| Practice | Percent of Acres Receiving Practice |
|----------------------------------|-------------------------------------|
| | <i>Percent</i> |
| Mechanical Devices: | |
| Aeration controller | 13 |
| Deep bin sampler | |
| Grain spreader | 13 |
| Phosphine pellet dispenser | 4 |
| Protein analyzer | 1 |
| Power probe | |
| Re-circulation fumigation device | |
| Temperature cable | 1 |
| Cleaning Activities: | |
| Clean aeration ducts | 38 |
| Control vegetation around bins | 78 |
| Core bins after filling | 16 |
| Fumigate empty bins | 34 |
| Hose down empty warehouse bins | 6 |
| Pick up spilled grain | 87 |
| Sweep or vacuum empty bins | 81 |
| Other cleaning activities | 4 |

¹ Blank cells represent no data reported for the item.

Pennsylvania: Oats – All Grains Handled: Pest Management Practices,
Percent of Operations Utilizing Practice, 2005-06 Marketing Year ^{1 2}

| Practice | Spring and Summer | Fall and Winter |
|------------------------|----------------------|--------------------|
| Inspected for insects: | | |
| Concrete Silos: | | |
| Daily | 3 | 3 |
| Twice a week | | |
| Weekly | 3 | 1 |
| Every two weeks | 1 | 1 |
| Monthly | 1 | 3 |
| Other | | |
| Do not monitor | 3 | 3 |
| Do not have structure | 89 | 89 |
| Steel Bins and Tanks: | | |
| Daily | 11 | 11 |
| Twice a week | 5 | 5 |
| Weekly | 17 | 15 |
| Every two weeks | 8 | 7 |
| Monthly | 13 | 16 |
| Other | 8 | 8 |
| Do not monitor | 8 | 9 |
| Do not have structure | 30 | 30 |
| Other Structures: | | |
| Daily | 12 | 12 |
| Twice a week | 1 | 1 |
| Weekly | 11 | 8 |
| Every two weeks | 5 | 5 |
| Monthly | 9 | 11 |
| Other | 3 | 3 |
| Do not monitor | 9 | 11 |
| Do not have structure | 49 | 49 |

¹ Numbers for each type of structure may not add to 100 due to rounding.

² Blank cells represent no data reported for the item.

Pennsylvania: Oats – Pest Management Practices, Percent of Operations
Utilizing Practice, 2005-06 Marketing Year, Continued ^{1 2}

| Practice | Spring and Summer | Fall and Winter |
|-----------------------------|----------------------|--------------------|
| Measured Grain Temperature: | | |
| Concrete Silos: | | |
| Daily | | |
| Twice a week | | |
| Weekly | | |
| Every two weeks | | |
| Monthly | 3 | 3 |
| Other | | |
| Do not monitor | 11 | 11 |
| Do not have structure | 87 | 87 |
| Steel Bins and Tanks: | | |
| Daily | 3 | 3 |
| Twice a week | | |
| Weekly | 8 | 5 |
| Every two weeks | 1 | 3 |
| Monthly | 7 | 7 |
| Other | 1 | 1 |
| Do not monitor | 50 | 52 |
| Do not have structure | 30 | 30 |
| Other Structures: | | |
| Daily | 1 | 1 |
| Twice a week | | |
| Weekly | 5 | 1 |
| Every two weeks | 1 | 1 |
| Monthly | 5 | 7 |
| Other | 1 | 1 |
| Do not monitor | 36 | 37 |
| Do not have structure | 49 | 50 |

¹ Numbers for each type of structure may not add to 100 due to rounding.

² Blank cells represent no data reported for the item.

Oats - All Grains Handled: Pest Management Practices, Strategies Used in
Determining Fumigation Schedule, 2005-06 Marketing Year ¹

| Practice | State | | | | | | |
|---|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| | ND | OH | PA | SD | TX | WI | ALL |
| | <i>Percent of Operations</i> |
| Preset calendar date | | 24 | 6 | 4 | | 7 | 6 |
| Bin samples | 25 | 6 | 13 | 33 | 35 | 32 | 28 |
| Combined with other handling operations | 5 | | 31 | 14 | 35 | 7 | 12 |
| Insect trap counts | 5 | 6 | 6 | 8 | | | 3 |
| Visual grain inspection | 65 | 65 | 31 | 41 | 29 | 47 | 49 |
| Other | | | 13 | | | 8 | 2 |

¹ Blank cells represent no data reported for the item.

Agricultural Chemical Usage

2005 Selected Field Crops

By Pamela K. Kanagy

(for the complete report, go to www.nass.usda.gov and click on 'Environmental' on the gray column on the left)

Oats

Pesticides, Fertilizers, Pest Management Practices:

Nitrogen: Pennsylvania farmers applied nitrogen to 90 percent of the 140,000 acres of oats planted in 2005. Total nitrogen applied to oats in 2005 was 4.5 million pounds. The average rate per application was 33 pounds per acre with the average number of applications of 1.1.

Potash: Oat growers in the State applied potash to 82 percent of the 140,000 acres planted in 2005. The total amount applied was 5.1 million pounds at a rate of 45 pounds per acre per crop year.

Phosphate: Phosphate was applied to 81 percent of Pennsylvania's oat acres planted in 2005. Total phosphate applied to oats in 2005 was 4.9 million pounds.

Pesticides: Herbicides were applied to 58 percent of the oat acreage planted. 2,4-D was the most common herbicide applied with a total amount applied of 9,000 pounds on 16 percent of Pennsylvania's oat acreage.

Pennsylvania: Oats - Planted Acreage, Pesticide, Percent of Area Receiving Applications and Total Applied, 2005¹

| Crop | Planted Acreage 1,000 Acres | Area Receiving and Total Applied | | | | | |
|------|--------------------------------|----------------------------------|------------|-------------|------------|-----------|------------|
| | | Herbicide | | Insecticide | | Fungicide | |
| | | Percent | 1,000 Lbs. | Percent | 1,000 Lbs. | Percent | 1,000 Lbs. |
| Oats | 140 | 58 | 46 | - | - | - | - |

¹ Insufficient reports to publish data for one or more pesticide classes.

Pennsylvania: Oats - Fertilizer Primary Nutrient Applications, 2005

| Primary Nutrient | Planted Acreage 1,000 Acres | Area Applied Percent | Applications Number | Rate Per Application Pounds Per Acre | Rate Per Crop Year Pounds Per Acre | Total Applied Million Lbs. |
|------------------|--------------------------------|-------------------------|------------------------|---|---------------------------------------|-------------------------------|
| Oats | 140 | | | | | |
| Nitrogen | | 90 | 1.1 | 33 | 36 | 4.5 |
| Phosphate | | 81 | 1.0 | 43 | 43 | 4.9 |
| Potash | | 82 | 1.0 | 45 | 45 | 5.1 |
| Sulfur | | 2 | 1.0 | 34 | 34 | 0.1 |

Pennsylvania: Oats - Agricultural Chemical Applications, 2005¹

| Active Ingredient | Area Applied Percent | Applications Number | Rate Per Application Pounds Per Acre | Rate Per Crop Year Pounds Per Acre | Total Applied 1,000 Lbs. |
|----------------------|-------------------------|------------------------|---|---------------------------------------|-----------------------------|
| Herbicides | | | | | |
| 2,4-D, dimeth. salt | 16 | 1.0 | 0.378 | 0.387 | 9 |
| 2,4-DB, dimeth. salt | 8 | 1.0 | 0.580 | 0.580 | 6 |
| MCPA, dimethyl. salt | 15 | 1.0 | 0.350 | 0.350 | 8 |

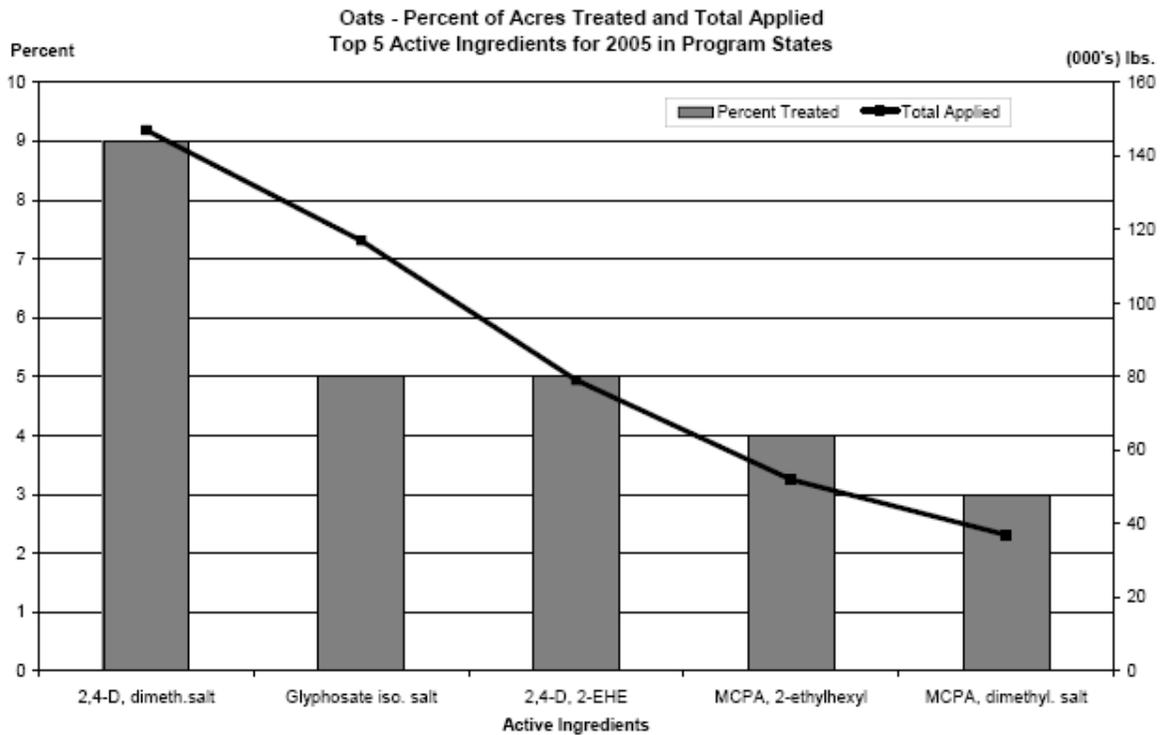
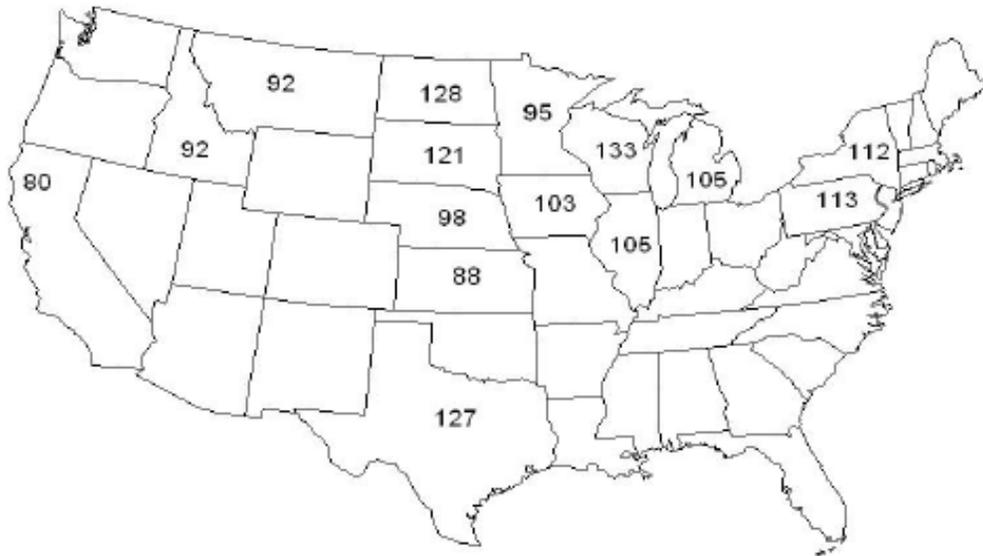
¹ Planted acreage in 2005 for Pennsylvania was 140,000 acres.

Pennsylvania: Pest Management Practices - Percent of Acres Receiving Practice
and Percent of Farms Receiving Practice for Oats, 2005

| Practice | Percent of Acres Receiving Practice | | Percent of Farms Receiving Practice | |
|--|-------------------------------------|----|-------------------------------------|----|
| | PA | US | PA | US |
| | <i>Percent of Acres</i> | | <i>Percent of Farms</i> | |
| Prevention Practice: | | | | |
| No-till or minimum till used to manage pests | 21 | 38 | 16 | 37 |
| Plow down crop residue | 54 | 39 | 53 | 37 |
| Remove crop residue | 17 | 15 | 20 | 15 |
| Clean implements after fieldwork | 21 | 32 | 16 | 26 |
| Field edges/etc. chopped, mowed/etc. | 24 | 24 | 19 | 23 |
| Water management practices | | 2 | | 2 |
| Avoidance Practices: | | | | |
| Adjust planting/harvesting dates | 11 | 12 | 11 | 11 |
| Rotate crops to control pests | 88 | 62 | 87 | 71 |
| Crop variety chosen for pest resistance | 4 | 11 | 2 | 11 |
| Planting locations planned to avoid pests | 12 | 10 | 12 | 10 |
| Monitoring Practices: | | | | |
| Scouting by general observation | 42 | 40 | 42 | 42 |
| Deliberate scouting activities | 23 | 24 | 20 | 19 |
| Field was not scouted | 35 | 37 | 39 | 38 |
| Scouted for pests | 3 | 4 | 1 | 3 |
| Scouting due to pest advisory warning | | 1 | | 1 |
| Scouting due to pest development model | * | 3 | * | 2 |
| Scouted for weeds | 63 | 60 | 59 | 59 |
| Scouting for weeds was done by: | | | | |
| Operator, partner, or family member | 92 | 88 | 96 | 92 |
| An employee | | 5 | | 1 |
| Farm supply or chemical dealer | 3 | 5 | 2 | 6 |
| Indep. crop consultant or comm. scout | 5 | 2 | 3 | 2 |
| Scouted for insects or mites | 29 | 38 | 26 | 33 |
| Scouting for insects or mites was done by: | | | | |
| Operator, partner, or family member | 84 | 83 | 91 | 88 |
| An employee | | 8 | | 1 |
| Farm supply or chemical dealer | 7 | 6 | 4 | 9 |
| Indep. crop consultant or comm. scout | 9 | 3 | 5 | 2 |
| Scouted for diseases | 26 | 30 | 24 | 27 |
| Scouting for diseases was done by: | | | | |
| Operator, partner, or family member | 83 | 82 | 92 | 87 |
| An employee | | 9 | | 1 |
| Farm supply or chemical dealer | 7 | 6 | 4 | 10 |
| Indep. crop consultant or comm. scout | 9 | 3 | 4 | 2 |
| Field mapping of weed problems | 4 | 4 | 3 | 4 |
| Soil/plant tissue analysis to detect pests | 5 | 2 | 2 | 1 |
| Records kept to track pests | 12 | 6 | 10 | 6 |
| Weather monitoring | 52 | 53 | 55 | 53 |
| Suppression Practices: | | | | |
| Biological pesticides | | | | |
| Scouting used to make decisions | 4 | 5 | 3 | 4 |
| Maintain ground cover or physical barriers | 31 | 33 | 31 | 36 |
| Adjust planting methods | 6 | 9 | 4 | 7 |
| Alternate pesticides with different MOA | 16 | 13 | 14 | 14 |

* Percentage is less than 0.5 percent.

Oats: Number of Usable Reports 2005



Corn

Pesticides, Fertilizers, Pest Management Practices:

Nitrogen: Pennsylvania farmers applied nitrogen to 88 percent of the 1,350,000 acres of corn planted in 2005. Total nitrogen applied to corn in 2005 was 108.4 million pounds. The average rate per application was 62 pounds per acre with the average number of applications of 1.5.

Phosphate: Phosphate was applied to 64 percent of Pennsylvania's corn acres planted in 2005. Total phosphate applied to corn in 2005 was 40.7 million pounds.

Potash: Corn growers in the State applied potash to 58 percent of the 1,350,000 acres planted in 2005. The total amount

applied was 37.4 million pounds at a rate of 44 pounds per acre per crop year.

Pesticides: Herbicides were applied to 97 percent of the corn acreage planted. The herbicide Atrazine was the leading agricultural chemical applied with a total applied of 1,291,000 pounds on 87 percent of Pennsylvania's corn acreage. Insecticides were applied to 21 percent of corn acreage in Pennsylvania for the 2005 crop year. Chlorpyrifos was the most common insecticide applied to corn with a total amount applied of 128,000 pounds on 9 percent of Pennsylvania's corn acreage.

Pennsylvania: Corn - Planted Acreage, Pesticide, Percent of Area Receiving Applications and Total Applied, 2005

| Crop | Planted Acreage | Area Receiving and Total Applied | | | | | | | |
|------|-----------------|----------------------------------|------------|--------------------------|------------|-----------|------------|---------|------------|
| | | Herbicide | | Insecticide ² | | Fungicide | | Other | |
| | 1,000 Acres | Percent | 1,000 Lbs. | Percent | 1,000 Lbs. | Percent | 1,000 Lbs. | Percent | 1,000 Lbs. |
| Corn | 1,350 | 97 | 3,346 | 21 | 154 | - | - | - | - |

Pennsylvania: Corn - Fertilizer Primary Nutrient Applications, 2005

| Primary Nutrient | Planted Acreage | Area Applied | Applications | Rate Per Application | Rate Per Crop Year | Total Applied |
|------------------|-----------------|--------------|--------------|----------------------|--------------------|---------------|
| | 1,000 Acres | Percent | Number | Pounds per Acre | Pounds per Acre | Million Lbs. |
| Corn | 1,350 | | | | | |
| Nitrogen | | 88 | 1.5 | 62 | 92 | 108.4 |
| Phosphate | | 64 | 1.1 | 44 | 47 | 40.7 |
| Potash | | 58 | 1.1 | 44 | 48 | 37.4 |
| Sulfur | | 6 | 1.1 | 33 | 37 | 3.0 |

Pennsylvania: Corn - Agricultural Chemical Applications 2005¹

| Active Ingredient | Area Applied | Applications | Rate Per Application | Rate Per Crop Year | Total Applied |
|----------------------|--------------|--------------|----------------------|--------------------|------------------|
| | Percent | Number | Pounds per Acre | Pounds per Acre | 1,000 Lbs. |
| Herbicides | | | | | |
| 2,4-D, 2-EHE | 5 | 1.0 | 0.597 | 0.597 | 40 |
| 2,4-D, dimeth.salt | 6 | 1.2 | 0.623 | 0.731 | 63 |
| Acetochlor | 11 | 1.0 | 1.610 | 1.610 | 234 |
| Atrazine | 87 | 1.0 | 1.063 | 1.096 | 1,291 |
| Dicamba, Dimet.salt | 5 | 1.0 | 0.194 | 0.194 | 14 |
| Dicamba, Sodium salt | 2 | 1.0 | 0.106 | 0.106 | 2 |
| Diflufenzopyr-sodium | 2 | 1.0 | 0.042 | 0.042 | 1 |
| Glyphosate iso. salt | 28 | 1.1 | 0.766 | 0.832 | 319 |
| Isoxaflutole | 5 | 1.0 | 0.062 | 0.062 | 5 |
| Mesotrione | 26 | 1.0 | 0.136 | 0.136 | 47 |
| Metolachlor | 3 | 1.0 | 1.217 | 1.217 | 49 |
| Nicosulfuron | 13 | 1.0 | 0.020 | 0.020 | 4 |
| Paraquat | 9 | 1.0 | 0.458 | 0.458 | 54 |
| Pendimethalin | 26 | 1.0 | 0.928 | 0.928 | 324 |
| Rimsulfuron | 13 | 1.0 | 0.011 | 0.011 | 2 |
| S-Metolachlor | 48 | 1.0 | 1.220 | 1.220 | 783 |
| Simazine | 1 | 1.0 | 1.123 | 1.123 | 14 |
| Insecticides | | | | | |
| Chlorpyrifos | 9 | 1.0 | 1.018 | 1.018 | 128 |
| Cyfluthrin | 2 | 1.4 | 0.009 | 0.013 | (²) |
| Lambda-cyhalothrin | 2 | 1.0 | 0.014 | 0.014 | (²) |
| Tefluthrin | 7 | 1.0 | 0.097 | 0.097 | 9 |

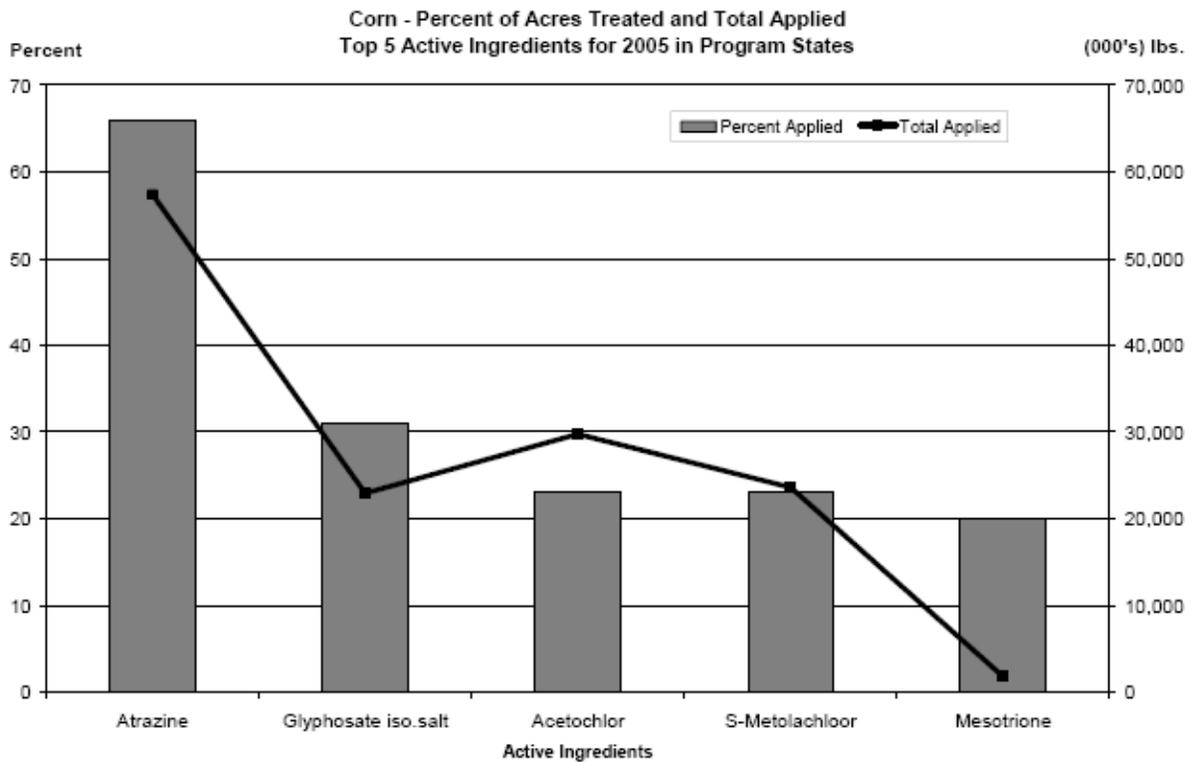
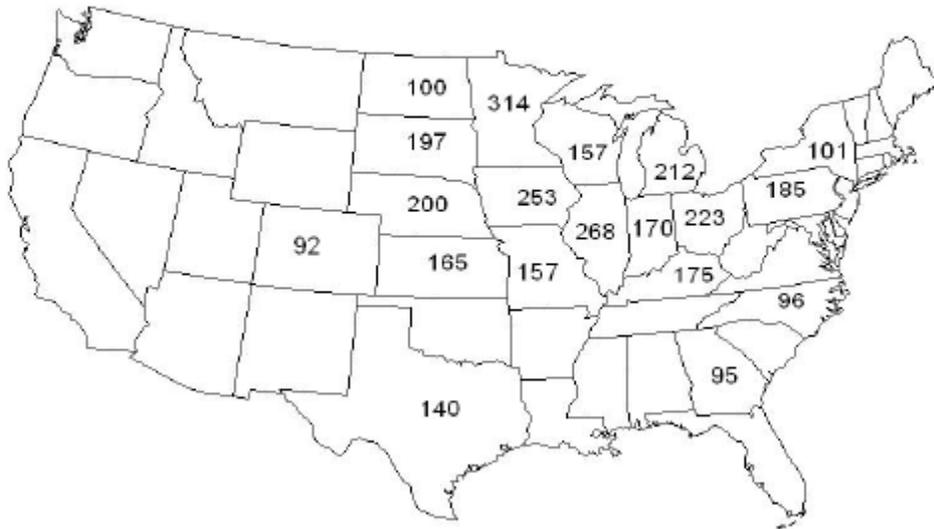
¹ Planted acres in 2003 for Pennsylvania were 1.4 million acres. ² Total applied is less than 500 lbs.

Pennsylvania: Pest Management Practices - Percent of Acres Receiving Practice
and Percent of Farms Receiving Practice for Corn, 2005

| Practice | Percent of Acres Receiving Practice | | Percent of Farms Receiving Practice | |
|--|-------------------------------------|----|-------------------------------------|----|
| | PA | US | PA | US |
| | <i>Percent of Acres</i> | | <i>Percent of Farms</i> | |
| Prevention Practices: | | | | |
| No-till or minimum till used to manage pests | 68 | 62 | 63 | 61 |
| Plow down crop residue | 31 | 22 | 37 | 24 |
| Remove crop residue | 14 | 4 | 16 | 6 |
| Clean implements after fieldwork | 33 | 35 | 30 | 33 |
| Field edges/etc. chopped, mowed/etc. | 45 | 44 | 39 | 41 |
| Water management practices | 2 | 3 | 3 | 2 |
| Avoidance Practices: | | | | |
| Adjust planting/harvesting dates | 4 | 10 | 5 | 9 |
| Rotate crops to control pests | 71 | 80 | 71 | 79 |
| Crop variety chosen for pest resistance | 51 | 52 | 42 | 44 |
| Planting locations planned to avoid pests | 11 | 16 | 15 | 14 |
| Monitoring Practices: | | | | |
| Scouting by general observation | 39 | 41 | 46 | 42 |
| Deliberate scouting activities | 43 | 50 | 43 | 45 |
| Field was not scouted | 18 | 9 | 11 | 13 |
| Scouted for pests | 12 | 17 | 14 | 14 |
| Scouting due to pest advisory warning | 1 | 9 | 3 | 7 |
| Scouting due to pest development model | 8 | 8 | 10 | 7 |
| Scouted for weeds | 82 | 90 | 89 | 86 |
| Scouting for weeds was done by: | | | | |
| Operator, partner, or family member | 79 | 79 | 78 | 81 |
| An employee | 1 | 1 | 2 | 1 |
| Farm supply or chemical dealer | 8 | 9 | 7 | 10 |
| Indep. crop consultant or comm. scout | 12 | 11 | 13 | 8 |
| Scouted for insects or mites | 49 | 67 | 53 | 59 |
| Scouting for insects or mites was done by: | | | | |
| Operator, partner, or family member | 75 | 74 | 73 | 77 |
| An employee | 1 | 1 | 3 | 1 |
| Farm supply or chemical dealer | 7 | 10 | 4 | 11 |
| Indep. crop consultant or comm. scout | 16 | 15 | 20 | 11 |
| Scouted for diseases | 37 | 49 | 36 | 43 |
| Scouting for diseases was done by: | | | | |
| Operator, partner, or family member | 73 | 71 | 69 | 75 |
| An employee | 1 | 1 | 4 | 1 |
| Farm supply or chemical dealer | 8 | 10 | 4 | 11 |
| Indep. crop consultant or comm. scout | 18 | 19 | 23 | 13 |
| Field mapping of weed problems | 11 | 11 | 14 | 10 |
| Soil/plant tissue analysis to detect pests | 6 | 5 | 3 | 4 |
| Records kept to track pests | 17 | 21 | 18 | 17 |
| Weather monitoring | 63 | 61 | 60 | 58 |
| Suppression Practices: | | | | |
| Biological pesticides | 4 | 7 | 4 | 5 |
| Scouting used to make decisions | 17 | 23 | 20 | 18 |
| Maintain ground cover or physical barriers | 44 | 42 | 49 | 42 |
| Adjust planting methods | 6 | 14 | 8 | 12 |
| Alternate pesticides with different MOA | 29 | 29 | 23 | 28 |

* Percentage is less than 0.5 percent.

Corn: Number of Usable Reports 2005



Agricultural Chemical Usage, 2007

Fruit - Apples

By Sherry S. Deane

This release is a brief summary of data for on-farm use of commercial fertilizers, agricultural chemicals, and pest management practices from producers of apples for the 2007 crop year taken from the **Agricultural Chemical Usage 2007 Field Crops Summary** issued by the National Agricultural Statistics Service in Washington, D.C. The complete report, with many more details, including organic apple information, is available on the Internet at www.nass.usda.gov/Statistics_by_Subject/Environmental/; click on "Field Crops".

Information in this report is collected from the Agricultural Resources Management Survey (ARMS). The ARMS survey is conducted in cooperation with the Economic Research Service (ERS). Data collection occurred between October and December of 2007. The agricultural chemical use estimates in this report focus on the acreage treated and application rates for herbicides, insecticides, fungicides, and other pesticides. The survey also collected information about production practices; that information will be released by ERS at a later date at www.ers.usda.gov/data/costsandreturns/.

Herbicides were applied to 84 percent of the 21,500 bearing acres of apples in Pennsylvania. A total of 30,700 pounds was applied to that acreage. The active ingredient most commonly used was Glyphosate isopropylamine salt with a total application of 8,300 pounds. It was applied to 26 percent of the bearing acreage at a rate of 1.504 pounds per acre. The second-most used herbicide was Simazine. A total of 4,700 pounds was used on 11 percent of all bearing acres.

There was an average of 1.2 applications made at a rate of 1.710 pounds per acre.

Insecticides were applied to 98 percent of Pennsylvania's bearing apple acreage. A total of 235,200 pounds was applied. Petroleum oil was the active ingredient used in the largest volume. A total of 67,200 pounds was applied to 12 percent of all bearing acres. There was an average of 1.4 applications made at a rate of 19.510 pounds per acre. The insecticide most commonly used was Azinphos-methyl. It was applied to 70 percent of the bearing acreage at a rate of 1.226 pounds per acre, for a total of 18,500 pounds applied.

Fungicides were applied to 97 percent of the state's bearing apple acreage. A total application of 307,600 pounds was made. Captan was the most commonly used active ingredient with 109,100 pounds of the chemical applied to 80 percent of all bearing acres. An average of 4.8 applications was made at a rate of 1.326 pounds per acre. The second-most common fungicide in use was Mancozeb. A total of 82,500 pounds was applied to 68 percent of bearing acres. It was applied at a rate of 1.589 pounds per acre an average of 3.6 times.

Other chemicals were applied to 70 percent of bearing apple acreage in the state. A total of 4,200 pounds was applied. Ethephon was the most used active ingredient of these chemicals as a total of 2,000 pounds was applied to 27 percent of the state's bearing acreage. It was applied at a rate of 0.208 pounds per acre with an average of 1.6 applications.



Pennsylvania ¹ and Program States ²: Apples – Agricultural Chemical Applications, 2007

| Active Ingredient | Area Applied | | Applications | | Rate per Application | | Rate per Crop Year | | Total Applied | |
|----------------------------|--------------|-----------------|--------------|-----------------|----------------------|-----------------|--------------------|-----------------|---------------|-----------------|
| | PA | US ² | PA | US ² | PA | US ² | PA | US ² | PA | US ² |
| | Percent | | Number | | Pounds per Acre | | | | 1,000 lbs. | |
| Herbicides | | | | | | | | | | |
| 2,4-D dimeth. salt | 15 | 8 | 1.1 | 1.3 | 1.120 | 0.977 | 1.260 | 1.280 | 4.1 | 29.7 |
| Diuron | 9 | 6 | 1.2 | 1.1 | 1.682 | 1.484 | 2.059 | 1.688 | 3.9 | 31.0 |
| Glyphosate iso. salt | 26 | 45 | 1.2 | 1.6 | 1.219 | 1.193 | 1.504 | 1.925 | 8.3 | 250.5 |
| Paraquat | 22 | 12 | 1.1 | 1.2 | 0.818 | 1.194 | 0.908 | 1.440 | 4.2 | 49.7 |
| Pendimethalin | 9 | 3 | 1.0 | 1.4 | 1.771 | 1.443 | 1.858 | 2.055 | 3.4 | 16.9 |
| Simazine | 11 | 10 | 1.2 | 1.3 | 1.710 | 1.421 | 1.989 | 1.843 | 4.7 | 52.1 |
| Terbacil | 2 | 1 | 1.0 | 1.0 | 0.603 | 0.826 | 0.603 | 0.826 | 0.2 | 2.0 |
| Insecticides | | | | | | | | | | |
| Abamectin | 12 | 2 | 1.4 | 1.2 | 0.008 | 0.010 | 0.011 | 0.012 | ^{3/} | 0.1 |
| Acetamiprid | 29 | 37 | 1.6 | 1.7 | 0.141 | 0.147 | 0.224 | 0.254 | 1.4 | 27.0 |
| Azinphos-methyl | 70 | 62 | 2.8 | 2.5 | 0.433 | 0.832 | 1.226 | 2.045 | 18.5 | 363.3 |
| Benzoic acid | 54 | 19 | 1.9 | 1.4 | 0.133 | 0.197 | 0.252 | 0.273 | 2.9 | 15.2 |
| Bt subsp. kurstaki | 2 | 10 | 1.8 | 1.8 | ^{4/} | ^{4/} | ^{4/} | ^{4/} | ^{4/} | ^{4/} |
| Carbaryl | 44 | 52 | 1.4 | 1.4 | 1.005 | 1.115 | 1.402 | 1.566 | 13.3 | 233.8 |
| Chlorpyrifos | 36 | 59 | 1.7 | 1.2 | 0.941 | 1.502 | 1.567 | 1.732 | 12.0 | 292.2 |
| Cyfluthrin | 8 | 1 | 1.2 | 1.1 | 0.028 | 0.032 | 0.032 | 0.034 | 0.1 | 0.1 |
| Diazinon | 34 | 8 | 1.9 | 1.4 | 0.796 | 1.504 | 1.504 | 2.078 | 11.1 | 50.1 |
| Endosulfan | 2 | 9 | 1.2 | 1.2 | 2.302 | 1.458 | 2.690 | 1.723 | 1.2 | 43.3 |
| Esfenvalerate | 26 | 10 | 1.8 | 1.5 | 0.034 | 0.044 | 0.061 | 0.064 | 0.3 | 1.9 |
| Ethion | 3 | ^{5/} | 1.8 | 1.9 | 0.347 | 0.220 | 0.636 | 0.413 | 0.3 | 0.4 |
| Etoxazole | 10 | 3 | 1.0 | 1.0 | 0.050 | 0.085 | 0.050 | 0.088 | 0.1 | 0.7 |
| Fenpropathrin | 23 | 12 | 1.6 | 1.6 | 0.175 | 0.258 | 0.278 | 0.402 | 1.4 | 14.3 |
| Gamma-cyhalothrin | 20 | 5 | 1.4 | 2.0 | 0.010 | 0.015 | 0.014 | 0.030 | 0.1 | 0.4 |
| Imidacloprid | 21 | 25 | 1.4 | 1.5 | 0.036 | 0.086 | 0.051 | 0.128 | 0.2 | 9.3 |
| Lambda-cyhalothrin | 15 | 10 | 2.5 | 1.5 | 0.015 | 0.031 | 0.038 | 0.048 | 0.1 | 1.4 |
| Methomyl | 23 | 4 | 2.1 | 1.8 | 0.352 | 0.526 | 0.747 | 0.943 | 3.7 | 9.5 |
| Novaluron | 22 | 15 | 1.9 | 1.5 | 0.093 | 0.163 | 0.178 | 0.238 | 0.8 | 10.6 |
| Petroleum distillate | 28 | 58 | 1.5 | 1.8 | 7.101 | 17.808 | 10.610 | 31.410 | 64.5 | 5,281.8 |
| Petroleum oil | 12 | 4 | 1.4 | 1.5 | 19.510 | 14.180 | 26.389 | 20.719 | 67.2 | 262.0 |
| Phosmet | 39 | 25 | 3.3 | 2.2 | 1.098 | 1.609 | 3.592 | 3.561 | 30.3 | 255.0 |
| Pyridaben | 2 | 7 | 1.2 | 1.1 | 0.216 | 0.248 | 0.262 | 0.262 | 0.1 | 5.6 |
| Thiacloprid | 10 | 8 | 1.6 | 1.5 | 0.094 | 0.167 | 0.147 | 0.258 | 0.3 | 5.7 |
| Fungicides | | | | | | | | | | |
| Basic copper sulfate | 11 | 3 | 1.5 | 1.2 | 1.041 | 1.239 | 1.542 | 1.523 | 3.7 | 13.3 |
| Boscalid | 13 | 14 | 1.4 | 1.4 | 0.013 | 0.014 | 0.018 | 0.020 | 0.1 | 0.8 |
| Captan | 80 | 34 | 4.8 | 5.2 | 1.326 | 1.988 | 6.350 | 10.274 | 109.1 | 1,005.5 |
| Chlorothalonil | 3 | ^{5/} | 1.0 | 1.2 | 0.708 | 1.303 | 0.708 | 1.537 | 0.4 | 1.2 |
| Copper hydroxide | 5 | 7 | 1.4 | 1.3 | 1.707 | 2.617 | 2.383 | 3.361 | 2.6 | 66.8 |
| Copper oxychloride sulfate | 3 | 2 | 1.0 | 1.5 | 2.534 | 1.529 | 2.534 | 2.264 | 1.8 | 13.3 |
| Copper oxychloride | 8 | 2 | 1.0 | 1.0 | 3.477 | 2.526 | 3.577 | 2.626 | 5.9 | 13.3 |
| Cyprodinil | 15 | 4 | 1.4 | 1.5 | 0.171 | 0.183 | 0.240 | 0.276 | 0.8 | 3.4 |
| Dodine | 3 | 3 | 1.3 | 1.5 | 0.490 | 0.800 | 0.659 | 1.223 | 0.5 | 9.4 |
| Fenarimol | 5 | 13 | 2.4 | 1.4 | 0.047 | 0.067 | 0.112 | 0.091 | 0.1 | 3.5 |
| Kresoxim-methyl | 56 | 13 | 1.8 | 1.7 | 0.081 | 0.111 | 0.148 | 0.190 | 1.8 | 7.0 |
| Mancozeb | 68 | 37 | 3.6 | 2.7 | 1.589 | 2.676 | 5.701 | 7.309 | 82.5 | 769.8 |
| Metiram | 23 | 7 | 3.0 | 3.1 | 1.818 | 2.586 | 5.533 | 8.078 | 26.9 | 172.7 |
| Myclobutanil | 33 | 36 | 2.1 | 1.5 | 0.115 | 0.128 | 0.247 | 0.191 | 1.7 | 19.5 |
| Pyraclostrobin | 13 | 14 | 1.4 | 1.4 | 0.001 | 0.001 | 0.001 | 0.001 | ^{3/} | ^{3/} |
| Streptomycin | 4 | 9 | 1.8 | 1.6 | 0.145 | 0.173 | 0.257 | 0.273 | 0.2 | 6.7 |
| Thiophanate-methyl | 60 | 18 | 2.7 | 2.5 | 0.320 | 0.375 | 0.873 | 0.939 | 11.2 | 49.8 |
| Thiram | 2 | ^{5/} | 2.9 | 2.6 | 5.188 | 4.592 | 15.194 | 11.709 | 5.0 | 5.6 |
| Trifloxystrobin | 24 | 20 | 1.9 | 1.6 | 0.051 | 0.066 | 0.100 | 0.103 | 0.5 | 6.0 |
| Ziram | 30 | 11 | 3.0 | 2.0 | 2.025 | 3.009 | 6.173 | 6.100 | 39.8 | 195.7 |

See footnote(s) at end of table.

–continued

Pennsylvania¹ and Program States²: Apples – Agricultural Chemical Applications, 2007 (continued)

| Active Ingredient | Area Applied | | Applications | | Rate per Application | | Rate per Crop Year | | Total Applied | |
|------------------------|----------------|-----------------|---------------|-----------------|------------------------|-----------------|------------------------|-----------------|-------------------|-----------------|
| | PA | US ² | PA | US ² | PA | US ² | PA | US ² | PA | US ² |
| | <i>Percent</i> | | <i>Number</i> | | <i>Pounds per Acre</i> | | <i>Pounds per Acre</i> | | <i>1,000 lbs.</i> | |
| Other Chemicals | | | | | | | | | | |
| Benzyladenine | 16 | 23 | 1.2 | 1.3 | 0.050 | 0.034 | 0.061 | 0.043 | 0.2 | 2.9 |
| Butenoic Acid Hydro. | 11 | 15 | 1.3 | 1.1 | 0.099 | 0.071 | 0.128 | 0.075 | 0.3 | 3.3 |
| Chlorophacinone | 3 | 2 | 1.0 | 1.1 | 0.001 | 0.001 | 0.001 | 0.001 | ^{3/} | ^{3/} |
| Dodecadien-1-ol | 2 | 2 | 1.8 | 1.3 | 0.010 | 0.012 | 0.017 | 0.016 | ^{3/} | 0.1 |
| Ethephon | 27 | 13 | 1.6 | 1.3 | 0.208 | 0.485 | 0.335 | 0.615 | 2.0 | 23.3 |
| Gibberellic acid | 1 | 3 | 1.8 | 1.8 | 0.020 | 0.026 | 0.035 | 0.048 | ^{3/} | 0.4 |
| Gibberellins A4A7 | 4 | 18 | 1.0 | 1.0 | 0.016 | 0.024 | 0.016 | 0.024 | ^{3/} | 1.2 |
| NAA, Sodium | 31 | 11 | 1.4 | 1.4 | 0.012 | 0.012 | 0.016 | 0.017 | 0.1 | 0.5 |
| Prohexadione calcium | 6 | 6 | 1.7 | 2.0 | 0.102 | 0.213 | 0.178 | 0.422 | 0.2 | 7.4 |
| Spirodiclofen | 17 | 7 | 1.6 | 1.2 | 0.145 | 0.208 | 0.232 | 0.239 | 0.9 | 4.8 |
| Zinc phosphide | 8 | 2 | 1.0 | 1.4 | 0.173 | 0.117 | 0.173 | 0.159 | 0.3 | 1.0 |

¹ Bearing acreage in 2007 for Pennsylvania is 21,500 acres.

² The 7 Program States consist of: California, Florida, Michigan, New York, North Carolina, Oregon, **Pennsylvania**, and Washington totaling 288,000 bearing acres.

³ Total applied is less than 50 lbs.

⁴ Rate and total applied are not available because amounts of active ingredient are not comparable between products.

⁵ Area applied is less than 0.5 percent.

Pennsylvania and Program States¹: Apples – Fertilizer Use, 2007
Percent of Acres Treated and Total Applied

| State | Bearing Acreage | Percent of Acres Treated and Total Applied | | | | | | | |
|-----------------|-----------------|--|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|
| | | Nitrogen | | Phosphate | | Potash | | Sulfur | |
| | | <i>Percent</i> | <i>1,000 Lbs.</i> | <i>Percent</i> | <i>1,000 Lbs.</i> | <i>Percent</i> | <i>1,000 Lbs.</i> | <i>Percent</i> | <i>1,000 Lbs.</i> |
| PA | 21,500 | 45 | 287.0 | 29 | 182.2 | 29 | 234.5 | ^{2/} | ^{2/} |
| US ¹ | 288,000 | 71 | 10,861.8 | 24 | 2,445.8 | 34 | 6,327.0 | 12 | 962.1 |

¹ The 7 Program States consist of: California, Florida, Michigan, New York, North Carolina, Oregon, **Pennsylvania**, and Washington.

² Insufficient reports to publish data for the fertilizer primary nutrient.

Pennsylvania and Program States¹: Apples – Fertilizer Primary Nutrient Applications, 2007

| Primary Nutrient | Bearing Acreage | Area Applied | Applications | Rate per Application | Rate per Crop Year | Total Applied |
|-----------------------------------|-----------------|----------------|---------------|------------------------|------------------------|-------------------|
| | <i>Acres</i> | <i>Percent</i> | <i>Number</i> | <i>Pounds per Acre</i> | <i>Pounds per Acre</i> | <i>1,000 Lbs.</i> |
| Pennsylvania | 21,500 | | | | | |
| Nitrogen | | 45 | 1.2 | 25 | 30 | 287.0 |
| Phosphate | | 29 | 1.1 | 27 | 29 | 182.2 |
| Potash | | 29 | 1.1 | 35 | 38 | 234.5 |
| Program States¹ | 288,000 | | | | | |
| Nitrogen | | 71 | 1.5 | 35 | 53 | 10,861.8 |
| Phosphate | | 24 | 1.5 | 24 | 36 | 2,445.8 |
| Potash | | 34 | 1.4 | 47 | 65 | 6,327.0 |

¹ The 7 Program States consist of : California, Florida, Michigan, New York, North Carolina, Oregon, **Pennsylvania**, and Washington.

**Pest Management Practices – Percent of Acres Receiving Practice and
Percent of Farms Utilizing Practice, Apples, 2007**

| Practice | Percent of Acres Receiving Practice | | Percent of Farms Utilizing Practice | |
|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | PA | Program States ¹ 2007 | PA | Program States ¹ 2007 |
| Prevention Practices: | | | | |
| Remove crop residue, leaf litter, or remove prunings | 51 | 67 | 65 | 62 |
| Clean implements after block work | 21 | 54 | 21 | 47 |
| Chop, spray, mow or plow | 87 | 85 | 88 | 80 |
| Applied herbicides before weeds emerged | 27 | 19 | 19 | 16 |
| Applied herbicides after weeds emerged | 75 | 56 | 66 | 53 |
| Applied insecticides to this apple block | 95 | 96 | 94 | 93 |
| Maintain beneficial insect or vertebrate habitat | 43 | 51 | 42 | 45 |
| Protection of beneficial organisms | 55 | 61 | 60 | 60 |
| Non-chemical controls for deer | 13 | 10 | 14 | 13 |
| Avoidance Practices: | | | | |
| Adjust harvesting dates | 6 | 10 | 7 | 12 |
| Crop variety chosen for pest resistance | 12 | 8 | 9 | 9 |
| Monitoring Practices: | | | | |
| Deliberate scouting activities | 91 | 88 | 87 | 85 |
| Scouting by general observation | 6 | 10 | 9 | 11 |
| Scouted for pests | 78 | 77 | 66 | 73 |
| Scouting due to pest advisory warning | 41 | 33 | 28 | 31 |
| Scouting due to pest development model | 49 | 51 | 41 | 44 |
| Scouted for weeds | 91 | 85 | 87 | 79 |
| Scouting for weeds was done by: | | | | |
| Operator, partner, or family member | 55 | 42 | 61 | 51 |
| Farm supply or chemical dealer | 42 | 33 | 34 | 28 |
| Scouted for insects and mites | 96 | 98 | 94 | 95 |
| Scouting for insects or mites was done by: | | | | |
| Operator, partner, or family member | 41 | 28 | 44 | 36 |
| Farm supply or chemical dealer | 53 | 42 | 48 | 40 |
| Scouted for diseases | 95 | 96 | 95 | 92 |
| Scouting for diseases was done by: | | | | |
| Operator, partner, or family member | 42 | 30 | 46 | 39 |
| Farm supply or chemical dealer | 53 | 42 | 47 | 38 |
| Records kept to track pests | 63 | 68 | 52 | 62 |
| Soil/plant tissue analysis to detect pests | 23 | 18 | 11 | 16 |
| Weather monitoring | 94 | 86 | 92 | 85 |
| Pesticide applicator training | 61 | 56 | 52 | 54 |
| Suppression Practices: | | | | |
| Biological pest controls | 65 | 63 | 51 | 53 |
| Biological pesticides | 35 | 43 | 33 | 42 |
| Beneficial organisms | 13 | 11 | 5 | 6 |
| Scouting used to make decisions | 75 | 62 | 67 | 61 |
| Maintain ground cover or physical barriers | 67 | 70 | 68 | 64 |
| Living mulch | 66 | 51 | 60 | 55 |
| Alternate pesticides with different MOA | 94 | 76 | 91 | 75 |

¹The 7 Program States consist of: California, Florida, Michigan, New York, North Carolina, Oregon, **Pennsylvania**, and Washington.



Agricultural Chemical Usage, 2006

Vegetables - Snap Beans, Sweet Corn, Pumpkins

By Adam W. Pike

The following displays statistics for on-farm use of commercial fertilizers, agricultural chemicals, and integrated pest management practices from producers of targeted vegetable crops. Chemical application rates listed by active ingredient are also featured in this publication. The agricultural chemical use estimates in this report focus on the acreage treated with herbicides, insecticides, fungicides, and other pesticides for selected vegetable crops. Information is provided from a survey funded by the USDA Pesticide Data Program that targeted 23 vegetable crops and 19 states. Pennsylvania was surveyed for 3 different vegetable crops: snap beans for processing, fresh market sweet corn, and pumpkins.

Snap Beans, Processing: Growers of processed snap beans applied nitrogen to 96 percent of the crop's acreage. Phosphate and Potash were both applied to 81 percent of the acreage, while 30 percent of the acreage received sulfur applications. Herbicide applications were reported on 95 percent of the surveyed acres. The herbicides used most were **EPTC**, applied to 39 percent of the acreage, **Trifluralin**, used on 38 percent of the acreage, and **S-Metolachlor**, applied to 35 percent of the acreage. Insecticides were applied to 73 percent of the acres. Insecticides commonly used included **Bifenthrin** on 40 percent of the acreage, followed by **Acephate** and **Zetacypermethrin**, at 16 and 11 percent coverage, respectively. Fungicides were applied to 53 percent of the acres. **Thiophanate-methyl**, used on 37 percent of the acres, was the most widely used fungicide.

Corn, Sweet, Fresh: Nitrogen was applied to 95 percent of the 2006 fresh market sweet corn acreage in the following Program States: California, Colorado, Florida, Georgia, Illinois, Michigan, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Texas, and Wisconsin. Phosphate, potash, and sulfur were applied to 91, 85, and 27 percent of the acreage, respectively. Herbicides were applied to 83 percent of the fresh market sweet corn acres. **Atrazine** was used on 71 percent of the acreage, followed by **S-Metolachlor** on 39 percent.

Insecticides were applied to 88 percent of the acreage; **Lambda-cyhalothrin**, applied to 52 percent of the acreage; and **Chlorpyrifos** and **Thiodicarb** which were both applied to 23 percent of the acreage. Fungicides were used on 20 percent of the acres. The most commonly used fungicides were **Mancozeb** and **Propiconazole**, both of which were applied to 11 percent of the acreage.

Pumpkins: Nitrogen was applied to 90 percent of the pumpkin acreage in the Program States: California, Illinois, Michigan, Ohio, and Pennsylvania. Phosphate, potash, and sulfur applications were made to 63, 85, and 13 percent of the acreage, respectively. Herbicides were applied to 75 percent of the acres planted to pumpkins, while insecticide and fungicide applications were made to 79 and 75 percent of the acres, respectively. Major herbicides used included **Clomazone**, applied to 60 percent of the acreage, followed by **Ethalfuralin**, applied to 25 percent of the acreage. The more commonly used insecticides were **Bifenthrin**, **Carbaryl**, and **Endosulfan**, covering 40, 18, and 16 percent of the acreage, respectively. **Chlorothalonil** was the most widely used fungicide and was applied on 48 percent of the acreage. **Copper hydroxide** was the most utilized fungicide, applied to 28 percent of the acreage, followed by **Azoxystrobin**, on 22 percent of the acreage.

Pennsylvania: Vegetable Crops – Planted Acreage, Pesticide, Percent of Area Receiving Applications and Total Applied, 2006

| Crop | Planted Acreage | Area Receiving and Total Applied | | | | | | | |
|-----------------------|-----------------|----------------------------------|------------------|----------------|------------------|----------------|------------------|------------------|------------------|
| | | Herbicide | | Insecticide | | Fungicide | | Other | |
| | <i>Acres</i> | <i>Percent</i> | <i>1,000 lbs</i> | <i>Percent</i> | <i>1,000 lbs</i> | <i>Percent</i> | <i>1,000 lbs</i> | <i>Percent</i> | <i>1,000 lbs</i> |
| Snap Beans, Processed | 10,900 | 93 | 19.7 | 89 | 2.1 | 41 | 2.9 | (¹) | |
| Sweet Corn, Fresh | 20,200 | 95 | 77.3 | 73 | 10.6 | 22 | 0.6 | (¹) | |
| Pumpkins | 8,500 | 87 | 16.7 | 90 | 7.7 | 90 | 30.4 | (¹) | |

¹ Insufficient reports to publish data for pesticide class.

Pennsylvania: Fertilizer Primary Nutrient Applications, 2006

| Primary Nutrient | Planted Acreage | Area Applied | Applications | Rate per Application | Rate per Crop Year | Total Applied |
|----------------------|-----------------|----------------|---------------|----------------------|---------------------|------------------|
| | <i>Acres</i> | <i>Percent</i> | <i>Number</i> | <i>Lbs per Acre</i> | <i>Lbs per Acre</i> | <i>1,000 lbs</i> |
| Snap Bean, Processed | 10,900 | | | | | |
| Nitrogen | | 98 | 5.9 | 28 | 164 | 1,755.6 |
| Phosphate | | 98 | 6.6 | 39 | 258 | 2,766.3 |
| Potash | | 98 | 5.7 | 43 | 248 | 2,655.7 |
| Sulfur | | 36 | 5.0 | 10 | 48 | 188.9 |
| Sweet Corn, Fresh | 20,200 | | | | | |
| Nitrogen | | 99 | 9.1 | 46 | 418 | 8,321.8 |
| Phosphate | | 92 | 6.5 | 54 | 348 | 6,486.5 |
| Potash | | 93 | 6.5 | 39 | 250 | 4,665.9 |
| Sulfur | | 6 | 5.8 | 12 | 67 | 78.4 |
| Pumpkins | 8,500 | | | | | |
| Nitrogen | | 88 | 6.4 | 65 | 413 | 3,085.0 |
| Phosphate | | 82 | 5.9 | 68 | 402 | 2,799.9 |
| Potash | | 84 | 5.9 | 68 | 398 | 2,832.7 |
| Sulfur | | 4 | 5.0 | 8 | 40 | 14.2 |

Pennsylvania: Snap Beans, Processed – Agricultural Chemical Applications, 2006 ¹

| Active Ingredient | Area Applied | Applications | Rate per Application | Rate per Crop Year | Total Applied |
|----------------------|----------------|---------------|------------------------|------------------------|------------------|
| | <i>Percent</i> | <i>Number</i> | <i>Pounds per Acre</i> | <i>Pounds per Acre</i> | <i>1,000 lbs</i> |
| Herbicides | | | | | |
| Bentazon | 13 | 1.0 | 0.539 | 0.539 | 0.7 |
| Fomesafen | 13 | 1.2 | 0.255 | 0.297 | 0.4 |
| Glyphosate iso. salt | 45 | 1.0 | 1.058 | 1.086 | 5.3 |
| Halosulfuron | 59 | 1.0 | 0.029 | 0.029 | 0.2 |
| S-Metolachlor | 88 | 1.0 | 1.023 | 1.071 | 10.2 |
| Sethoxydim | 5 | 1.3 | 0.338 | 0.443 | 0.3 |
| Insecticides | | | | | |
| Acephate | 21 | 1.1 | 0.591 | 0.629 | 1.5 |
| Bifenthrin | 28 | 1.0 | 0.062 | 0.064 | 0.2 |
| Fungicides | | | | | |
| Boscalid | 22 | 1.0 | 0.313 | 0.320 | 0.8 |

¹ Planted acreage in 2006 for Pennsylvania was 10,900 acres.

Pennsylvania: Sweet Corn, Fresh – Agricultural Chemical Applications, 2006 ¹

| Active Ingredient | Area Applied | Applications | Rate per Application | Rate per Crop Year | Total Applied |
|----------------------|----------------|---------------|------------------------|------------------------|------------------|
| | <i>Percent</i> | <i>Number</i> | <i>Pounds per Acre</i> | <i>Pounds per Acre</i> | <i>1,000 lbs</i> |
| Herbicides | | | | | |
| 2, 4-D, dimeth. Salt | 2 | 1.0 | 0.505 | 0.505 | 0.2 |
| Atrazine | 70 | 1.1 | 1.524 | 1.666 | 23.4 |
| Bentazon | 2 | 1.0 | 0.654 | 0.654 | 0.3 |
| Carfentrazone-ethyl | 4 | 1.0 | 0.008 | 0.008 | (²) |
| Glyphosate iso. salt | 6 | 1.0 | 1.105 | 1.105 | 1.4 |
| Halosulfuron | 3 | 1.0 | 0.028 | 0.028 | (²) |
| Mesotrione | 25 | 1.0 | 0.121 | 0.121 | 0.6 |
| Pendimethalin | 37 | 1.0 | 1.603 | 1.609 | 12.1 |
| S-Metochlor | 62 | 1.7 | 1.815 | 2.998 | 37.4 |

Table continued on next page.

Pennsylvania: Sweet Corn, Fresh – Agricultural Chemical Applications, 2006¹ (continued)

| Active Ingredient | Area Applied | Applications | Rate per Application | Rate per Crop Year | Total Applied |
|---------------------|----------------|---------------|------------------------|------------------------|------------------|
| | <i>Percent</i> | <i>Number</i> | <i>Pounds per Acre</i> | <i>Pounds per Acre</i> | <i>1,000 lbs</i> |
| Insecticides | | | | | |
| Chlorpyrifos | 5 | 1.6 | 0.715 | 1.147 | 1.2 |
| Cyfluthrin | 11 | 1.8 | 0.022 | 0.039 | 0.1 |
| Endosulfan | 4 | 1.2 | 0.870 | 1.081 | 0.8 |
| Esfenvalerate | 5 | 1.1 | 0.039 | 0.044 | (²) |
| Lambda-cyhalothrin | 56 | 2.5 | 0.027 | 0.068 | 0.8 |
| Methomyl | 20 | 2.2 | 0.381 | 0.831 | 3.3 |
| Permethrin | 9 | 1.8 | 0.131 | 0.239 | 0.4 |
| Tebupirimphos | 7 | 1.0 | 0.183 | 0.183 | 0.3 |
| Tefluthrin | 2 | 1.0 | 0.031 | 0.032 | (²) |
| Thiodicarb | 7 | 1.7 | 0.620 | 1.044 | 1.5 |
| Zeta-cypermethrin | 2 | 2.9 | 0.024 | 0.071 | (²) |
| Fungicides | | | | | |
| Propiconazole | 17 | 1.0 | 0.082 | 0.082 | 0.3 |

¹ Planted acreage in 2006 for Pennsylvania was 20,200 acres

² Total applied is less than 50 lbs.

Pennsylvania: Pumpkins – Agricultural Chemical Applications, 2006¹

| Active Ingredient | Area Applied | Applications | Rate per Application | Rate per Crop Year | Total Applied |
|----------------------|----------------|---------------|------------------------|------------------------|------------------|
| | <i>Percent</i> | <i>Number</i> | <i>Pounds per Acre</i> | <i>Pounds per Acre</i> | <i>1,000 lbs</i> |
| Herbicides | | | | | |
| Clethodim | 5 | 1.0 | 0.101 | 0.101 | (²) |
| Clomazone | 78 | 1.0 | 0.349 | 0.350 | 2.3 |
| Ethalfuralin | 65 | 1.0 | 0.783 | 0.784 | 4.4 |
| Glyphosate iso. salt | 52 | 1.0 | 1.428 | 1.480 | 6.6 |
| Halosulfuron | 15 | 1.1 | 0.034 | 0.037 | (²) |
| S-Metolachlor | 10 | 2.4 | 1.032 | 2.455 | 2.1 |
| Insecticides | | | | | |
| Bifenthrin | 49 | 2.0 | 0.049 | 0.096 | 0.4 |
| Endosulfan | 59 | 1.1 | 0.752 | 0.855 | 4.3 |
| Esfenvalerate | 5 | 1.9 | 0.035 | 0.067 | (²) |
| Imidacloprid | 11 | 1.1 | 0.134 | 0.149 | 0.1 |
| Lambda-cyhalothrin | 11 | 2.1 | 0.024 | 0.050 | (²) |
| Methomyl | 12 | 2.2 | 0.395 | 0.879 | 0.9 |
| Permethrin | 7 | 2.9 | 0.157 | 0.456 | 0.3 |
| Fungicides | | | | | |
| Azoxystrobin | 16 | 1.5 | 0.153 | 0.234 | 0.3 |
| Boscalid | 52 | 1.1 | 0.015 | 0.017 | 0.1 |
| Chlorothalonil | 83 | 1.8 | 1.434 | 2.586 | 18.2 |
| Copper hydroxide | 14 | 1.6 | 0.599 | 0.936 | 1.1 |
| Copper resinate | 5 | 2.9 | 0.061 | 0.176 | 0.1 |
| Cymoxanil | 9 | 2.1 | 0.102 | 0.215 | 0.2 |
| Famoxadone | 9 | 2.1 | 0.098 | 0.205 | 0.2 |
| Mancozeb | 15 | 1.5 | 1.587 | 2.420 | 3.1 |
| Maneb | 4 | 1.0 | 1.535 | 1.565 | 0.5 |
| Mefenoxam | 4 | 1.5 | 0.839 | 1.269 | 0.4 |
| Myclobutanil | 13 | 2.1 | 0.101 | 0.217 | 0.2 |
| Pyraclostrobin | 55 | 2.1 | 0.072 | 0.149 | 0.7 |

¹ Planted acreage in 2006 for Pennsylvania was 8,500 acres.

² Total applied is less than 50 lbs.

**Pest Management Practices – Percent of Farms & Percent of Acres
Utilizing Practice, Vegetables, 2006**

| Practice | Percent of Farms Utilizing Practice | | Percent of Acres Utilizing Practice | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | PA | Program States ¹ 2006 | PA | Program States ¹ 2006 |
| Prevention Practices: | | | | |
| No-till or minimum till used to manage pests | 35 | 25 | 48 | 28 |
| Remove or plow down crop residue | 66 | 63 | 68 | 71 |
| Clean implements after field work | 47 | 55 | 60 | 68 |
| Field cultivated for weed control | 56 | 70 | 43 | 76 |
| Field edges/etc. chopped, mowed/etc. | 61 | 59 | 56 | 72 |
| Water management practices | 28 | 42 | 39 | 52 |
| Avoidance Practices: | | | | |
| Adjust planting/harvesting dates | 18 | 18 | 15 | 26 |
| Rotate crops to control pests | 87 | 79 | 89 | 81 |
| Planting locations planned to avoid pests | 48 | 35 | 54 | 37 |
| Grow trap crop to control insects | 4 | 5 | 8 | 8 |
| Crop variety chosen for pest resistance | 48 | 37 | 51 | 43 |
| Monitoring Practices: | | | | |
| Scouting by general observation | 69 | 72 | 74 | 87 |
| Deliberate scouting activities | 27 | 23 | 24 | 10 |
| Field was not scouted | 4 | 5 | 2 | 3 |
| Established scouting process/insect trap used | 30 | 37 | 40 | 60 |
| Scouting due to pest advisory warning | 24 | 16 | 24 | 23 |
| Scouting due to pest development model | 25 | 17 | 27 | 25 |
| Scouted for weeds | 93 | 91 | 97 | 94 |
| Scouting for weeds was done by: | | | | |
| Operator, partner, or family member | 87 | 73 | 74 | 40 |
| An employee | 2 | 3 | 2 | 9 |
| Farm supply or chemical dealer | 4 | 6 | 10 | 15 |
| Indep. crop consultant or comm.. scout | 6 | 8 | 15 | 25 |
| Other | 1 | 10 | (²) | 10 |
| Scouted for insects and mites | 93 | 93 | 95 | 97 |
| Scouting for insects or mites was done by: | | | | |
| Operator, partner, or family member | 85 | 65 | 72 | 31 |
| An employee | 2 | 3 | 2 | 9 |
| Farm supply or chemical dealer | 4 | 8 | 10 | 17 |
| Indep. crop consultant or comm.. scout | 8 | 10 | 16 | 29 |
| Other | 1 | 14 | (²) | 14 |
| Scouted diseases | 87 | 90 | 85 | 96 |
| Scouting for diseases was done by: | | | | |
| Operator, partner, or family member | 85 | 66 | 69 | 31 |
| An employee | 2 | 3 | 2 | 8 |
| Farm supply or chemical dealer | 5 | 8 | 12 | 17 |
| Indep. crop consultant or comm.. scout | 8 | 10 | 17 | 30 |
| Other | 1 | 14 | (²) | 14 |
| Records kept to track pests | 30 | 37 | 38 | 62 |
| Field mapping of pest problem | 13 | 17 | 26 | 35 |
| Soil/plant tissue analysis to detect pests | 9 | 16 | 15 | 45 |
| Weather monitoring | 74 | 59 | 81 | 78 |
| Biological pest controls | 8 | 7 | 7 | 15 |
| Suppression Practices: | | | | |
| Biological pesticides | 8 | 10 | 5 | 28 |
| Beneficial organisms | 1 | 6 | 1 | 11 |
| Scouting used to make decisions | 30 | 35 | 38 | 53 |
| Maintain ground cover or physical barriers | 61 | 43 | 75 | 45 |
| Adjusted planting methods | 20 | 24 | 23 | 23 |
| Alternate pesticide with different MOA | 51 | 36 | 49 | 63 |

¹ The 19 Program States include Arizona, California, Colorado, Florida, Georgia, Illinois, Michigan, Minnesota, New Jersey, New York, North Carolina, Ohio, Oregon, **Pennsylvania**, South Carolina, Tennessee, Texas, Washington, and Wisconsin. ² Percentage is less than 0.5.