Method for Estimating Pesticide Use for County Areas of the Conterminous United States

U.S. Geological Survey
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U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

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Gail P. Thelin[1] and Leonard P. Gianessi[2]

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[1]U.S. Geological Survey

[2] National Center for Food and Agricultural Policy

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U.S. DEPARTMENT OF THE INTERIOR
BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY
Charles G. Groat, Director

For additional information write to:

Chief of Pesticide National Synthesis
U.S. Geological Survey
Placer Hall, Suite 2012
6000 J Street
Sacramento, CA 95819-6129

Copies of this report can be purchased from:

U.S. Geological Survey
Information Services
Box 25286
Federal Center
Denver, CO 80225

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Abbreviations and Acronyms

AVHRR	Advanced Very High Resolution Radiometer
CALEPA	California Environmental Protection Agency
EIWA	Eastern Iowa Basins
FIPS	Federal Information Processing Standard
GIS	Geographic Information System
NAPIAP	National Agricultural Pesticide Impact Assessment Program
NASS	National Agricultural and Statistics Service
NCFAP	National Center for Food and Agricultural Policy
NAWQA	National Water-Quality Assessment (Program)
STCROP	State Crop Code
STPESTCROP	A key that includes the two-digit state FIPS code, four-digit pesticide code and three-digit crop code
USDA	U.S. Department of Agricultural
USGS	U.S. Geological Survey

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By Gail P. Thelin *and* Leonard P. Gianessi

ABSTRACT

Information on the amount and distribution of pesticide compounds used throughout the United States is essential to evaluate the relation between water quality and pesticide use. This information is the basis of the U.S. Geological Survey's National Water-Quality Assessment (NAWQA) Program studies of the effects of pesticides on water quality in 57 major hydrologic systems, or study units, located throughout the conterminous United States. To support these studies, a method was devised to estimate county pesticide use for the conterminous United States by combining (1) state-level information on pesticide use rates available from the National Center for Food and Agricultural Policy, and (2) county-level information on harvested crop acreage from the Census of Agriculture. The average annual pesticide use, the total amount of pesticides applied (in pounds), and the corresponding area treated (in acres) were compiled for the 208 pesticide compounds that are applied to crops in the conterminous United States. Pesticide use was ranked by compound and crop on the basis of the amount of each compound applied to 86 selected crops. Tabular summaries of pesticide use for NAWQA study units and for the Nation were prepared, along with maps that show the distribution of selected pesticides to agricultural land.

INTRODUCTION

Background

More than 400,000 tons of pesticides are applied annually to agricultural land in the United States. Information on agricultural pesticide use is available from several national and state pesticide use surveys and reports, along with a variety of research reports on specific crops or states. The type and detail of data that are reported varies widely between federal and state programs, making it difficult to rely on a single source for complete information. Three examples of such programs are the U.S. Department of Agriculture's (USDA) National Agricultural and Statistics Service (NASS), the Census of Agriculture, and the state of California's Department of Pesticide Regulation. The NASS provides state summaries of pesticide use annually for major field crops, which include corn, wheat, soybeans, cotton, potatoes, and, in selected years, peanuts, rice, sorghum, and tobacco. NASS conducts a second survey that targets specialty crops, alternating year-to-year between vegetables (even-numbered years) and fruit and nut crops (odd-numbered years). The NASS data are based on a statistical sample of farms in states that account for at least 80 percent of United States production for a specific crop. Summaries of the average application rates of major pesticide ingredients and the percentage of crop area (in acres) treated are published annually by NASS. In comparison, the United States Census of Agriculture conducts a survey every 5 years of all farms within the United States that have an annual farm income of $1,000 or more. This enumeration includes information on the type, quantity, and cost of agricultural chemicals used on each farm. The data, reported by county, include the number of farms and the number of acres on which broad classes of chemicals are used (for example, herbicides and insecticides). In contrast, the California Environmental Protection Agency's (CALEPA) Department of Pesticide Regulation collects state-wide information annually, by location, on the amount of individual pesticides used on all crops—major field crops, specialty crops, orchards, and vineyards.

Each of these surveys and reports provides useful information; however, these sources do not provide all of the information needed to conduct a national

assessment of pesticide use. NAWQA requires data on the full range of pesticide compounds used on major crops (such as corn, soybeans, wheat, and other grains) and specialty crops (such as vegetables, orchards, and vineyards) throughout all the states. The level of detail reported for the state of California by the Department of Pesticide Regulation is considered optimal, but not widely available. Other states, such as New York, Texas, Arizona, and Oregon, are considering or have adopted similar programs. Until these data are uniformly available for all states, however, an alternative source and method of estimating pesticide use are needed.

Purpose and Scope

This report describes the method used to develop county estimates of agricultural pesticide use and the application of these data for estimating pesticide use in the NAWQA study units. The Cook Inlet (Alaska) and Oahu (Hawaii) study units were not included in the analyses. State pesticide use-coefficients developed for 208 active ingredients, or pesticides, and 86 crops (Gianessi and Anderson, 1995) were applied to Census of Agriculture county crop acreage to estimate average annual pesticide usage totals for counties, including the amount of pesticides applied (in pounds) and the corresponding area treated (in acres). County pesticide data were used to profile pesticide use for the NAWQA study units, to rank use among the study units, and to compare results with national use. Maps for selected pesticides were prepared by combining county pesticide use data with the location of agricultural land use.

Approach

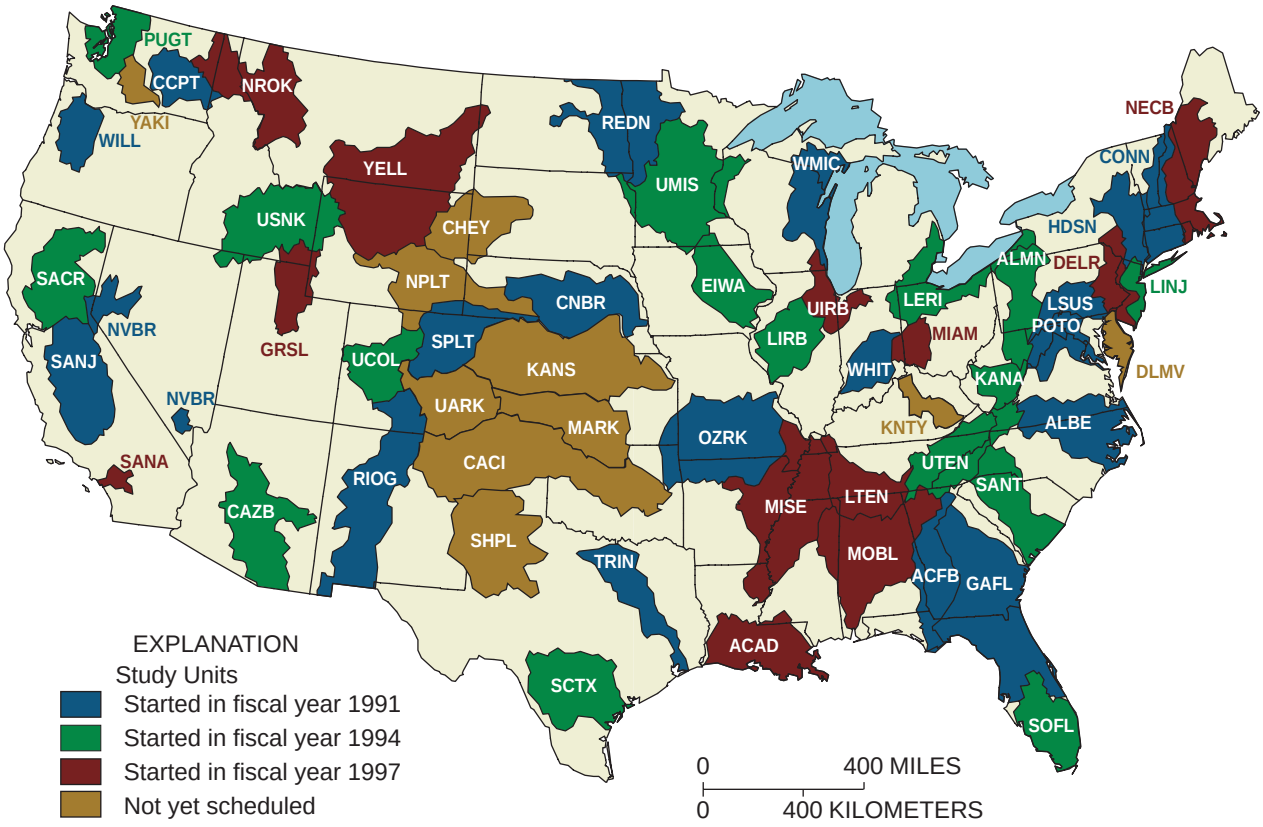
The purpose of the U.S. Geological Survey's (USGS) National Water-Quality Assessment (NAWQA) Program, which began in 1991, is to assess the status and trends of the quality of ground and surface waters in 59 major hydrologic systems (57 in the conterminous United States) distributed throughout the United States. These hydrologic systems, referred to as "study units" (fig. 1), represent the diverse hydrologic conditions found in the United States, encompass approximately one-half of its land area, and contain about 60 percent of its water resources. More than half of the Nation's population and total water use is contained within these study units. The study units also encompass the rich diversity of agriculture that is found across the Nation. Major crops, such as wheat and other grains, corn, and soybeans, dominate the study units, whereas a variety of specialty crops, such as vegetables, cotton, tobacco, sorghum, and rice, are also well represented (Gilliom and Thelin, 1997). In all, about one-half of the Nation's harvested cropland and pastureland, and approximately two-thirds of the national use of pesticides used for agriculture, occur in these study units.

The potential effect of pesticides on water quality is an issue of common concern throughout the nation, and the NAWQA Program addresses this issue in its assessment of the effects of pesticides in each study unit and nationally. Pesticides in both surface water and ground water are systematically sampled in each study unit, followed by analysis and interpretation of findings using commonly prescribed analytical and interpretative methods. The study units' results are combined and analyzed at regional and national scales to assess the effects of pesticide use on the quality of the nation's water resources.

Information on the amount and distribution of pesticide compounds used in the United States is an essential element in establishing relations between pesticide use and water quality. The NAWQA studies use this information to evaluate pesticide loads and concentrations in surface and ground waters, and to explain the variability of water-quality conditions among different agricultural settings and among surface-water basins of varying sizes. With an understanding of the relations between agricultural management practices (such as timing and amount of pesticide application, and cropping patterns), physical characteristics of the site, and water quality, the study-unit findings can be extrapolated to areas of the country outside of study unit areas that have not been sampled but that have similar characteristics. Lastly, and perhaps most importantly, these data provide information for prioritizing areas that should be monitored for pesticide use.

Environmental Framework

Information on the natural features and human influences that affect water quality form an environmental framework, which is used for NAWQA design and data analysis. Tabular databases and digital maps, stored in a Geographic Information System (GIS), provide geographically referenced information on geology, soils, streams, and several of the features that



ACAD	Acadian-Pontchartrain	NECB	New England Coastal Basin
ACFB	Apalachicola-Chattahoochee-Flint River Basin	NPLT	North Platte River Basin
ALBE	Albemarle-Pamlico Drainage	NROK	Northern Rockies Intermontane Basins
ALMN	Allegheny and Monongahela Basins	NVBR	Nevada Basin and Range
CACI	Canadian-Cimarron River Basins	OZRK	Ozark Plateaus
CAZB	Central Arizona Basins	POTO	Potomac River Basin
CCPT	Central Columbia Plateau	PUGT	Puget Sound Drainages
CHEY	Cheyenne and Belle Fourche Basins	REDN	Red River of the North
CNBR	Central Nebraska Basins	RIOG	Rio Grande Valley
CONN	Connecticut, Housatonic, and Thames River Basins	SACR	Sacramento Basin
DELR	Delaware River Basin	SANT	Santee Basin and Coastal Drainage
DLMV	Delmarva Peninsula	SANA	Santa Ana Basin
EIWA	Eastern Iowa Basins	SANJ	San Joaquin-Tulare
GAFL	Georgia-Florida Coastal Plain	SCTX	South Central Texas
GRSL	Great Salt Lake Basins	SOFL	Southern Florida
HDSN	Hudson River Basin	SHPL	Southern High Plains
KANA	Kanawha-New River Basin	SPLT	South Platte River Basin
KANS	Kansas River Basin	TRIN	Trinity River Basin
KNTY	Kentucky River Basin	UARK	Upper Arkansas River Basin
LERI	Lake Erie-Lake Saint Clair Drainage	UCOL	Upper Colorado Basin
LINJ	Long Island-New Jersey Coastal Drainages	UIRB	Upper Illinois River Basin
LIRB	Lower Illinois River Basin	UMIS	Upper Mississippi River Basin
LSUS	Lower Susquehanna River Basin	USNK	Upper Snake River Basin
LTEN	Lower Tennessee River Basin	UTEN	Upper Tennessee River Basin
MARK	Middle Arkansas River Basin	WHIT	White River Basin
MIAM	Great and Little Miami River Basins	WILL	Willamette Basin
MISE	Mississippi Embayment	WMIC	Western Lake Michigan Drainage
MOBL	Mobile River and Tributaries	YELL	Yellowstone River Basin
		YAKI	Yakima River Basin

Figure 1. Locations of National Water-Quality Assessment Program study units for which pesticide use estimates were developed.

characterize the man-made landscape, such as land use. Data that describe these environmental characteristics are collected from a variety of sources, and consequently, range in spatial scale, coverage, and date of compilation. It is important, however, that each source of information is consistent in spatial scale and amount of detail so that comparisons and interpretations can be made. The NAWQA environmental framework for national analysis is based on many small-scale databases covering information on various geographical features that are available on the entire United States.

Data that describe the environmental setting of each ground-water and surface-water site sampled by NAWQA are assembled and used to explore and understand the relations between these natural and anthropogenic factors and water quality. The framework also serves as a common background to compare water quality in different parts of the country. For example, once relations between water quality and pesticide applications to irrigated corn grown on sandy soils in a particular area within a study unit are determined, then these relations can be directly compared with other areas of the country that share similar physical characteristics and crop management practices. The framework may be used to interpret and understand why the occurrence and concentrations of pesticides differ for various environmental settings.

Land use is one of the most important and unifying elements of the environmental framework because it serves as a surrogate for many of the human-related activities that affect water quality. The location and amount of different land uses serve as a backdrop that other characteristics of land use can be linked to, such as agricultural management practices, including irrigation, crop rotation, tillage, and pesticide use. In addition, other information related to land use could be used to update and refine these mapped data. For example, U.S. Census Bureau population density data have been used to update residential use patterns and to characterize residential use by population density category (Hitt, 1994). Census of Agriculture data (U.S. Department of Commerce, 1995) also have been used to characterize agricultural land use according to a crop group classification scheme (Gilliom and Thelin, 1997).

Estimates of the amounts and spatial distributions of agricultural and nonagricultural pesticide use are important elements in the NAWQA environmental framework. Agricultural uses of pesticides include application to crops, pretreatment of seeds, and treatment of livestock with insecticides, whereas nonagricultural uses vary from applications to rangeland, forestland, highway rights-of-way, turf, and a variety of home uses. Few data on nonagricultural total use of pesticides are available at this time, whereas data on agricultural uses have been collected for many years. Until more comprehensive data on nonagricultural pesticide use are available, the NAWQA environmental framework includes only agricultural pesticide-use estimates.

THE NATIONAL CENTER FOR FOOD AND ARICULTURAL POLICY'S STATE PESTICIDE USE DATABASE

The National Center for Food and Agricultural Policy (NCFAP) is a nonprofit research organization that has reviewed and incorporated information from more than 130 national and state surveys and reports into a comprehensive national agricultural pesticide use database. The database was developed to support NCFAP's research, policy analysis, and outreach programs that focus on issues related to agriculture. One component of NCFAP research and policy analysis addresses concerns about the benefits and risks associated with chemicals used in food production and processing.

The NCFAP database contains estimates of pesticide use by crop for each of the 48 conterminous states. Pesticide use is reported as the total amount of a pesticide applied and the area treated with the pesticide for each state and crop, and compound combination. Pesticide use-coefficients, which are required to calculate pesticide use, are also available from the database. The coefficients include the average amount of an active ingredient applied annually per crop acre and the percentage of crop area treated. Tables 1 and 2 respectively list the 208 compounds used in agriculture and the 86 crops for which NCFAP has developed pesticide use-coefficients.

The primary data sources used by NCFAP to develop a state pesticide use report included data compiled by three USDA programs and one state source: the NASS, the National Agricultural Pesticide Impact Assessment Program (NAPIAP), the Cooperative Extension Service, and the CALEPA. In some instances, data for a specific crop or state were not available. For these instances, the state pesticide use-

Table 1. Pesticide codes for compound names contained in the National Center for Food and Agricultural Policy's 1992–1995 state database

Pesticide code	Compound	Pesticide code	Compound	Pesticide code	Compound	Pesticide code	Compound
8008	1,3-D	5014	Captan	6014	Diazinon	6022	Ethion
1302	2,4-D	6006	Carbaryl	1298	Dicamba	9012	Ethofumesate
1308	2,4-Db	6007	Carbofuran	1865	Dichlobenil	6023	Ethoprop
6001	Abamectin	5026	Carboxin	1005	Diclofop	6024	Ethyl parathion
6002	Acephate	1299	Chloramben	6016	Dicofol	5051	Etridiazole
3000	Acetochlor	4008	Chlorimuron	6082	Dicrotophos	6025	Fenamiphos
1002	Acifluorfen	8000	Chloropicrin	9015	Diethatyl ethyl	5032	Fenarimol
1863	Alachlor	5007	Chlorothalonil	1374	Difenzoquat	6026	Fenbutatin oxide
6003	Aldicarb	6009	Chlorpyrifos	6064	Diflubenzuron	9003	Fenoxaprop
1982	Ametryn	1913	Chlorsulfuron	3001	Dimethenamid	7203	Fenpropathrin
6091	Amitraz	7010	Clethodim	7004	Dimethipin	6070	Fenvalerate
5018	Anilazine	7204	Clofentezine	6017	Dimethoate	5017	Ferbam
9048	Asulam	9001	Clomazone	3006	Dimethomorph	9007	Fluazifop
1980	Atrazine	4002	Clopyralid	5035	Dinocap	3003	Flumetsulam
6004	Azinphos-methyl	5011	Copper	1366	Diphenamid	1998	Fluometuron
1362	Benefin	6010	Cryolite	1950	Diquat	4010	Fomesafen
5001	Benomyl	1369	Cyanazine	6018	Disulfoton	6028	Fonofos
7009	Bensulfuron	2069	Cycloate	1991	Diuron	6071	Formetanate HCl
1098	Bensulide	6081	Cyfluthrin	5033	Dodine	5031	Fosetyl-Al
1287	Bentazon	3008	Cymoxanil	4001	DSMA	8013	Gibberellic acid
6063	Bifenthrin	6011	Cypermethrin	6019	Endosulfan	1099	Glyphosate
1809	Bromacil	6012	Cyromazine	1948	Endothall	2070	Hexazinone
1116	Bromoxynil	8015	Cytokinins	1414	EPTC	7001	Imazamethabenz
6005	Bt	5008	DCNA	6020	Esfenvalerate	4005	Imazaquin
1839	Butylate	1872	DCPA	9009	Ethalfluralin	9000	Imazethapyr
8017	Cacodylic acid	9014	Desmedipham	7003	Ethephon	3004	Imidacloprid

coefficients were generated on the basis of opinions of USDA Extension service specialists who were experienced with state cropping and management practices. In a few cases, there were no published surveys or information from Extension service specialists on a specific crop or compound; in these cases, similar pesticide use profiles of a neighboring state were used in place of the survey.

The coefficients represent the average annual application rates to cropland only, and do not include the commercial treatment of seeds, use in greenhouses or on ornamentals, or postharvest treatment of crops. The use-coefficients are based on the statewide average use for a compound and crop, and therefore do not reflect local variations in use as a result of local environmental variables (such as soil and climate) and crop management practices. The pesticide use-coefficients do not represent a specific year, but rather an integration of data collected over a 4-year period because NCFAP developed the reported information from multiple sources collected from 1992 to 1995.

Although the NCFAP report was compiled from multiple sources that represent four different years, it has been verified by review and comparison with other published data. In addition, over 30 chemical manufacturing companies have reviewed the state and crop pesticide use estimates contained in the report. Through this informal process, NCFAP was able to resolve most discrepancies between published survey results and comments on use and rates of use from the reviewers.

The NCFAP report provides estimates of state and national pesticide use. NAWQA studies, however, require estimates of pesticide use for study units and smaller areas within study units. The following section briefly describes how NCFAP state pesticide use-coef-

ficients were combined with county crop acreage to develop a county database of pesticide use.

METHOD FOR ESTIMATING COUNTY PESTICIDE USE

Census of Agriculture

County crop acreage data from the 1992 Census of Agriculture (hereinafter referred to as "Census") were used to determine the amount of different pesticides used on different crops in each county. The Census is the only nationally consistent, complete source of crop acreage data. It is the leading source of statistics on agriculture in the United States and is collected every 5 years by mail surveys for all places from which $1,000 or more of agricultural products were produced and sold or normally would have been sold during the census year (U.S. Department of Commerce, 1995). Planted and harvested crop acreage is reported for those crops that have pesticide use-coefficients that were developed by NCFAP. For purposes of this report, county crop acreage always is "harvested" acreage from the Census.

Census information is available as a computer-readable file with individual items referenced by a numeric code. Crop acreage was retrieved from the Census using the numeric crop code for crops listed in table 2. There were 3,069 counties in the conterminous United States that reported crop acreage during the 1992 Census. Data files were created for each crop that had pesticide use-coefficients developed by NCFAP. Each crop file contained a two-digit state FIPS (Federal Information Processing Standard) code and a three-digit county code and crop acreage (for example, 06019 comprises “06” for the state of California and “019” for Fresno County). In some instances, the Census reports several categories of crops such as sorghum, corn, and sugar cane. For example, the crop sorghum is classified into three categories: sorghum for grain, sorghum for dry forage, and sorghum for silage (table 2). In these cases, the various categories of a crop were summed to produce total acreage for a county. The county crop acreage files were appended. The crop code developed by NCFAP (table 2) was added and combined with the two-digit state FIPS code to produce a state crop code (STCROP) that could be used to link crop acreage to the NCFAP state pesticide use-coefficients.

Calculation of County Pesticide Use Estimates

The NCFAP state pesticide use data file had seven columns of information: state name, compound name, pesticide code, crop name, crop code, average amount (in pounds) of an active ingredient applied annually, and percentage of area (in acres) treated with the pesticide active ingredient. The data file contained 16,000 records—one record for each pesticide and crop combination for each state. The two-digit state FIPS code corresponding to the state name was added to the file to create the same STCROP code that was contained in the crop acreage file. The STCROP code is used to temporarily link the two files and to retrieve county crop acreage for compounds that have a pesticide use coefficient. For example, in Texas (state FIPS code 48), the state pesticide use data file contained pesticide use-coefficients for 21 compounds that are used with rice (crop code 605). Using the STCROP code 48605, the harvested crop acreage file was checked for any data that were reported for this code. For Texas, 17 counties reported rice acreage in 1992. The crop acreage for rice in the 17 counties was retrieved and written to a new file 21 times — each time for a different compound; that is, once for propanil, once for triclopyr, and so on. The file now contained 357 records that included 17 records (counties) written for each of the 21 compounds that are applied to rice.

This procedure was repeated for each STCROP code that had a pesticide use-coefficient in the state pesticide use file. The number of records retrieved from the county crop acreage file was different for each compound, crop, and county because a pesticide use-coefficient did not exist for every compound and crop combination. This retrieval resulted in a file of many records for each county, each record representing one compound and crop combination. The final file—the county pesticide use file—contained more than 516,000 records. Each record included a five-digit state and county FIPS code, crop name, crop acreage, pesticide name, pesticide code, and pesticide type.

To complete the calculation of the amount of compound applied and the area treated, a second key, STPESTCROP, was created to link the new county pesticide use file to the state pesticide use file. This key comprises three numeric codes that are common to both the crop acreage file and the state pesticide use file and includes the two-digit state FIPS code (ST), four-digit pesticide code (PEST), and the three-digit crop code (CROP). Using the STPESTCROP key, the county pesticide use file was temporarily linked to the

state pesticide use file. The key allowed records in the two files to be matched by the state, the pesticide code, and the crop code, thereby ensuring that the correct use-coefficients were used to calculate the county pesticide use information. The two use-coefficients include the percentage of area treated and the average rate of annual application for each state, compound, and crop combination. These two pesticide use-coefficients were applied to each reported crop and compound combination in a county:

County Pesticide Use by Compound
= crop area
× percentage of area treated
× amount of active ingredient

LIMITATIONS OF THE COUNTY PESTICIDE USE DATA FOR WATER QUALITY ASSESSMENT

National and regional estimates of pesticide use can be determined from the state data that were produced by NCFAP or from the county estimates derived using NCFAP's pesticide use-coefficients and county crop data. However, both the state and county data have limitations. The pesticide use-coefficients developed by NCFAP are based on statewide averages of both application rates for a compound applied to a crop and the average percentage of a crop's area treated with a compound; therefore, the data do not yield precise estimates of pesticide use at the county level. In addition, the state use-coefficients do not reflect the local variability of cropping and management practices found within many states and counties. Even though the crop area that is used in the calculations of pesticide use are taken from the 1992 Census, the pesticide use-coefficients were developed from data collected over a 4-year period. Therefore, the use estimates do not represent a specific year, but rather, general patterns of use over a 4-year period.

Pesticide use-coefficients were developed only for those states located within the conterminous United States, and therefore, pesticide use for the Hawaiian Islands and Alaska cannot be estimated. Many specialty crops are grown on the Hawaiian Islands, such as sugar cane and vegetables, many of which are treated with a variety of pesticide compounds; pesticide use, however, cannot be calculated because use-coefficients are not published for the crops grown or the pesticide used on the Hawaiian Islands.

Another potential factor that affects estimates derived from these data is the result of Census nondisclosure rules. The Census does not publish information that can be related to the operation of an individual farm. For example, the Census does not publish information from counties where three or fewer farms reported acreage for a specific crop, such as rice. Therefore, it would not be possible to estimate county use for any of the pesticides applied to a crop with nondisclosed acreage because county crop acreage is a main component in the calculation of pesticide use (crop area × percentage of crop treated × average amount of an active ingredient applied). In these instances, pesticide usage can be underestimated. Estimates of pesticides applied to pasture may also be underestimated because the only readily available source of pasture area is available from the Census, and the Census does not include information on federally owned land that is used for pasture or grazing.

SUMMARIES OF PESTICIDE USE

The county pesticide-use data were used to summarize national use by pesticide compound, to rank pesticide use by individual crop, to "calculate total" pesticide use for each of the NAWQA study units, and to produce estimates for ground-water and surface-water studies within the study unit. Table 3 ranks each of the 208 compounds according to the estimated total application in pounds. The data were produced in two steps. First, the amounts of each compound applied to all crops in each county were summed to produce totals for each compound. Second, the county totals were summed nationally for each compound. The compounds were then ranked in order of total application nationwide. The ranking was influenced by both the amount of a compound applied to crop (recommended application rate) and the amount of total crop area.

The application totals by active ingredient, shown in table 3, are not in exact agreement with the national totals published by NCFAP. The totals listed in table 3 are based on use-coefficients that are applied to county acreage, whereas the NCFAP totals are based on applying the coefficients to state acreage estimates from the 1992 Census. This difference can be explained by the instances in which the Census does not publish county-level estimates for a crop, but includes the county acreage in the state total. Thus, the national estimates summarized from the county data in table 3 usually are lower than the NCFAP estimates.

Table 4 lists the pesticide compounds and the primary crops associated with each pesticide in order of highest to lowest percentage of application. Only crops that represent at least 5 percent of the national total use are listed. Table 4 shows the diversity of crops that each compound is applied to and the variety of compounds used to treat a particular crop.

THE NATIONAL WATER-QUALITY ASSESSMENT'S STUDY UNIT SUMMARIES

Table 5 summarizes pesticide use for each NAWQA study unit. For each study unit, all compounds are included that represent at least 1 percent of pesticide use within the study unit. The amount applied, area treated, percentage of national use, percentage of United States area treated, average amount applied annually to cropland and pasture, percentage of use within the study unit, and percentage of total use among the study units are shown. The average application rate over the entire study unit provides regional-scale use intensity (that is, intensity of application) throughout the basin, whereas average annual application to cropland and pasture represents use intensity in agricultural areas.

To produce the study unit summaries of pesticide use presented in table 5, a different approach was taken than that used to produce county totals and national estimates of pesticide use. Pesticide estimates were needed for the study unit area only, and so, it was necessary to exclude the area of each county located outside the study unit boundary. Using a GIS, a polygon coverage of NAWQA study-unit boundaries was overlaid with a 1:100,000-scale map of the counties contained within the conterminous United States. The overlay process created a new polygon coverage that included the intersection of county and study-unit boundaries. NAWQA study-unit boundaries are irregular and sometimes do not follow county boundaries; therefore, each of the polygons created from the overlay process contains more than one record of attribute information. The attribute information includes the area of each polygon (reported in square meters), a FIPS code from the county coverage, and a study unit name if the polygon fell within the study-unit boundary. Multiple records in the resultant polygon coverage attribute table have the same county FIPS code and name. Using Steel County as an example of this overlay process, three of these records represent areas of Steele County, Minn., that are located inside the eastern Iowa study unit, one record is the county area located within the upper Mississippi study unit, and another three records are based on regions of the county that are located outside any of the study-unit boundaries. By summing the county area associated with each of the records for a county—in this case, the seven records representing Steele County—the total area of a county was calculated. For example**,** figure 2 displays seven records that are associated with Steele County (FIPS 27147), and figure 3 shows a map of counties located within the eastern Iowa study unit. The area of a county located within a study unit was calculated using records associated with both the county and the study unit. From the area totals (total county area and county area within the study unit), a county weighting factor was calculated by dividing the area of a county within the study unit by the total county area. The weighting factor was important because it was used to proportion the estimated acres treated with pesticides and the amount applied for those counties that were not entirely contained within a study unit.

Using the county weighting factor to calculate the area and quantity of a pesticide's use assumes that the crop acreage and the compound's application are evenly distributed across a county. Where agricultural patterns are localized within a county, this procedure can produce overestimates or underestimates of pesticide use, depending on the collocation of agricultural land and the study-unit boundary. In order to develop estimates of pesticide use that are based on the distribution of agricultural land within the county or a basin, a crop weighting factor was developed by overlaying maps of agricultural land use with maps of county boundaries and basin boundaries (Naomi Nakagaki, unpub. data, 2000). Figure 4 shows mapped USGS land-use and land-cover information for Sumter County, Ga. (FIPS 13261), overlaid with a NAWQA basin boundary. Within Sumter County, 168,304 acres are mapped as cropland and pasture; of this total, 26,362 acres are located within the NAWQA basin boundary. Cropland and pasture area (26,362 acres) located within the NAWQA basin was divided by total cropland and pasture within the county (168,304 acres) to produce a cropland and pasture weighting factor for the basin, which in this case is approximately 15 percent. The crop weighting factor was applied to county pesticide use data to estimate pesticide use for the basin. In this example, an estimated 20,168 pounds of pesticides was applied throughout Sumter County;

FTS	County Name	Polygon Area (m^2)	Study Unit	Total County Area (m^2)	County Area in Study Unit (m^2)	Percent County Area
27147	Steele	17,682,910		1,119,253,803		1.50
27147	Steele	1,030,417,000	UMIS	1,119,253,803		92.06
27147	Steele	261,732		1,119,253,803		0.02
27147	Steele	51,352,500		1,119,253,803		
27147	Steele	19,316,670	EIWA	1,119,253,803	19,539,661	1.74
27147	Steele	183,198	EIWA	1,119,253,803		
27147	Steele	39,793	EIWA	1,119,253,803		

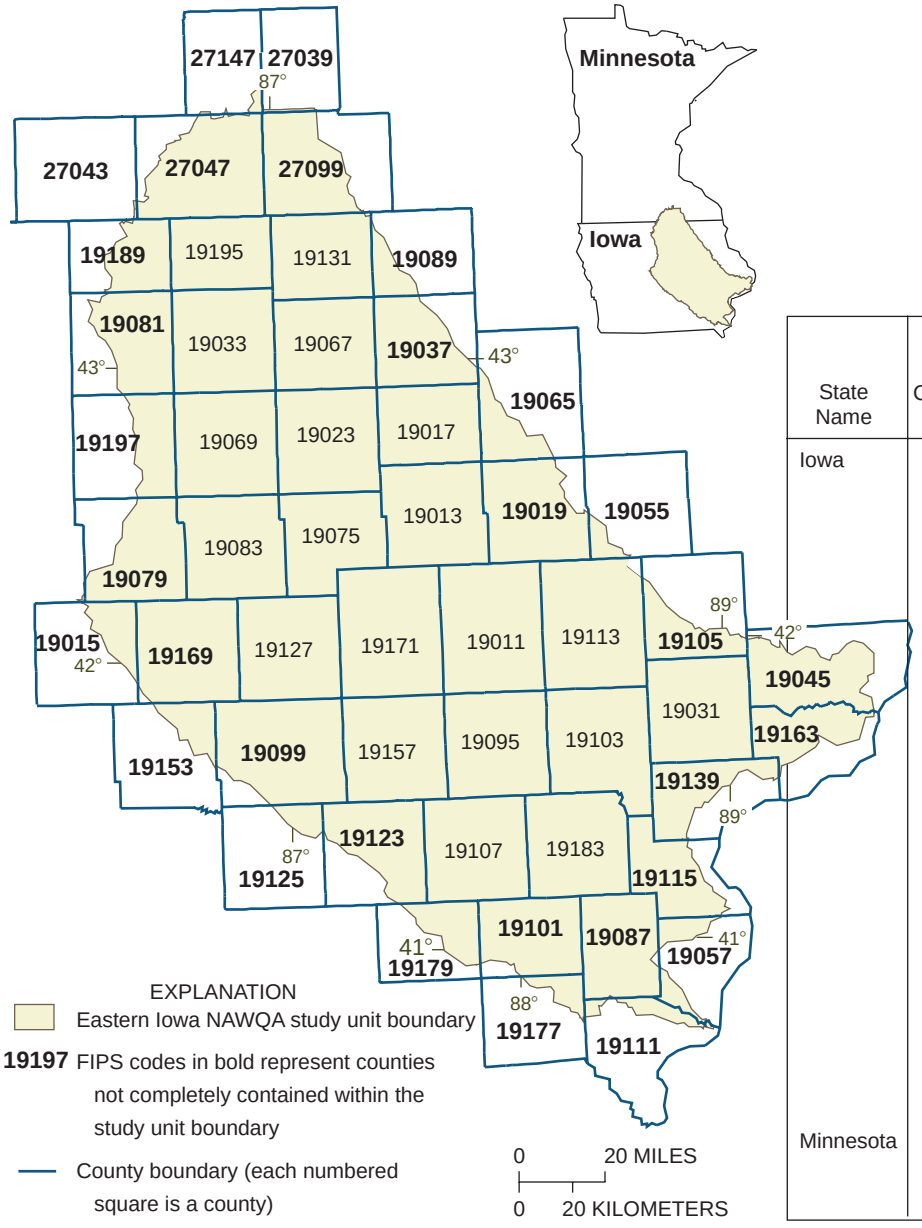
Figure 2. Seven records associated with Steele County, Minnesota, which display the area of the county associated with two National Water-Quality Assessment Program study units

however, using the crop weighting factor, the revised estimate is 3,158 pounds of pesticides applied within the NAWQA basin. Applying the weighting factor to individual compounds can further refine the pesticide use estimate. For example, county use of alachlor is estimated to be 5,985 pounds, but if the crop weighting factor is applied, alachlor use within the NAWQA basin is 917 pounds. If information on the acreage and location of specific crops were available, then the use-coefficients, the percentage of area treated, and the average amount applied, could be used instead of assuming that specific crops are distributed evenly throughout the county, as is the case with maps of cropland and pasture.

MAP DISPLAYS OF PESTICIDE USE DATA

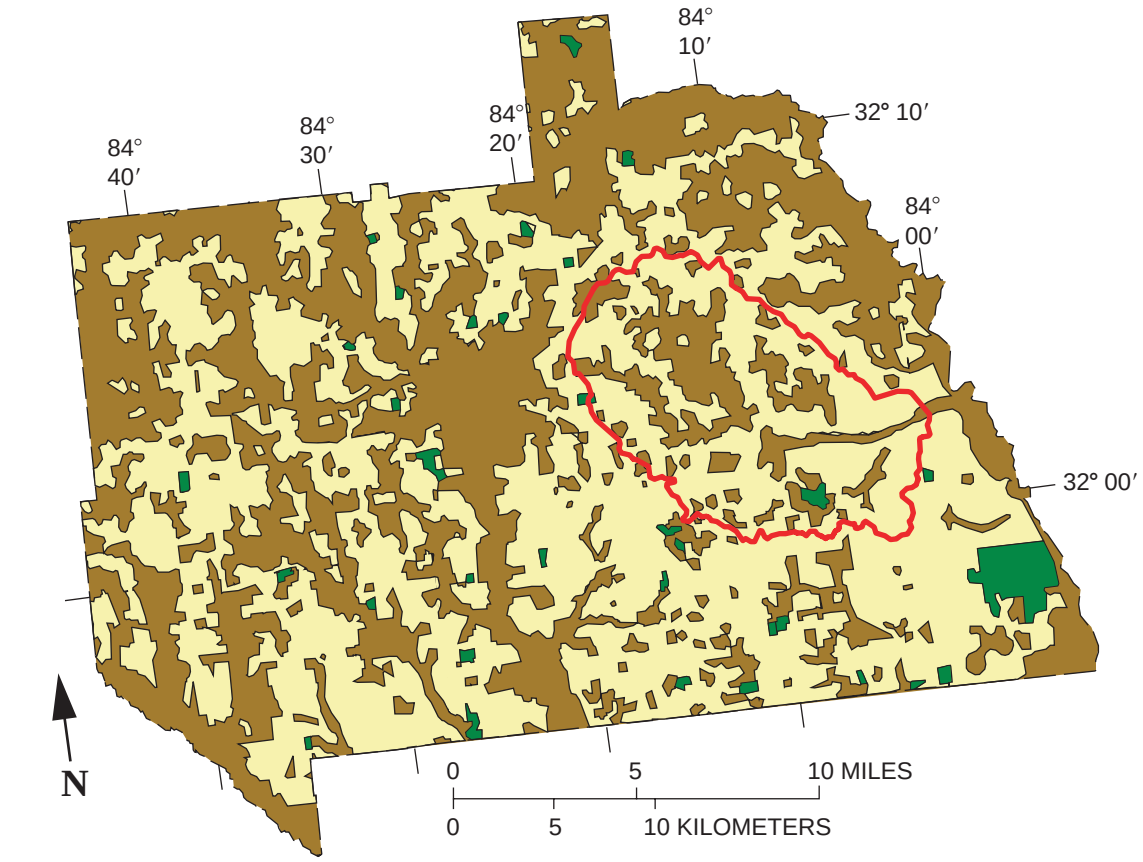
Pesticide-use patterns were also mapped using a GIS. County pesticide-use data provide information for counties that have applications of pesticides along with the corresponding rate of use, but from these data alone, the spatial distribution and intensity of use are not apparent. A GIS with a relational database is the tool to create maps that display tabular data spatially.

A digital map of United States counties and pesticide use information stored in a relational database were linked using the five-digit FIPS code — an element that was common to both data sets. The attribute file for the county coverage contained the FIPS code, name, and area of each county. Three additional items were added to the county attribute file: area of the county in cropland and pasture, the amount of a compound applied per unit area of the county, and the amount of compound applied per unit area of cropland and pasture. By selecting a compound name or pesticide code, all the records for that compound were selected from the pesticide file. By linking the digital map with the pesticide file using the FIPS code, other information in each of the files could be used. For example, the amount of a compound in the pesticide file could be divided by the area of the county in a map attribute file to estimate amount of pesticide use in pounds applied per acre. By adding the conversion from square meter to acre to the calculation, the map could be displayed as pounds per acre. Similarly, the amount applied per unit area of cropland and pasture could be calculated by linking the Census county data to the pesticide data using the 5-digit FIPS code. Figures 5 and 6 show the distribution and intensity of use across the conterminous United States for four frequently used pesticides. Figure 5 shows the average amount (in pounds) applied per square mile for two herbicides— acethochlor and metolachlor; figure 6 shows use of the fumigant methyl bromide and the insecticide chlorpyrifos. Each map displays, in four intervals, the amount of active ingredient applied over a county. The four class intervals were established independently for each of the compounds for counties that reported use of the specific compound (greater than zero pounds applied per acre). Each class interval represents an equal number of data values from the distribution of the pesticide data, with the first interval representing the 25th percentile, the second representing the 50th percentile (or the median), and the third interval representing the 75th percentile.



State Name	State and County FIPS Code	County Name	Total County Area (acres)	Area of County within Study Unit	Proportion of County in Study Unit (weighting factor)
Iowa	19015	Boone	78,637	16,847	0.21
	19019	Buchanan	329,734	296,300	0.90
	19037	Chickasaw	245,214	185,866	0.76
	19045	Clinton	252,821	140,627	0.56
	19055	Delaware	31,748	2,720	0.09
	19057	Des Moines	73,316	19,541	0.27
	19065	Fayette	110,941	26,293	0.24
	19079	Hamilton	253,049	173,269	0.68
	19081	Hancock	230,564	144,925	0.63
	19087	Henry	275,721	272,018	0.99
	19089	Howard	61,738	12,571	0.20
	19099	Jasper	423,683	382,686	0.90
	19101	Jefferson	255,137	232,896	0.91
	19105	Jones	148,711	59,918	0.40
	19111	Lee	39,622	4,553	0.11
	19113	Linn	455,483	447,395	0.98
	19115	Louisa	211,712	167,688	0.79
	19123	Mahaska	247,063	166,332	0.67
	19125	Marion	34,993	3,353	0.10
	19139	Muscatine	193,294	130,000	0.67
	19153	Polk	68,982	12,562	0.18
	19163	Scott	175,633	102,951	0.59
	19169	Story	360,365	353,694	0.98
	19177	Van Buren	39,241	4,905	0.12
	19179	Wapello	96,006	33,033	0.34
	19189	Winnebago	134,454	70,342	0.52
	19197	Wright	135,800	49,466	0.36
Minnesota	27039	Dodge	45,088	7,226	0.16
	27047	Freeborn	353,022	269,481	0.76
	27099	Mower	269,346	159,275	0.59
	27147	Steele	4,828	84	0.02

Figure 3. Eastern Iowa Study Unit.



EXPLANATION

- Sumter County, Georgia boundary
- NAWQA basin boundary
- Cropland (including pasture)
- Orchards (including groves, vineyards, nurseries, and ornamental horticultural areas)

$$\text{County Crop Weighting Factor} = \frac{\text{county area of cropland + orchards}}{\text{county area}}$$

$$\text{Basin Crop Weighting Factor} = \frac{\text{basin area of cropland + orchards}}{\text{county area of cropland + orchards}}$$

Figure 4. Calculating a crop weighting factor for a county and a basin.

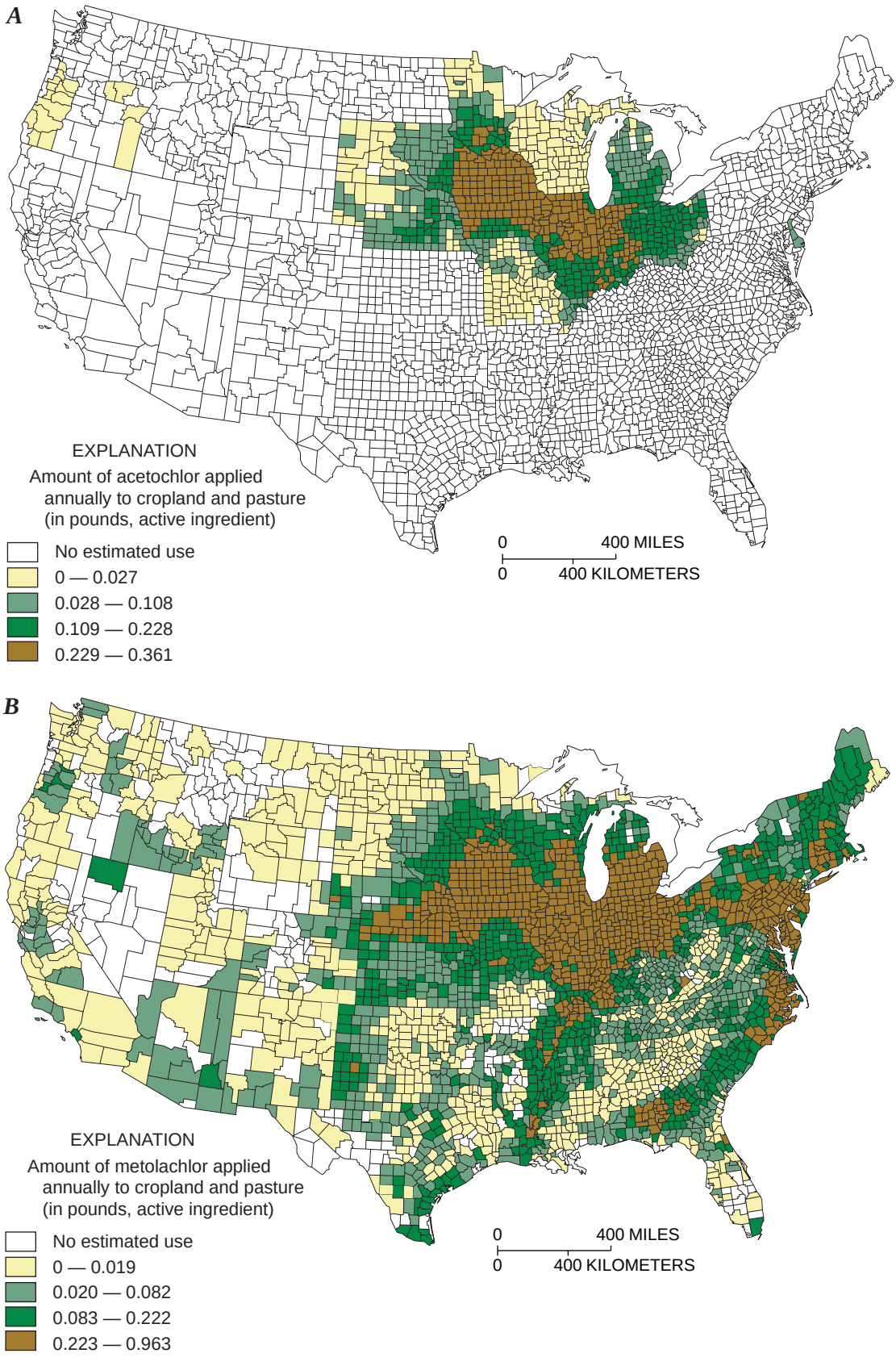
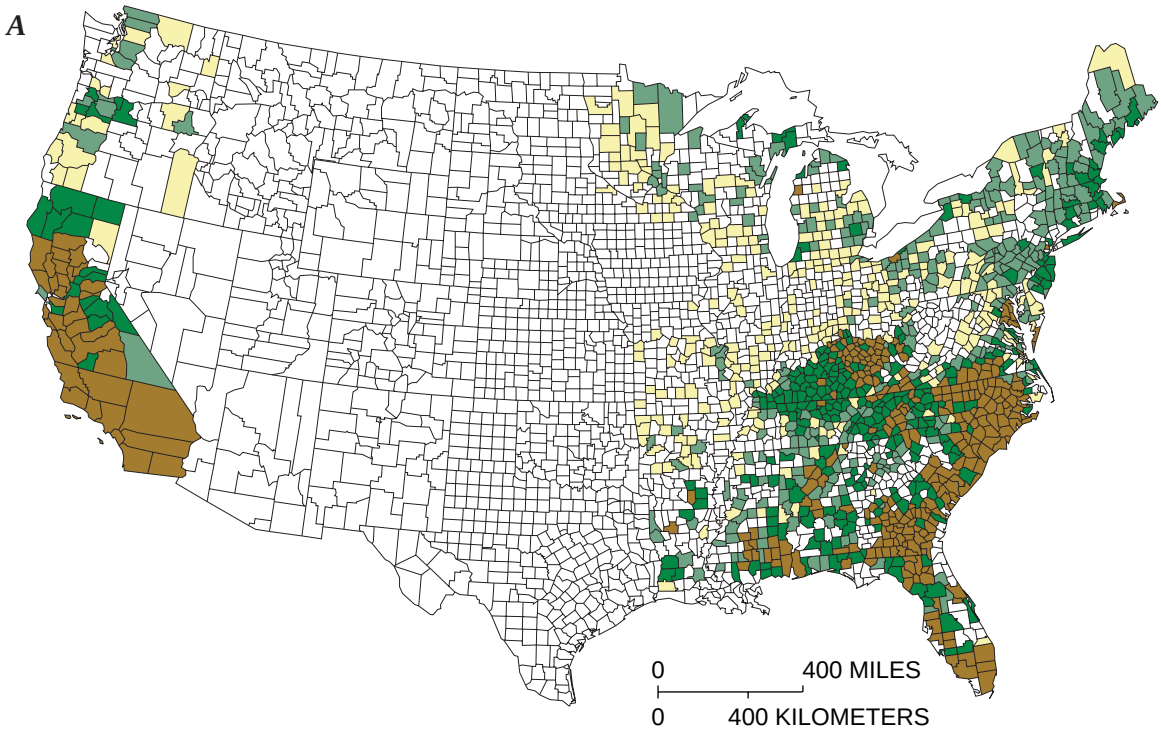


FIgure 5. Average annual amount of active ingredient of acetochlor and metolachlor applied to cropland and pasture area in a county



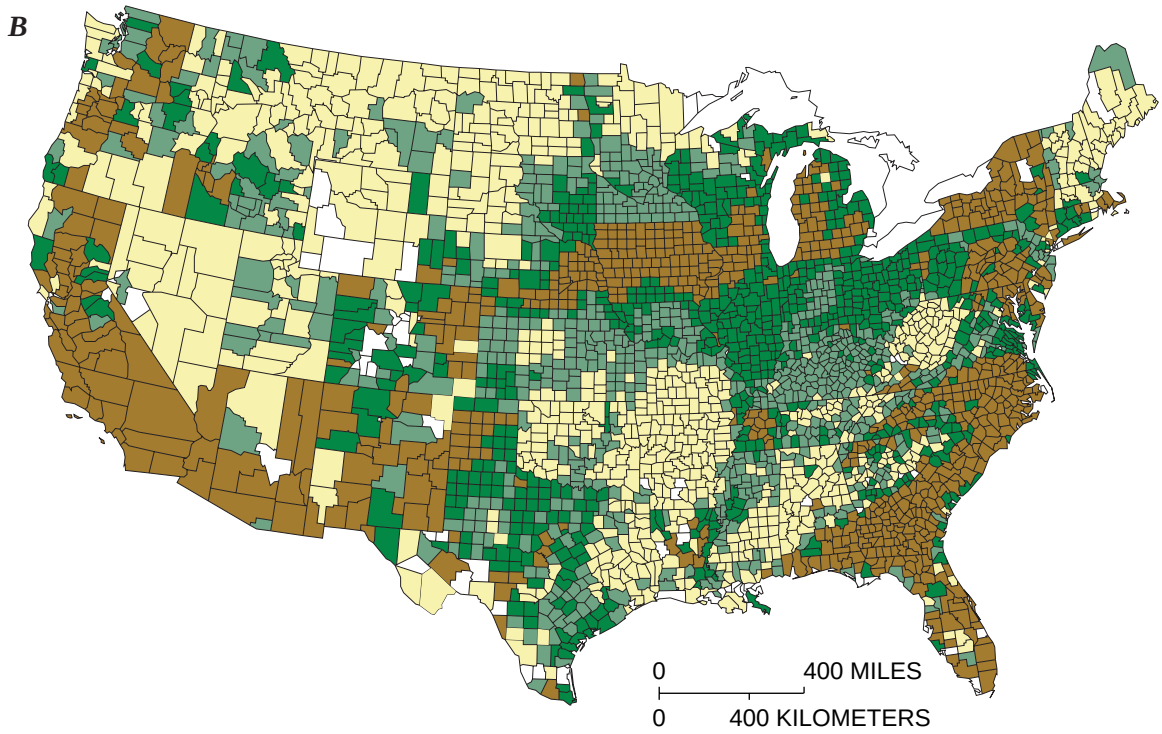
EXPLANATION

Amount of methyl bromide applied annually to cropland and pasture (in pounds, active ingredient)

- No estimated use
- 0 — 0.007
- 0.008 — 0.042
- 0.043 — 0.245
- 0.246 — 60.056

Crops	Total Amount Applied (in pounds, active ingredient)	National Use (in percent)
tomatoes	13,035,891	33.22
tobacco	5,603,849	14.28
strawberries	5,629,716	14.09
watermelons	3,748,578	9.55
sweet peppers	3,140,497	8.00
grapes	2,668,467	6.79
almonds	1,697,323	4.32
carrots	607,371	1.55
nectarines	478,112	1.22
cucumbers	406,998	1.04

Figure 6. Average annual amount of active ingredient of methyl bromide ***(A)*** and chlorpyrifos ***(B)*** applied to cropland and pasture area in a county.



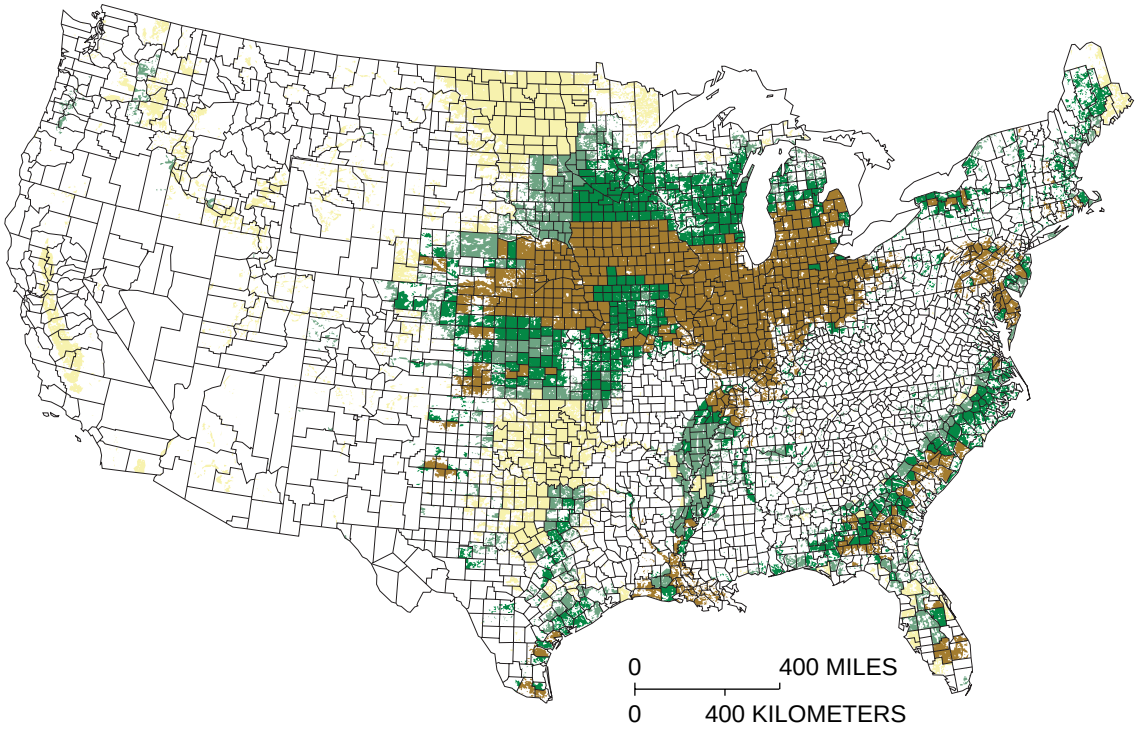
EXPLANATION

Amount of chlorpyrifos applied annually to cropland and pasture (in pounds, active ingredient)

- No estimated use
- 0 — 0.010
- 0.011 — 0.023
- 0.024 — 0.047
- 0.048 — 0.858

Crops	Total Amount Applied (in pounds, active ingredient)	National Use (in percent)
corn	6,710,506	43.55
cotton	1,616,065	10.49
peanuts	912,717	5.92
alfalfa hay	872,215	5.68
wheat and grains	741,185	4.81
tobacco	706,200	4.60
all citrus	675,060	4.38
apples	654,938	4.25

Figure 6. Average annual amount of active ingredient of methyl bromide ***(A)*** and chlorpyrifos ***(B)*** applied to cropland and pasture area in a county—Continued.



EXPLANATION

Amount of atrazine applied annually to cropland and pasture (in pounds, active ingredient)

- No estimated use
- < 0.02
- 0.03 — 0.11
- 0.12 — 0.25
- 0.26 — 2.11

Crops	Total Amount Applied (in pounds, active ingredient)	National Use (in percent)
corn	53,796,206	84.13
sorghum	7,339,963	11.48
sugar cane: sugar & seed	1,711,322	2.68
pasture	518,074	0.81
sweet corn	444,523	0.70
sod	119,182	0.19
proso millet	11,937	0.02
field and grass seed	6,305	0.01

Figure 7. Average annual atrazine use applied to cropland categories mapped from Advanced Very High Resolution Radiometer data.

The maps shown in figures 5 and 6 represent use of a pesticide as equally distributed across a county. Display of the pesticide use information can be improved by using other ancillary data. For example, using the GIS, maps of land use and land cover can be linked to the pesticide use data in the same manner as the county maps were linked to the study unit boundaries. In the example in figure 7, a national classification of land-cover was used to map the distribution of the compound atrazine in a county. The land-cover classification was derived from satellite data collected by the Advanced Very High Resolution Radiometer (AVHRR) (Loveland and others, 1991). The land-cover classification contained over 150 classes, 50 of which were related to agricultural land use. The individual agricultural land-cover categories were combined into a single category. As part of each map (figs. 6 and 7), a table lists, in order of use, the crop treated with the compound, the total amount (in pounds) of the active ingredient applied to the crop, and the percentage of national use. Because the percentages are rounded, they do not always total 100 percent.

County boundaries that included a FIPS code were overlaid on the land-cover classification using a GIS map overlay function. The land-cover map could now be referenced to a FIPS code and linked to the pesticide data using the FIPS code. The area of mapped agriculture in a county could be totaled, and in this case, converted to acres, and used as the denominator to calculate the amount of an active ingredient (atrazine) applied to each acre of agricultural land use. Figure 7 shows a map of atrazine use applied to agricultural land mapped from AVHRR data.

The addition of other spatial and tabular data could be used to further refine both the estimates of pesticide use and their distribution at state and regional levels. The greatest improvement in estimating pesticide usage would be obtained by incorporating information on the location and amount of specific crops grown and crop rotation practices. However, this more detailed spatial information is not readily available. Regional use-coefficients could be developed using information on crop management practices and crop requirements, such as irrigation, tillage, the number and timing of pesticide applications, crop phenology, soils, and climate. These additions could provide a temporal component and could be used to estimate timing and concentrations of pesticide loads in surface water. These refinements are needed to better characterize environmental risk and exposure and to model the transport of pesticide residues through the hydrologic system.

SUMMARY

County average annual pesticide-use data have been compiled for 208 compounds used in crop production in the United States. The U.S. Geological Survey's National Water-Quality Assessment (NAWQA) Program is using these data to estimate pesticide concentrations and loads for areas not sampled by the study units and to develop and explain the occurrence of pesticides in surface and ground waters in relation to estimated use and other physical requirements such as soil and climate. The county data are based on pesticide use rates compiled by the National Center for Food and Agriculture Policy (NCFAP) from pesticide use information collected by state and federal agencies over a 4-year period (1992–1995) and on crop acreage data from the 1992 Census of Agriculture. The NCFAP database contains state-based estimates of pesticide-use rates for 208 compounds and 86 crops. For each of the compounds, two use-coefficients were developed: the percentage of area treated for 86 specific crops and the average amount of an active ingredient applied annually to each acre of that crop.

The state-based pesticide-use coefficients were applied to county crop acreage obtained from the 1992 Census. County estimates of pesticide use were derived for over 16,000 possible compound and crop combinations found throughout the 3,067 counties within the conterminous United States that reported crop acreage. Crop acreages for each county were retrieved from the Census. To calculate county pesticide use by compound and crop, the county crop acreage was combined with the percentage of each crop's area that was treated and with the average annual application rate of the active ingredient.

The resulting county pesticide database provides a comprehensive source of information on the application of more than 200 compounds used in crop production in the United States. The data provide a single source of information on pesticide use that is consistent in both scale and level of detail, thus, allowing regional comparisons of pesticide use to be made. The data have been aggregated to provide information for the nation and for NAWQA study units. These data provide a means to assess regional and national relationships between pesticide use and water quality.

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U.S. Department of Commerce, 1995, 1992 Census of agriculture. Geographic area series 1A. U.S. summary state data file, and cross-tab data file: U.S. Department of Commerce, Bureau of the Census, Data User Services Division, CD-AG-92-1C [CD-ROM, dBase format].

Table 2. Crop codes and crop names with corresponding Census of Agriculture data codes

Crop code	Crop	Census of Agriculture Data Code	Crop code	Crop	Census of Agriculture Data Code
653	Alfalfa Hay	280132	119	Melons	290106
108	Almonds	310317	660	Millet	260092
701	Apples	310002	910	Mint	340057
122	Apricots	310011	112	Nectarines	310137
102	Artichokes	290010	533	Oats	260082
116	Asparagus	290014	152	Okra	290134
123	Avocados	310020	135	Olive	310146
535	Barley	260042	709	Onions	290126
128	Beets	290026	654	Other Hay	280127 (Other Hay) - 280132 (Alfalfa Hay)
915	Blackberries	320008	502	Parsley	290138
400	Blueberries	320012 (Tame Blueberries) + 320017 (Wild Blueberries)	842	Pasture	60073
109	Broccoli	290030	702	Peaches	310173
100	Brussel Sprouts	290034	690	Peanuts	270077
716	Cabbage	290042	703	Pears	310182
680	Canola	260057	105	Pecans	310344
715	Cantaloupes	290050	136	Pistachios	310353
714	Carrots	290054	120	Plums	310200
110	Cauliflower	290058	244	Pomegranates	310209
713	Celery	290062	717	Potatoes	270042
704	Cherries	310038	143	Pumpkins	290158
700	Citrus	310227	147	Radishes	290162
118	Collards	290074	236	Raspberries	320042
530	Corn	260002 (Corn for Grain) + 280157 (Corn for Silage)	605	Rice	260097
520	Cotton	270002	139	Rye	260102
914	Cranberries	320027	140	Safflower	260107
712	Cucumbers	290082	949	Sod	330043
160	Dates	310083	570	Sorghum	260007 (Grain) + 280162 (Dry Forage) + 280167 (Silage)
800	Dry Beans	270017 (Edible Dry Beans) + 270022 (Dry Lima Beans) + 270037 (Lentils)	600	Soybeans	270012
801	Dry Peas	270027 (Edible Dry Peas) + 270032 (Dry Cowpeas)	126	Spinach	290170
150	Eggplant	290090	127	Squash	290174
401	Field and Grass Seed	280002	103	Strawberries	320047
145	Figs	310092	107	Sugar Beets	270057
913	Filberts	310326	952	Sugarcane	270062 (Sugar Cane for Seed) + 270067 (Sugar Cane for Sugar)
943	Flax	260072	121	Sunflowers	260112
117	Garlic	290102	707	Sweet Corn	340092
111	Grapes	310101	101	Sweet Peppers	290150
711	Green Beans	290018 (Lima Beans) + 290022 (Snap Beans)	158	Sweet Potatoes	270047
245	Green Onions	290130	670	Tobacco	270007
104	Green Peas	290078 (Cowpeas) + 290142 (Green Peas)	706	Tomatoes	290182
911	Hops	340037	115	Walnuts	310362
941	Hot Peppers	290146	705	Watermelons	290202
243	Kiwi	310119	540	Wheat	260012
710	Lettuce	290118	900	Wild Rice	260122

Table 3. Summary of national pesticide use, 1992–1995, derived from county pesticide use information sorted by total application in pounds active ingredient in descending order

Compound	Pesticide code	Pesticide type	Total application, (pounds, active ingredient)	Total area treated (acres)
Sulfur	5004	Fungicide	86,750,257	2,471,066
Atrazine	1980	Herbicide	63,947,513	56,985,754
Metolachlor	1011	Herbicide	57,932,590	31,262,371
Oil	6049	Insecticide	53,184,324	1,354,858
1,3-D	8008	Other Pesticides	40,023,187	492,847
Methyl Bromide	8001	Other Pesticides	39,246,466	204,350
2,4-D	1302	Herbicide	37,238,146	77,794,014
Metam Sodium	8002	Other Pesticides	32,237,173	383,881
Cyanazine	1369	Herbicide	29,535,834	15,846,727
Sulfuric Acid	8016	Other Pesticides	25,941,349	105,608
Alachlor	1863	Herbicide	25,647,684	14,529,371
Acetochlor	3000	Herbicide	23,841,035	11,845,501
Pendimethalin	1629	Herbicide	20,723,987	21,498,031
Trifluralin	1361	Herbicide	19,786,700	25,368,107
Glyphosate	1099	Herbicide	16,039,854	23,821,020
Chlorpyrifos	6009	Insecticide	15,408,958	13,955,168
EPTC	1414	Herbicide	14,097,139	4,014,564
Chlorothalonil	5007	Fungicide	12,801,685	3,137,717
Copper	5011	Fungicide	10,531,790	2,505,811
Dicamba	1298	Herbicide	9,590,278	38,967,795
Methyl Parathion	6042	Insecticide	8,930,188	7,491,440
Mancozeb	5000	Fungicide	8,301,811	2,043,763
Butylate	1839	Herbicide	7,701,494	1,986,155
Chloropicrin	8000	Other Pesticides	7,443,548	122,684
Propanil	1282	Herbicide	7,229,829	2,337,989
Terbufos	6060	Insecticide	7,200,077	6,675,913
Bentazon	1287	Herbicide	6,729,259	10,020,824
MSMA	1124	Herbicide	5,763,370	3,807,455
Sodium Chlorate	8004	Other Pesticides	5,243,734	1,711,868
Carbofuran	6007	Insecticide	5,124,406	6,515,915
Molinate	1417	Herbicide	4,903,206	1,420,255
Simazine	1981	Herbicide	4,810,327	3,431,825
MCPA	1305	Herbicide	4,658,848	12,316,934
Carbaryl	6006	Insecticide	4,554,089	2,953,313
Fluometuron	1998	Herbicide	4,500,857	4,983,276
Aldicarb	6003	Insecticide	4,282,750	4,315,657
Paraquat	1616	Herbicide	4,228,555	9,496,297
Propachlor	1191	Herbicide	3,865,533	1,674,875
Phorate	6050	Insecticide	3,811,251	3,004,197
Captan	5014	Fungicide	3,801,514	585,977
Diuron	1991	Herbicide	3,746,849	3,249,062
Tribufos	8009	Other Pesticides	3,721,092	3,978,201
Acephate	6002	Insecticide	3,639,113	3,186,829
Propargite	6055	Insecticide	3,434,047	1,940,567
Dimethoate	6017	Insecticide	3,415,912	5,160,527
Bromoxynil	1116	Herbicide	3,379,476	12,388,097
Malathion	6033	Insecticide	3,105,858	1,935,421
Ethephon	7003	Other Pesticides	3,079,023	2,943,740
Cryolite	6010	Insecticide	3,077,166	479,436

Table 3. Summary of national pesticide use, 1992–1995, derived from county pesticide use information sorted by total application in pounds active ingredient in descending order—Continued

Compound	Pesticide code	Pesticide type	Total application, (pounds, active ingredient)	Total area treated (acres)
Maneb	5009	Fungicide	3,008,755	703,061
Fonofos	6028	Insecticide	2,811,694	2,416,793
Ziram	5016	Fungicide	2,760,375	492,718
Metribuzin	1975	Herbicide	2,704,051	8,402,249
Dimethenamid	3001	Herbicide	2,615,979	2,321,166
Azinphos-Methyl	6004	Insecticide	2,491,323	2,583,532
Ethalfluralin	9009	Herbicide	2,459,958	3,083,449
Methomyl	6038	Insecticide	2,449,612	3,411,730
Triallate	1790	Herbicide	2,283,665	2,224,396
Norflurazon	1018	Herbicide	2,271,813	2,396,335
Maleic Hydrazide	8010	Other Pesticides	2,125,576	721,431
Profenofos	6084	Insecticide	2,121,560	1,695,563
Endosulfan	6019	Insecticide	2,087,805	1,614,778
Ethyl Parathion	6024	Insecticide	2,063,014	3,410,741
Linuron	1993	Herbicide	1,974,832	3,149,483
Clomazone	9001	Herbicide	1,961,420	3,480,831
Prometryn	1987	Herbicide	1,845,301	2,559,043
Disulfoton	6018	Insecticide	1,800,145	2,356,733
Picloram	1051	Herbicide	1,723,161	7,103,643
PCNB	5021	Fungicide	1,694,994	1,586,450
Acifluorfen	1002	Herbicide	1,691,552	7,259,825
Diazinon	6014	Insecticide	1,615,931	1,075,288
Thiodicarb	6061	Insecticide	1,488,074	1,964,188
Thiobencarb	1903	Herbicide	1,436,364	473,210
DSMA	4001	Herbicide	1,395,348	767,261
Imazethapyr	9000	Herbicide	1,377,335	22,759,097
Sethoxydim	1910	Herbicide	1,301,674	6,299,515
Ethoprop	6023	Insecticide	1,269,562	336,202
Benomyl	5001	Fungicide	1,250,821	1,478,646
Chloramben	1299	Herbicide	1,216,306	729,772
Bromacil	1809	Herbicide	1,194,805	440,170
Permethrin	6048	Insecticide	1,176,636	7,721,364
Diclofop	1005	Herbicide	1,117,669	1,407,416
Methamidophos	6036	Insecticide	1,114,767	906,920
Dicofol	6016	Insecticide	1,090,423	836,413
Iprodione	5006	Fungicide	1,003,982	1,088,045
DCPA	1872	Herbicide	997,630	184,780
2,4-Db	1308	Herbicide	956,997	4,422,924
Phosmet	6051	Insecticide	929,361	439,807
Cycloate	2069	Herbicide	925,958	363,454
Metiram	5029	Fungicide	922,144	127,121
Metalaxyl	5002	Fungicide	886,183	2,447,054
Ethion	6022	Insecticide	868,217	249,148
Sulprofos	6059	Insecticide	842,478	530,154
Oxamyl	6045	Insecticide	813,832	1,686,855
Imazaquin	4005	Herbicide	807,270	8,634,943
Oryzalin	1873	Herbicide	780,971	481,596
Fluazifop	9007	Herbicide	755,073	6,809,168

Table 3. Summary of national pesticide use, 1992–1995, derived from county pesticide use information sorted by total application in pounds active ingredient in descending order—Continued

Compound	Pesticide code	Pesticide type	Total application, (pounds, active ingredient)	Total area treated (acres)
Dicrotophos	6082	Insecticide	734,486	2,241,589
Asulam	9048	Herbicide	721,007	334,170
Fenamiphos	6025	Insecticide	663,777	481,467
Pebulate	1419	Herbicide	560,473	157,205
Fenoxaprop	9003	Herbicide	543,638	5,462,223
Fomesafen	4010	Herbicide	542,922	1,979,632
Methidathion	6037	Insecticide	520,676	381,805
Thiophanate-methyl	5019	Fungicide	506,706	587,687
Ametryn	1982	Herbicide	503,952	678,342
Vernolate	1432	Herbicide	498,688	257,728
Methazole	9096	Herbicide	491,795	859,590
Oxyfluorfen	4000	Herbicide	490,752	1,307,624
Fosetyl Al	5031	Fungicide	487,594	148,630
Napropamide	1900	Herbicide	473,962	357,759
Hexazinone	2070	Herbicide	461,483	582,477
Thidiazuron	8006	Other Pesticides	452,393	2,717,045
Imazamethabenz	7001	Herbicide	449,862	1,457,048
Tefluthrin	6066	Insecticide	423,973	3,562,200
Benefin	1362	Herbicide	416,580	294,474
Triphenyltin hydroxide	5012	Fungicide	409,950	875,455
Diethatyl ethyl	9015	Herbicide	397,362	267,249
Ethofumesate	9012	Herbicide	384,550	445,594
Fenbutatin oxide	6026	Insecticide	384,456	431,386
Lactofen	4009	Herbicide	377,416	3,657,316
Formetanate HCl	6071	Insecticide	328,109	274,447
Bensulide	1098	Herbicide	322,016	92,313
Pyrazon	2250	Herbicide	321,224	210,153
Myclobutanil	5036	Fungicide	317,812	1,166,729
Dodine	5033	Fungicide	297,414	180,706
Naled	6044	Insecticide	295,660	315,531
Propiconazole	5020	Fungicide	291,341	1,843,809
Terbacil	1109	Herbicide	284,737	336,750
Nicosulfuron	7007	Herbicide	284,159	9,821,302
Esfenvalerate	6020	Insecticide	269,472	4,092,634
Thiram	5022	Fungicide	266,376	46,477
Tridiphane	4007	Herbicide	255,871	440,172
Oxydemeton-methyl	6046	Insecticide	242,019	441,160
Diquat	1950	Herbicide	229,777	466,793
Clethodim	7010	Herbicide	228,267	2,366,808
Ferbam	5017	Fungicide	223,973	70,174
Mevinphos	6043	Insecticide	220,870	291,532
Cypermethrin	6011	Insecticide	215,165	1,911,495
Lambdacyhalothrin	6083	Insecticide	213,447	2,680,334
Pronamide	1888	Herbicide	202,662	227,715
Difenzoquat	1374	Herbicide	194,960	199,187
Amitraz	6091	Insecticide	193,196	422,615
Triclopyr	1988	Herbicide	192,705	454,123
Quizalofop	7006	Herbicide	191,023	3,611,894

Table 3. Summary of national pesticide use, 1992–1995, derived from county pesticide use information sorted by total application in pounds active ingredient in descending order—Continued

Compound	Pesticide code	Pesticide type	Total application, (pounds, active ingredient)	Total area treated (acres)
Chlorimuron	4008	Herbicide	183,757	9,587,873
Phenmedipham	2220	Herbicide	183,167	953,543
DCNA	5008	Fungicide	180,819	88,673
Thiabendazole	5030	Fungicide	159,142	289,350
Desmedipham	9014	Herbicide	154,719	965,871
Cyfluthrin	6081	Insecticide	151,422	1,721,883
Trimethacarb	6300	Insecticide	151,150	151,150
Fenpropathrin	7203	Insecticide	146,707	320,222
Oxythioquinox	6047	Insecticide	144,872	206,381
Dimethipin	7004	Other Pesticides	141,889	446,441
Isopropalin	1867	Herbicide	139,291	139,275
Anilazine	5018	Fungicide	139,115	67,408
Cacodylic acid	8017	Other Pesticides	138,504	148,929
Quinclorac	7013	Herbicide	126,968	342,392
Clopyralid	4002	Herbicide	122,701	704,526
Vinclozolin	5013	Fungicide	119,737	116,167
Bifenthrin	6063	Insecticide	115,080	1,702,338
Triadimefon	5015	Fungicide	114,346	773,855
Diphenamid	1366	Herbicide	111,217	49,769
Mepiquat chloride	8007	Other Pesticides	110,871	2,854,066
Streptomycin	5037	Fungicide	108,478	185,628
Tebuthiuron	1963	Herbicide	104,591	209,183
Triforine	5003	Fungicide	103,491	143,465
Naptalam	1307	Herbicide	99,462	43,631
Etridiazole	5051	Fungicide	98,217	593,651
Bensulfuron	7009	Herbicide	95,407	546,611
Methoxychlor	6039	Insecticide	87,654	61,827
Thifensulfuron	4004	Herbicide	82,980	11,648,716
Pyridate	7012	Herbicide	80,916	86,994
Flumetsulam	3003	Herbicide	78,359	1,274,397
Diflubenzuron	6064	Insecticide	78,013	494,696
Endothall	1948	Herbicide	73,964	443,182
Lindane	6032	Insecticide	70,601	98,175
Dichlobenil	1865	Herbicide	64,552	27,734
Primisulfuron	7008	Herbicide	64,406	2,192,931
Fenvalerate	6070	Insecticide	63,136	306,946
Imidacloprid	3004	Insecticide	60,966	957,724
Metaldehyde	6073	Insecticide	56,890	82,160
Chlorsulfuron	1913	Herbicide	56,116	5,536,530
Propamocarb	3007	Fungicide	54,198	55,337
Tralomethrin	6067	Insecticide	53,331	1,313,008
Fenarimol	5032	Fungicide	50,843	725,430
Tribenuron	7002	Herbicide	49,500	6,218,111
Carboxin	5026	Fungicide	44,161	37,249
Tebufenozide	3005	Insecticide	42,104	290,444
MCPB	1889	Herbicide	36,328	57,324
Metsulfuron	4003	Herbicide	35,534	7,747,924
Oxytetracycline	5038	Fungicide	35,321	71,207
Gibberellic acid	8013	Other Pesticides	33,770	567,810

Table 3. Summary of national pesticide use, 1992–1995, derived from county pesticide use information sorted by total application in pounds active ingredient in descending order—Continued

Compound	Pesticide code	Pesticide type	Total application, (pounds, active ingredient)	Total area treated (acres)
Triasulfuron	7011	Herbicide	31,369	2,762,515
MCPP	1477	Herbicide	17,930	19,769
Clofentezine	7204	Insecticide	16,133	73,450
Cyromazine	6012	Insecticide	13,970	57,551
NAA	8003	Other Pesticides	13,666	235,226
Abamectin	6001	Insecticide	12,779	1,021,633
Dinocap	5035	Fungicide	11,238	23,252
Trichlorfon	6062	Insecticide	10,356	19,607
Dimethomorph	3006	Fungicide	6,678	26,656
NAD	8014	Other Pesticides	3,974	51,143
Cytokinins	8015	Other Pesticides	3,166	105,776
Cymoxanil	3008	Fungicide	2,332	12,979
Siduron	1984	Herbicide	247	62
Bt	6005	Insecticide	No Data	No Data

Table 4. Primary crops that account for use of each pesticide, 1992–1995

[—, no data]

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Abamectin	Cotton	6,285	629,823
	All Citrus	1,755	175,453
	Pears	1,503	61,495
	Hops	873	33,808
	Strawberries	746	18,657
	Tomatoes	580	19,324
	Lettuce	549	51,903
	Celery	326	15,759
	Potatoes	105	10,464
	Sweet Peppers	53	4,533
Acephate	Tobacco	1,672,309	798,896
	Cotton	1,369,895	1,782,679
	Lettuce	123,736	108,418
	Soybeans	84,504	90,814
	Peanuts	82,938	158,327
	Mint	81,949	72,206
	Green Beans	74,586	64,840
	Sweet Peppers	63,244	27,937
	Celery	29,751	20,484
	Dry Beans	28,266	32,048
Acetochlor	Corn	23,841,035	11,845,501
Acifluorfen	Soybeans	1,517,072	6,779,706
	Peanuts	148,196	394,524
	Rice	26,284	85,596
Alachlor	Corn	13,902,747	8,114,192
	Soybeans	8,862,899	4,848,681
	Sorghum	1,829,617	1,096,950
	Sweet Corn	507,232	231,950
	Dry Beans	336,653	157,500
	Peanuts	122,871	30,718
	Cotton	61,870	41,247
	Sunflowers	23,794	8,134
Aldicarb	Cotton	2,294,875	3,139,633
	Peanuts	1,019,803	751,643
	Sugar Beets for Sugar	398,354	165,125
	All Citrus	301,343	102,847
	Tobacco	167,788	74,572
	Pecans	42,323	17,227
	Dry Beans	31,481	21,643
	Sorghum	19,351	40,314
	Sweet Potatoes	7,433	2,652
Ametryn	Corn	428,815	498,747
Ametryn	Sugar Cane for Seed and Sugar	75,137	179,595
Amitraz	Cotton	116,056	392,065
	Pears	77,140	30,551
Anilazine	Tomatoes	108,832	56,849
	Strawberries	20,930	6,266
	Celery	7,705	3,044
	Onions	1,042	700
	Potatoes	363	385
	Garlic	244	163
Asulam	Sugar Cane for Seed and Sugar	698,293	322,812
	Sod	22,715	11,357
Atrazine	Corn	53,796,206	48,041,955
	Sorghum	7,339,963	7,385,377
	Sugar Cane for Seed and Sugar	1,711,322	805,742
	All Pasture	518,074	270,276
	Sweet Corn	444,523	411,171
	Sod	119,182	53,790
	Proso Millet	11,937	11,937
	Field and Grass Seed	6,305	5,506
Azinphos-methyl	Apples	830,812	429,015
	Cotton	671,920	1,334,476
	Almonds	221,948	
	Sugar Cane for Seed and Sugar	179,087	205,797
	Pears	137,429	64,319
	Peaches	91,708	52,721
	Potatoes	80,724	
	Walnuts	56,126	33,811
	Pistachios	48,269	22,011
	Cherries	46,360	37,144
Benefin	Peanuts	273,349	182,233
	Tobacco	62,683	47,487
	Alfalfa Hay	43,495	34,592
	Lettuce	28,089	22,978
	Field and Grass Seed	6,488	5,947
	Sod	2,476	1,237
Benomyl	Grapes	327,596	64,240
	Rice	303,966	572,721
	Wheat for Grain	118,226	243,111
	Tomatoes	57,086	38,592

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Benomyl	Green Beans	55,404	54,384
	Apples	51,445	63,030
	Almonds	50,060	66,129
	Peaches	34,536	40,167
	Pecans	31,252	30,549
	Watermelons	30,024	44,510
Bensulfuron	Rice	95,407	546,611
Bensulide	Onions	58,658	14,200
	Cucumbers	53,194	15,419
	Sod	42,482	6,461
	Watermelons	29,436	8,987
	Lettuce	28,134	7,192
	Cantaloupes	26,883	9,824
	Squash	20,951	8,314
	Pumpkins	20,781	8,932
	Carrots	8,451	1,761
	Hot Peppers	8,231	2,993
Bentazon	Soybeans	4,828,007	7,084,094
	Peanuts	767,893	1,023,858
	Corn	564,829	1,231,725
	Mint	166,465	111,793
	Dry Beans	153,836	201,866
	Rice	101,933	156,492
	Sweet Corn	59,169	109,705
	Green Peas	49,936	59,269
	Green Beans	27,255	32,292
	Sorghum	5,739	5,739
Bifenthrin	Cotton	70,171	966,149
	Corn	21,728	467,423
	Alfalfa Hay	14,518	177,320
	Hops	2,910	27,059
	Cantaloupes	1,573	17,478
	Field and Grass Seed	1,377	17,217
	Melons	743	7,434
	Watermelons	686	5,941
	Raspberries	407	4,069
	Squash	264	2,939
Bromacil	All Citrus	1,194,805	440,170
Bromoxynil	Corn	1,528,361	6,261,478
	Wheat for Grain	1,273,103	4,426,559
	Barley	262,377	766,415
	Alfalfa Hay	81,205	156,715
	Sorghum	79,103	273,845
Bromoxynil	Oats	44,287	103,427
	Rice	41,296	196,015
	Mint	23,241	79,898
	Onions	14,026	56,303
	Garlic	13,893	17,380
Bt	Alfalfa Hay	—	50,247
	Almonds	—	114,624
	Apples	—	53,138
	Apricots	—	2,150
	Artichokes	—	3,154
	Asparagus	—	1,043
	Avocados	—	671
	Beets	—	196
	Sugar Beets for Sugar	—	3,427
	Blackberries	—	1,055
Butylate	Corn	7,648,802	1,973,720
	Sweet Corn	52,692	12,434
Cacodylic acid	Cotton	138,504	148,929
Captan	Apples	2,264,488	257,199
	Peaches	540,337	83,938
	Strawberries	275,545	23,266
	Almonds	187,984	57,312
	Blueberries	143,439	35,228
	Plums	123,858	39,590
	Grapes	115,746	53,646
	Cherries	86,758	15,413
	Raspberries	23,563	5,636
	Pumpkins	12,949	1,816
Carbaryl	Alfalfa Hay	490,173	320,562
	Corn	427,446	337,061
	Pecans	423,525	99,815
	Other Hay	358,777	358,777
	All Citrus	339,934	42,039
	Soybeans	336,308	389,564
	Apples	281,131	192,238
	Sorghum	260,043	191,714
	Grapes	200,728	80,956
	Peaches	146,008	40,335
Carbofuran	Corn	2,480,218	2,586,374
	Alfalfa Hay	999,611	2,027,644
	Sorghum	389,221	440,092
	Potatoes	297,440	245,107
	Rice	206,884	410,101

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Carbofuran	Cotton	172,838	472,519
	Tobacco	165,462	46,450
	Grapes	120,192	29,211
	Sugar Cane for Seed and Sugar	87,499	52,861
	Sugar Beets for Sugar	77,952	60,260
Carboxin	Peanuts	44,161	37,249
Chloramben	Dry Beans	582,017	290,565
	Soybeans	456,076	367,464
	Squash	45,095	16,613
	Pumpkins	36,031	13,703
	Sunflowers	33,813	11,271
	Sweet Potatoes	24,268	7,823
	Green Beans	19,742	12,503
	Tomatoes	11,769	5,073
	Cucumbers	4,852	3,849
	Sweet Peppers	2,618	873
Chlorimuron	Soybeans	180,752	9,212,227
	Peanuts	3,005	375,646
Chloropicrin	Tomatoes	3,021,015	50,803
	Strawberries	2,332,362	25,925
	Potatoes	657,389	13,598
	Tobacco	603,745	12,534
	Sweet Peppers	533,555	6,604
	Onions	107,425	3,548
	Lettuce	76,338	1,957
	Eggplant	56,895	902
	Green Onions	22,681	418
	Hot Peppers	9,543	187
Chlorothalonil	Peanuts	5,926,168	1,362,273
	Potatoes	2,790,349	806,827
	Tomatoes	1,230,116	191,811
	Watermelons	423,300	91,746
	Onions	294,317	80,175
	Squash	257,604	32,805
	Cucumbers	239,026	44,338
	Peaches	213,755	60,553
	Celery	208,396	28,783
	Cherries	149,219	33,165
Chlorpyrifos	Corn	6,710,506	6,253,026
	Cotton	1,616,065	1,394,490
	Peanuts	912,717	583,139
	Alfalfa Hay	872,215	1,273,962
Chlorpyrifos	Wheat for Grain	741,185	1,519,246
	Tobacco	708,200	300,604
	All Citrus	675,080	238,426
	Apples	654,938	333,527
	Sugar Beets for Sugar	417,423	310,460
	Pecans	330,969	169,144
Chlorsulfuron	Wheat for Grain	55,302	5,480,806
	Barley	658	41,598
	Oats	156	14,125
Clethodim	Soybeans	228,267	2,366,808
Clofentezine	Walnuts	9,911	14,792
	Almonds	3,968	39,678
	Pears	1,220	8,070
	Peaches	508	5,648
	Nectarines	275	2,503
	Cherries	251	2,758
Clomazone	Soybeans	1,306,459	2,249,124
	Cotton	625,858	1,177,648
	Sweet Potatoes	15,191	20,255
	Green Peas	9,973	26,020
	Pumpkins	1,430	2,033
	Squash	1,052	1,237
	Sweet Peppers	744	1,786
	Cabbage	713	2,728
Clopyralid	Wheat for Grain	50,301	436,214
	Sugar Beets for Sugar	36,891	145,797
	Mint	27,024	46,650
	Oats	3,892	38,920
	Barley	3,435	28,628
	Field and Grass Seed	1,120	7,997
	Canola	38	320
Copper	All Citrus	2,061,386	477,675
	Rice	1,870,820	167,520
	Tomatoes	1,149,677	165,806
	Walnuts	1,145,976	212,840
	Almonds	1,000,521	233,657
	Peaches	590,181	84,367
	Grapes	393,232	219,520
	Potatoes	323,176	286,093
	Nectarines	241,373	35,759
	Apples	211,019	69,700
Cryolite	Grapes	2,552,815	437,126

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Cryolite	Potatoes	371,604	23,822
	All Citrus	62,501	8,488
	Sweet Peppers	22,755	2,123
	Watermelons	18,617	1,734
	Tomatoes	13,670	2,527
	Cantaloupes	10,294	1,029
	Peaches	7,291	807
	Kiwi	6,889	801
	Melons	6,380	619
Cyanazine	Corn	26,569,313	12,771,771
	Cotton	2,575,708	2,802,636
	Sweet Corn	270,504	165,646
	Sorghum	120,309	106,674
Cycloate	Sugar Beets for Sugar	870,755	346,923
	Beets	20,505	5,590
	Field and Grass Seed	17,753	3,998
	Spinach	16,945	6,942
Cyfluthrin	Cotton	144,779	1,625,334
	All Citrus	2,920	22,636
	Sugar Cane for Seed and Sugar	1,957	44,487
	Pears	1,766	29,427
Cymoxanil	Potatoes	2,332	12,979
Cypermethrin	Cotton	173,239	1,606,579
	Lettuce	24,641	180,311
	Pecans	10,003	72,510
	Onions	5,620	38,076
	Sugar Beets for Sugar	1,578	13,606
	Peaches	44	278
	Pears	41	136
Cyromazine	Tomatoes	5,610	37,402
	Celery	3,195	6,390
	Lettuce	2,374	5,993
	Potatoes	1,858	5,023
	Sweet Peppers	933	2,743
Cytokinins	Apples	3,166	105,776
1,3-D	Tobacco	12,114,886	173,070
	Potatoes	12,044,736	73,556
	Sugar Beets for Sugar	5,799,613	40,647
	Cotton	3,735,542	102,516
	Peanuts	3,463,002	61,401
	Sweet Potatoes	1,210,872	25,226
1,3-D	Onions	674,183	4,055
	Carrots	531,752	3,826
	Watermelons	133,801	2,485
	Cantaloupes	121,395	3,290
2,4-D	Pasture	16,106,460	31,570,814
	Wheat and Grains	7,926,325	20,609,950
	Corn	4,550,446	10,288,280
	Other Hay	3,718,124	4,109,068
	Soybeans	2,044,003	4,967,374
	Barley	908,607	2,570,698
	Rice	556,461	743,854
	Sorghum	453,258	1,111,210
	Oats	275,811	637,562
	Sugar Cane for Seed and Sugar	164,702	209,189
2,4-DB	Alfalfa Hay	620,582	1,123,058
	Peanuts	260,759	1,185,271
	Soybeans	62,269	2,087,824
	Field and Grass Seed	13,385	26,771
DCNA	Grapes	74,612	45,667
	Celery	46,469	15,542
	Lettuce	27,834	11,744
	Cherries	18,524	7,017
	Peaches	4,222	3,986
	Green Beans	3,788	1,931
	Plums	1,936	968
	Potatoes	1,043	385
	Carrots	916	1,108
	Onions	904	251
DCPA	Onions	274,506	43,315
	Broccoli	226,364	62,610
	Field and Grass Seed	115,496	11,523
	Cabbage	61,415	12,618
	Hot Peppers	55,085	7,443
	Cauliflower	53,357	16,175
	Sod	40,778	3,969
	Sweet Potatoes	33,146	5,127
	Collards	22,445	3,002
	Squash	19,824	2,537
Desmedipham	Sugar Beets for Sugar	154,719	965,871
Diazinon	Almonds	322,037	171,937
	Plums	153,829	70,826
	Peaches	134,968	43,615
	Walnuts	73,542	30,141
	Lettuce	73,301	83,645

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Diazinon	Nectarines	67,184	27,534
	Sweet Corn	67,027	27,614
	Tobacco	55,619	22,141
	Apples	52,499	29,885
	All Citrus	46,215	23,284
Dicamba	Corn	6,907,941	19,467,522
	All Pasture	1,175,374	6,764,796
	Wheat for Grain	861,932	10,228,079
	Other Hay	398,438	1,220,359
	Barley	89,182	501,438
	Sorghum	59,065	182,481
	Field and Grass Seed	50,572	300,654
	Oats	32,167	244,093
	Sod	11,519	32,349
	Proso Millet	1,726	15,229
Dichlobenil	Cranberries	38,934	16,102
	Apples	10,705	5,352
	Blueberries	6,246	3,174
	Filberts	3,858	1,286
	Pears	1,580	632
	Cherries	1,236	412
	Peaches	769	269
	Raspberries	554	222
	Plums	504	202
	Blackberries	166	83
Diclofop	Wheat for Grain	1,043,366	1,309,412
	Barley	74,303	98,004
Dicofol	Cotton	527,705	474,849
	All Citrus	302,464	133,593
	Dry Beans	109,230	102,863
	Apples	48,079	28,363
	Grapes	22,230	22,212
	Pecans	17,456	8,728
	Mint	11,394	9,495
	Tomatoes	11,324	10,257
	Strawberries	10,315	5,765
	Watermelons	8,362	10,939
Dicrotophos	Cotton	734,486	2,241,589
Diethatyl ethyl	Sugar Beets for Sugar	380,017	260,441
	Spinach	16,552	6,435
	Beets	793	373
Difenzoquat	Wheat for Grain	125,223	121,301
Difenzoquat	Barley	69,737	77,886
Diflubenzuron	Cotton	78,013	494,696
Dimethenamid	Corn	2,354,305	2,056,849
	Soybeans	261,674	264,317
Dimethipin	Cotton	141,889	446,441
Dimethoate	Wheat for Grain	1,269,355	967,133
	Alfalfa Hay	467,016	942,931
	Cotton	315,691	1,121,223
	Corn	233,048	498,141
	Sorghum	213,864	509,464
	All Citrus	210,037	117,317
	Apples	107,920	87,178
	Grapes	105,090	61,818
	Pecans	72,085	68,766
	Lettuce	57,122	130,339
Dimethomorph	Potatoes	6,678	26,656
Dinocap	Apples	5,693	6,721
	Grapes	4,534	14,666
	Pears	818	1,544
	Watermelons	193	322
Diphenamid	Tobacco	87,941	43,970
	Sweet Potatoes	15,711	3,928
	Strawberries	7,034	1,484
	Sweet Peppers	531	386
Diquat	Potatoes	176,943	378,942
	Alfalfa Hay	49,956	83,284
	Field and Grass Seed	2,878	4,568
Disulfoton	Cotton	495,256	954,116
	Wheat for Grain	475,657	663,295
	Corn	203,834	204,357
	Potatoes	184,498	63,529
	Peanuts	113,906	111,641
	Sorghum	92,029	188,038
	Tobacco	54,341	13,662
	Asparagus	38,770	30,010
	Barley	22,533	27,800
	Lettuce	16,479	11,743
Diuron	All Citrus	1,086,503	531,931
	Wheat for Grain	777,808	635,746

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Diuron	Cotton	742,308	1,170,832
	Field and Grass Seed	438,267	339,373
	Alfalfa Hay	208,984	148,015
	Grapes	101,155	102,603
	Other Hay	74,096	74,096
	Asparagus	64,429	43,588
	Apples	64,273	56,512
	Walnuts	33,017	25,358
Dodine	Apples	179,692	100,438
	Cherries	40,805	25,371
	Pears	31,784	17,966
	Pecans	31,130	30,822
	Peaches	13,858	5,965
	Strawberries	144	144
DSMA	Cotton	1,394,496	766,409
	Sod	852	852
Endosulfan	Cotton	736,166	742,134
	Apples	229,888	138,716
	Tomatoes	225,505	71,494
	Potatoes	195,041	195,208
	Pecans	130,538	80,216
	Pears	74,803	32,585
	Lettuce	61,006	49,737
	Grapes	56,636	41,681
	Squash	42,476	20,741
	Peaches	39,831	27,497
Endothall	Cotton	28,397	372,014
	Potatoes	22,616	24,955
	Sugar Beets for Sugar	10,647	32,002
	Field and Grass Seed	10,045	9,695
	Hops	2,258	4,516
EPTC	Corn	9,102,979	2,330,408
	Dry Beans	1,403,879	501,752
	Potatoes	1,313,936	373,974
	Alfalfa Hay	1,161,549	406,879
	Sugar Beets for Sugar	425,001	171,044
	Green Beans	300,475	112,760
	Sweet Corn	220,464	47,104
	Tomatoes	50,942	20,215
	Field and Grass Seed	37,034	14,081
	Safflower	35,000	10,086
Esfenvalerate	Cotton	99,096	1,119,890
	Corn	31,393	759,149
Esfenvalerate	Tomatoes	22,379	196,774
	Soybeans	12,969	154,610
	Pecans	11,889	80,501
	Potatoes	11,838	225,788
	Sweet Corn	9,633	83,819
	Wheat for Grain	5,862	195,392
	Cabbage	5,618	32,357
	Sunflowers	5,342	173,127
Ethalfluralin	Soybeans	1,061,584	1,294,110
	Peanuts	466,214	625,728
	Dry Beans	456,544	536,465
	Sunflowers	399,178	530,636
	Cucumbers	34,360	45,149
	Watermelons	18,404	25,198
	Green Beans	8,770	7,358
	Cantaloupes	6,405	8,010
	Dry Peas	3,922	6,878
	Squash	2,927	2,090
Ethephon	Cotton	2,869,000	2,662,406
	Tobacco	121,967	101,639
	Tomatoes	39,378	70,725
	Apples	20,445	30,618
	Walnuts	11,399	12,679
	Grapes	8,125	30,467
	Cherries	4,620	24,204
	Hot Peppers	2,129	3,548
	Barley	944	2,008
	Sweet Peppers	442	579
Ethion	All Citrus	841,628	225,953
	Onions	8,918	8,918
	Pecans	6,720	8,728
	Apples	5,838	3,970
	Avocados	4,691	1,167
	Melons	423	413
Ethofumesate	Sugar Beets for Sugar	342,531	325,583
	Field and Grass Seed	41,984	119,955
	Beets	34	56
Ethoprop	Potatoes	495,748	114,710
	Tobacco	426,341	102,581
	Sugar Cane for Seed and Sugar	181,703	39,346
	Peanuts	48,387	24,193
	Sweet Potatoes	41,409	8,826
	Sweet Corn	36,047	26,826

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Ethoprop	Green Beans	22,392	12,046
	Corn	13,971	5,566
	Cabbage	1,970	655
	Cucumbers	1,594	1,452
Ethyl parathion	Sorghum	397,593	696,033
	Corn	376,784	432,250
	Alfalfa Hay	370,659	683,717
	Wheat for Grain	338,630	782,130
	Sunflowers	240,192	216,712
	Cotton	206,221	331,126
	Soybeans	109,005	218,009
	Barley	19,356	41,299
	Oats	3,460	7,053
	Rye	1,085	2,170
Etridiazole	Cotton	98,217	593,651
Fenamiphos	Tobacco	271,813	241,723
	Grapes	148,506	101,996
	Cotton	121,642	82,501
	Peanuts	47,266	18,782
	Broccoli	32,203	16,514
	All Citrus	16,807	8,488
	Cauliflower	9,596	5,515
	Peaches	4,873	1,418
	Cherries	2,570	487
	Cabbage	2,559	1,738
Fenarimol	Apples	26,437	190,047
	Grapes	20,941	496,955
	Cherries	2,526	26,757
	Pears	939	11,670
Fenbutatin oxide	All Citrus	223,611	224,188
	Pecans	53,835	53,835
	Grapes	24,620	36,566
	Apples	24,061	29,271
	Almonds	18,552	35,269
	Strawberries	12,253	6,063
	Peaches	10,977	22,227
	Pears	4,453	4,783
	Walnuts	4,226	8,453
	Nectarines	3,326	4,291
Fenoxaprop	Soybeans	359,022	3,346,290
	Wheat for Grain	148,581	1,857,121
	Rice	26,752	198,953
	Peanuts	7,641	50,943
	Cotton	1,642	8,917
Fenpropathrin	Cotton	135,514	282,322
	All Citrus	6,144	19,199
	Tomatoes	5,049	18,701
Fenvalerate	Cotton	26,116	105,879
	Corn	16,132	87,015
	Potatoes	4,790	24,731
	Soybeans	4,548	22,739
	Sorghum	4,031	40,314
	Squash	2,299	3,886
	Alfalfa Hay	1,578	7,890
	Apples	906	1,132
	Green Beans	598	3,224
	Sunflowers	584	3,896
Ferbam	Grapes	74,813	25,533
	Peaches	73,804	28,086
	Cherries	34,427	7,460
	Cranberries	20,600	4,601
	Apples	10,558	1,957
	Pears	8,502	1,703
	Raspberries	1,269	835
Fluazifop	Soybeans	569,653	5,770,351
	Cotton	160,368	912,188
	Onions	7,377	30,225
	All Citrus	4,756	15,341
	Sweet Potatoes	3,523	33,243
	Carrots	3,342	17,582
	Peanuts	3,123	16,436
	Mint	1,085	6,825
	Garlic	953	3,300
	Lettuce	742	2,852
Flumetsulam	Corn	41,443	665,461
	Soybeans	36,916	608,936
Fluometuron	Cotton	4,500,857	4,983,276
Fomesafen	Soybeans	540,173	1,970,733
	Green Beans	2,749	8,898
Fonofos	Corn	2,182,026	2,098,413
	Peanuts	289,569	148,245
	Potatoes	88,102	37,438
	Mint	62,928	30,696
	Sweet Potatoes	58,282	14,570
	Sweet Corn	29,505	21,497
	Green Beans	19,973	9,271
Fonofos	Sugar Beets for Sugar	17,201	16,795

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Fonofos	Tobacco	12,863	8,188
	Asparagus	10,647	4,964
Formetanate HCl	All Citrus	165,042	136,630
	Apples	96,935	74,594
	Nectarines	43,984	35,759
	Alfalfa Hay	6,886	9,381
	Pears	6,683	8,583
	Peaches	6,221	6,891
	Plums	2,359	2,609
Fosetyl-Al	Lettuce	24,695	92,868
	All Citrus	192,941	40,840
	Hops	33,870	7,796
	Cauliflower	4,595	2,298
	Onions	3,593	1,843
	Spinach	2,724	1,124
	Collards	1,043	498
	Asparagus	842	261
	Broccoli	439	241
	Avocados	369	671
Gibberellic acid	Grapes	26,471	374,525
	All Citrus	3,604	70,294
	Apples	2,744	89,976
	Cherries	772	24,653
	Blueberries	74	438
	Artichokes	74	3,235
	Hops	20	1,314
	Carrots	10	3,375
Glyphosate	Soybeans	6,492,564	10,386,426
	Corn	3,102,793	4,463,460
	All Citrus	1,139,922	648,562
	All Pasture	991,773	2,450,794
	Wheat for Grain	953,321	1,681,278
	Cotton	702,753	1,008,356
	Almonds	476,132	440,863
	Grapes	430,492	509,544
	Sorghum	309,632	500,487
	Rice	203,008	204,477
Hexazinone	Alfalfa Hay	439,542	555,480
	Blueberries	15,186	13,538
	Field and Grass Seed	6,012	11,809
	Sugar Cane for Seed and Sugar	742	1,649
Imazamethabenz	Wheat for Grain	419,054	1,333,384
	Barley	30,234	83,671
Imazamethabenz	Sunflowers	313	31,262
	Corn	262	8,731
Imazaquin	Soybeans	807,270	8,634,943
Imazethapyr	Soybeans	1,325,374	21,971,760
	Corn	21,889	364,819
	Peanuts	18,850	305,425
	Dry Beans	7,479	14,957
	Green Peas	2,234	63,127
	Green Beans	1,025	34,164
	Alfalfa Hay	485	4,845
Imidacloprid	Cotton	34,676	799,497
	Potatoes	26,291	158,228
Iprodione	Almonds	332,375	273,335
	Potatoes	112,209	114,019
	Grapes	104,347	126,892
	Rice	99,401	180,285
	Peaches	68,814	73,974
	Lettuce	51,358	53,552
	Strawberries	43,513	21,166
	Cherries	43,063	46,263
	Onions	30,934	28,948
	Carrots	30,426	23,761
Isopropalin	Tobacco	139,291	139,275
Lactofen	Soybeans	293,654	3,128,785
	Cotton	78,292	491,664
	Tomatoes	2,493	24,935
	Green Beans	2,057	2,743
	Sweet Peppers	919	9,190
Lambdacyhalothrin	Cotton	212,782	2,666,028
	Onions	664	14,306
Lindane	Pecans	57,494	79,507
	Squash	6,272	7,433
	Safflower	3,110	1,681
	Sugar Beets for Sugar	2,136	1,512
	Lettuce	636	1,957
	Sweet Peppers	291	579
	Melons	253	1,858
	Cantaloupes	119	515
	Cauliflower	118	460
Linuron	Hot Peppers	61	124
	Soybeans	1,573,478	2,698,041

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Linuron	Cotton	216,174	265,648
	Potatoes	93,339	111,044
	Carrots	73,568	54,531
	Asparagus	14,118	15,757
	Celery	4,155	4,462
Malathion	Cotton	1,289,790	654,904
	Alfalfa Hay	627,335	449,864
	Sorghum	231,109	176,281
	Wheat for Grain	112,212	119,732
	Rice	98,241	122,265
	Strawberries	91,347	13,081
	Apples	76,804	54,979
	Cherries	72,032	18,959
	Blueberries	57,124	18,837
	Barley	33,837	35,696
Maleic hydrazide	Tobacco	1,900,910	613,197
	Potatoes	181,300	81,165
	Onions	43,367	27,069
Mancozeb	Potatoes	2,275,952	553,681
	Tomatoes	1,431,080	125,752
	Apples	1,202,774	210,878
	Wheat for Grain	688,551	426,818
	Sweet Corn	482,144	132,725
	Watermelons	378,949	60,106
	Grapes	342,661	125,165
	Squash	282,468	30,273
	Cotton	242,627	115,967
	Cucumbers	233,671	28,494
Maneb	Potatoes	874,158	203,667
	Tomatoes	470,344	64,428
	Lettuce	429,769	135,085
	Sweet Peppers	242,259	24,192
	Sweet Corn	221,487	59,400
	Almonds	184,669	61,721
	Pumpkins	125,087	13,703
	Onions	102,982	19,469
	Watermelons	98,655	19,913
	Cabbage	68,694	15,149
MCPA	Wheat for Grain	3,445,394	9,352,843
	Barley	633,976	1,680,914
	All Pasture	225,232	416,107
	Oats	207,439	548,897
	Rice	60,022	75,416
	Field and Grass Seed	51,260	114,985
	Flax	13,334	53,336
	Dry Peas	7,103	27,853
	Rye	6,942	13,878
	Green Peas	6,636	31,193
MCPB	Green Peas	26,346	46,386
	Sod	17,301	19,245
	Dry Peas	9,982	10,938
MCPP	Field and Grass Seed	629	524
Mepiquat chloride	Cotton	110,871	2,854,066
Metalaxyl	Tobacco	394,861	759,847
	Potatoes	110,363	347,176
	All Citrus	104,307	76,304
	Cotton	64,455	790,181
	Tomatoes	38,245	87,294
	Onions	22,424	64,838
	Watermelons	16,932	32,308
	Peanuts	16,251	32,501
	Lettuce	16,214	43,069
	Apples	16,105	5,404
Metaldehyde	All Citrus	29,785	48,350
	Field and Grass Seed	16,445	22,841
	Strawberries	4,202	3,494
	Artichokes	3,910	3,720
	Raspberries	764	624
	Avocados	572	1,342
	Cauliflower	451	418
	Mint	394	464
	Sweet Peppers	143	386
	Green Beans	95	249
Metam sodium	Potatoes	22,405,286	147,207
	Peanuts	3,696,806	116,252
	Tomatoes	2,236,921	63,172
	Cotton	1,260,255	31,913
	Onions	482,475	3,390
	Carrots	467,638	3,325
	Lettuce	339,194	1,957
	Brussel Sprouts	242,152	3,354
	Cantaloupes	184,965	2,059
	Watermelons	134,103	1,538
Methamidophos	Potatoes	376,011	283,748
	Cotton	309,752	391,634
	Tomatoes	242,236	90,473

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Methamidophos	Sugar Beets for Sugar	43,255	34,771
	Watermelons	34,093	13,735
	Alfalfa Hay	25,085	18,762
	Cabbage	20,770	17,205
	Broccoli	18,074	15,611
	Lettuce	8,828	9,862
	Eggplant	5,666	1,061
Methazole	Cotton	491,795	859,590
Methidathion	All Citrus	159,771	59,319
	Almonds	91,700	70,538
	Plums	63,607	41,983
	Peaches	36,225	25,332
	Safflower	35,403	60,518
	Walnuts	35,286	23,245
	Artichokes	16,904	8,088
	Apples	14,550	17,204
	Alfalfa Hay	14,071	28,143
	Nectarines	12,676	7,509
Methomyl	Cotton	409,821	875,885
	Sweet Corn	315,003	171,008
	Lettuce	247,866	190,100
	Apples	153,951	139,278
	Alfalfa Hay	122,379	192,585
	Corn	116,553	248,365
	Peanuts	99,489	248,722
	Tomatoes	94,352	90,409
	Sorghum	88,785	224,629
	Grapes	75,880	100,640
Methoxychlor	Apples	73,866	52,387
	Squash	4,764	3,811
	Field and Grass Seed	4,284	4,189
	Grapes	2,738	401
	Green Peas	1,181	653
	Strawberries	489	220
	Dry Peas	235	117
	Blueberries	98	50
Methyl bromide	Tomatoes	13,035,891	70,359
	Tobacco	5,603,849	12,534
	Strawberries	5,529,716	26,936
	Watermelons	3,748,578	18,025
	Sweet Peppers	3,140,497	16,608
	Grapes	2,666,467	7,285
	Almonds	1,697,323	22,043
	Carrots	607,371	3,325
Methyl bromide	Nectarines	478,112	2,146
	Cucumbers	406,988	2,236
Methyl parathion	Cotton	5,899,626	2,788,735
	Corn	1,014,112	1,850,090
	Alfalfa Hay	396,642	498,640
	Wheat for Grain	330,999	763,679
	Rice	267,585	519,167
	Soybeans	220,688	453,360
	Apples	208,979	126,939
	Sunflowers	199,057	124,474
	Peaches	115,432	56,584
	Sweet Corn	50,466	67,996
Metiram	Apples	614,448	69,228
	Potatoes	307,696	57,893
Metolachlor	Corn	41,546,112	21,901,483
	Soybeans	9,916,637	5,195,717
	Sorghum	3,089,336	2,250,997
	Peanuts	1,319,308	651,241
	Cotton	602,112	492,953
	Sweet Corn	494,057	230,905
	Potatoes	357,695	193,345
	Dry Beans	351,784	188,490
	Green Beans	175,669	112,500
	Green Peas	33,228	19,125
Metribuzin	Soybeans	1,707,148	6,119,359
	Potatoes	377,256	779,416
	Alfalfa Hay	215,321	348,321
	Sugar Cane for Seed and Sugar	189,811	145,324
	Wheat for Grain	82,793	417,650
	Tomatoes	48,913	87,892
	Field and Grass Seed	29,704	65,288
	Corn	26,825	383,208
	Asparagus	14,377	13,995
	Dry Peas	8,574	25,654
Metsulfuron	Wheat for Grain	34,589	7,511,573
	Barley	945	236,351
Mevinphos	Lettuce	101,986	118,207
	Broccoli	19,642	21,913
	Collards	12,048	5,745
	Cabbage	11,338	8,137
	Cauliflower	7,028	8,475
	Squash	7,003	8,497
	Sweet Peppers	6,779	5,592

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Mevinphos	Alfalfa Hay	6,675	20,162
	Green Peas	6,318	17,592
	Sweet Corn	5,861	11,907
Molinate	Rice	4,903,206	1,420,255
MSMA	Cotton	5,737,271	3,793,231
	Sod	14,555	6,350
	All Citrus	11,543	7,874
Myclobutanil	Grapes	213,321	735,200
	Apples	74,972	293,780
	Cherries	12,203	55,060
	Nectarines	7,125	8,940
	Peaches	3,673	27,695
	Tomatoes	3,613	32,849
	Strawberries	2,905	13,204
NAA	Apples	10,938	195,507
	Pears	2,651	39,364
	Olives	76	355
NAD	Apples	3,974	51,143
Naled	Cotton	153,184	159,566
	Safflower	24,557	36,983
	All Citrus	22,817	19,806
	Grapes	19,904	29,142
	Alfalfa Hay	16,390	14,967
	Broccoli	10,880	7,772
	Sugar Beets for Sugar	8,665	10,080
	Field and Grass Seed	5,878	11,995
	Brussel Sprouts	5,185	3,744
	Cabbage	5,068	3,325
Napropamide	Tobacco	198,830	180,407
	Tomatoes	84,867	75,940
	Cranberries	44,513	10,309
	Strawberries	33,340	10,017
	Sweet Potatoes	17,220	17,220
	Almonds	16,779	8,817
	Sweet Peppers	16,772	14,040
	Grapes	12,929	7,739
	Hot Peppers	8,904	6,544
	Peaches	4,606	2,507
Naptalam	Cucumbers	61,484	24,919
	Watermelons	25,840	11,914
	Cantaloupes	10,425	6,013
	Pumpkins	932	173
Naptalam	Melons	782	612
Nicosulfuron	Corn	284,159	9,821,302
Norflurazon	Cotton	1,573,179	2,030,640
	All Citrus	417,879	122,686
	Almonds	55,637	44,086
	Peanuts	52,403	56,347
	Grapes	48,272	49,694
	Apples	31,581	30,771
	Blueberries	16,833	4,676
	Plums	14,674	11,879
	Peaches	14,012	12,286
	Asparagus	11,463	5,879
Oil	All Citrus	20,100,541	367,576
	Apples	13,827,892	407,562
	Almonds	6,070,684	224,840
	Pears	5,795,382	74,803
	Plums	2,387,612	89,179
	Peaches	2,123,019	75,286
	Cherries	966,923	25,385
	Nectarines	956,219	26,462
	Olives	299,827	5,686
	Apricots	268,147	10,748
Oryzalin	Grapes	206,036	112,884
	Almonds	179,026	105,807
	All Citrus	94,664	31,772
	Pistachios	62,646	24,012
	Apples	42,676	26,798
	Peaches	35,658	32,608
	Pecans	32,921	70,070
	Plums	32,338	17,419
	Cherries	19,644	10,365
	Pears	17,213	11,677
Oxamyl	Cotton	477,086	1,328,662
	Potatoes	75,625	77,547
	Apples	72,819	122,200
	Mint	61,554	48,468
	Sweet Peppers	27,967	13,362
	Celery	23,599	18,904
	Tomatoes	21,537	21,289
	Cucumbers	12,269	9,139
	Onions	11,075	8,157
Oxamyl	Melons	9,379	14,260
Oxydemeton Methyl	Cotton	96,333	210,348
	Broccoli	41,573	66,379

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Oxydemeton Methyl	Cauliflower	28,803	35,485
	Field Grass and Seed	15,674	31,988
	Mint	14,687	18,305
	Sugar Beets for Sugar	7,763	14,615
	Cabbage	7,268	7,773
	Sorghum	4,753	9,511
	Brussel Sprouts	4,329	3,900
	Sweet Peppers	3,171	5,984
Oxyfluorfen	Grapes	102,702	144,720
	Almonds	95,932	282,152
	Cotton	77,944	380,376
	Apples	37,006	23,945
	Pistachios	26,385	25,346
	Field and Grass Seed	22,841	114,203
	Olives	22,441	6,397
	Onions	16,110	76,704
	Plums	15,092	30,005
	Walnuts	12,552	46,490
Oxytetracycline	Pears	17,638	45,258
	Peaches	17,292	23,394
	Apples	390	2,555
Oxythioquinox	All Citrus	84,925	115,328
	Pears	32,095	28,418
	Apples	26,159	58,942
	Walnuts	1,226	2,113
	Strawberries	321	1,340
	Apricots	147	239
Paraquat	Corn	1,240,472	2,298,051
	Soybeans	1,222,533	2,282,829
	Cotton	634,304	2,020,983
	Alfalfa Hay	112,891	204,360
	Peanuts	110,997	889,524
	Sorghum	106,352	425,410
	Grapes	98,385	167,807
	Almonds	79,250	123,442
	Apples	74,096	129,720
	All Citrus	66,571	86,693
PCNB	Cotton	1,207,448	1,476,625
	Peanuts	447,997	89,599
	Cabbage	11,467	2,333
	Brussel Sprouts	11,093	507
	Broccoli	8,490	1,943
	Green Beans	5,427	7,161
	Cauliflower	2,070	662
PCNB	Dry Beans	602	7,528
	Onions	400	67
	Dry Peas	0	25
Pebulate	Tobacco	438,651	111,987
	Tomatoes	105,522	40,683
	Sugar Beets for Sugar	16,300	4,535
Pendimethalin	Soybeans	12,728,006	13,629,471
	Corn	3,957,004	3,269,047
	Cotton	1,986,008	2,595,719
	Peanuts	479,612	506,696
	Sugar Cane for Seed and Sugar	375,676	187,838
	Tobacco	336,278	418,361
	Potatoes	242,424	256,402
	Rice	198,661	276,579
	Sunflowers	149,703	134,880
	Onions	85,056	34,326
Permethrin	Corn	405,729	3,572,476
	Wheat for Grain	160,196	1,607,085
	Alfalfa Hay	156,160	748,047
	Sweet Corn	111,657	288,275
	Lettuce	48,706	215,036
	Tomatoes	43,622	39,868
	Cotton	42,091	293,441
	Potatoes	42,065	242,600
	Onions	23,295	38,491
	Peaches	21,576	78,275
Phenmedipham	Sugar Beets for Sugar	180,624	946,995
	Beets	1,199	1,423
	Spinach	704	1,127
	Field and Grass Seed	640	3,998
Phorate	Corn	1,696,959	1,518,797
	Potatoes	838,166	318,365
	Cotton	414,009	587,994
	Sugar Cane for Seed and Sugar	329,645	84,524
	Wheat for Grain	161,429	167,763
	Peanuts	150,613	135,687
	Sorghum	117,781	106,147
	Sugar Beets for Sugar	46,572	41,653
	Sweet Corn	30,951	24,358
Phorate	Green Beans	17,053	12,677
Phosmet	Apples	506,042	155,668
	Pears	95,769	26,648

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Phosmet	Alfalfa Hay	87,319	115,090
	Peaches	81,368	27,694
	Almonds	44,483	8,817
	Potatoes	28,701	29,092
	Cherries	20,381	15,330
	Plums	15,757	6,430
	Green Peas	13,464	17,952
	Grapes	11,548	9,545
Picloram	All Pasture	1,583,553	6,620,303
	Other Hay	113,067	144,198
	Wheat for Grain	21,040	300,576
	Flax	3,336	6,673
	Oats	1,907	19,075
	Barley	256	12,819
Primisulfuron	Corn	64,406	2,192,931
Profenofos	Cotton	2,121,560	1,695,563
Prometryn	Cotton	1,821,722	2,540,598
	Celery	20,617	16,894
	Parsley	2,962	1,551
Pronamide	Lettuce	131,865	149,126
	Alfalfa Hay	27,797	34,231
	Field and Grass Seed	23,948	36,117
	Pears	16,534	5,101
	Artichokes	1,372	1,213
	Raspberries	569	739
	Apples	258	663
	Blackberries	254	416
	Blueberries	65	109
Propachlor	Corn	2,224,304	940,811
	Sorghum	1,620,434	724,478
	Sweet Corn	12,011	6,355
	Green Peas	8,784	3,231
Propamocarb	Potatoes	54,198	55,337
Propanil	Rice	7,229,829	2,337,989
Propargite	Corn	839,821	495,451
	Grapes	433,724	269,561
	Cotton	420,263	240,841
	Almonds	392,007	202,797
	Apples	330,626	154,788
	Peanuts	183,876	114,923
Propargite	Mint	136,235	67,048
	Alfalfa Hay	94,615	54,832
	Potatoes	88,857	43,039
	Dry Beans	85,114	65,232
Propiconazole	Wheat for Grain	103,381	913,126
	Rice	76,949	281,918
	Field and Grass Seed	47,582	339,872
	Pecans	34,391	134,932
	Barley	12,386	95,280
	Sweet Corn	10,940	46,289
	Peaches	4,208	19,569
	Wild Rice	830	7,545
	Celery	463	2,257
	Rye	212	3,023
Pyrazon	Sugar Beets for Sugar	299,491	201,139
	Beets	16,934	5,016
	Field and Grass Seed	4,798	3,998
Pyridate	Peanuts	80,327	86,373
	Cabbage	589	621
Quinclorac	Rice	126,968	342,392
Quizalofop	Soybeans	191,023	3,611,894
Sethoxydim	Soybeans	737,842	3,991,533
	Cotton	266,883	1,009,322
	Sugar Beets for Sugar	97,363	476,070
	Peanuts	70,423	251,512
	Alfalfa Hay	48,318	187,412
	Potatoes	17,572	77,632
	Mint	14,043	51,751
	Dry Beans	7,934	39,480
	Sunflowers	7,392	63,612
	Tomatoes	5,313	31,847
Siduron	Sod	247	62
Simazine	Corn	2,349,911	1,964,438
	All Citrus	1,140,321	350,409
	Grapes	481,199	314,580
	Alfalfa Hay	333,372	347,681
	Apples	114,112	100,610
	Peaches	61,784	50,069
	Almonds	59,940	96,990
	Walnuts	39,749	31,698
	Pecans	32,490	21,784
	Asparagus	31,155	20,454

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Sodium chlorate	Cotton	4,581,793	1,507,850
	Dry Beans	564,725	188,241
	Hot Peppers	33,504	4,171
	Safflower	29,856	5,043
	Rice	19,606	4,005
	Sunflowers	10,091	1,771
	Sweet Corn	3,303	634
	Sorghum	856	154
Streptomycin	Apples	90,256	140,562
	Pears	18,187	44,865
	Onions	36	200
Sulfur	Grapes	51,130,764	756,273
	Tomatoes	7,203,079	154,171
	Sugar Beets for Sugar	7,152,381	264,056
	Peaches	5,700,305	163,609
	All Citrus	2,631,665	98,725
	Apples	2,441,969	130,194
	Peanuts	1,500,906	294,181
	Cherries	1,270,414	63,735
	Pecans	1,093,392	99,237
	Dates	864,919	5,881
Sulfuric acid	Potatoes	25,941,349	105,608
Sulprofos	Cotton	842,478	530,154
Tebufenozide	Cotton	42,104	290,444
Tebuthiuron	All Pasture	104,591	209,183
Tefluthrin	Corn	423,845	3,561,133
	Sweet Corn	128	1,067
Terbacil	Mint	120,298	123,124
	Sugar Cane for Seed and Sugar	59,169	52,595
	Alfalfa Hay	35,795	66,080
	Apples	30,348	41,159
	Peaches	19,160	23,097
	Field and Grass Seed	6,920	11,477
	Blueberries	6,474	8,748
	Strawberries	2,710	5,154
Terbacil	Asparagus	1,591	2,628
	Pecans	1,242	1,657
Terbufos	Corn	6,497,298	5,949,434
	Sugar Beets for Sugar	472,498	432,038
Terbufos	Sorghum	181,752	247,071
	Sweet Corn	48,529	47,370
Thiabendazole	Wheat for Grain	159,142	289,350
Thidiazuron	Cotton	452,393	2,717,045
Thifensulfuron	Wheat for Grain	56,660	4,715,217
	Soybeans	18,689	6,248,335
	Barley	7,631	685,164
Thiobencarb	Rice	1,436,364	473,210
Thiodicarb	Cotton	1,172,802	1,664,837
	Sweet Corn	169,413	69,190
	Soybeans	141,175	225,386
	Cauliflower	2,151	2,757
	Cabbage	1,935	1,324
	Broccoli	597	694
Thiophanate-methyl	Apples	105,174	99,667
	Soybeans	100,526	167,544
	Peaches	89,745	55,810
	Wheat for Grain	52,144	86,906
	Dry Beans	49,026	48,373
	Almonds	35,401	48,495
	Pecans	24,296	29,630
	Green Beans	12,965	9,815
	Peanuts	9,125	6,156
	Strawberries	6,760	4,751
Thiram	Apples	139,755	30,116
	Strawberries	117,301	15,007
	Peaches	9,320	1,353
Tralomethrin	Cotton	42,376	765,264
	Soybeans	10,955	547,744
Triadimefon	Wheat for Grain	45,990	437,375
	Grapes	30,285	160,456
	Sugar Beets for Sugar	14,454	15,003
	Apples	10,926	62,926
	Tomatoes	3,942	32,849
	Cantaloupes	1,906	17,605
Triadimefon	Watermelons	1,712	12,915
	Pears	1,434	7,417
	Pumpkins	808	4,728
	Sweet Peppers	558	3,281

Table 4. Primary crops that account for use of each pesticide, 1992–1995—Continued

Compound	Crop	Total amount applied (pounds)	Total area treated (acres)
Triallate	Wheat for Grain	1,821,278	1,788,445
	Barley	390,850	375,954
	Dry Peas	39,678	31,743
	Green Peas	27,519	24,010
	Flax	4,004	4,004
	Canola	336	240
Triasulfuron	Wheat for Grain	31,369	2,762,515
Tribenuron	Wheat for Grain	46,571	5,846,187
	Barley	2,929	371,924
Tribufos	Cotton	3,721,092	3,978,201
Trichlorfon	Other Hay	6,184	6,184
	Alfalfa Hay	1,886	10,478
	Corn	1,278	1,704
	Tobacco	756	756
	Sod	212	78
	Cotton	41	406
Triclopyr	All Pasture	90,070	180,141
	Rice	67,750	204,557
	Other Hay	34,281	68,562
	Sod	605	864
Tridiphane	Corn	255,871	440,172
Trifluralin	Soybeans	11,099,394	13,354,394
	Cotton	4,736,822	6,380,474
	Alfalfa Hay	991,611	689,449
	Sunflowers	645,436	840,637
	Wheat for Grain	558,665	1,517,700
	Dry Beans	324,002	558,266
	Barley	290,602	488,713
	Sugar Cane for Seed and Sugar	245,381	125,164
	Tomatoes	126,694	164,441
	Green Peas	96,034	179,413
Triforine	Peaches	61,996	67,125
	Blueberries	12,797	19,928
	Plums	11,974	22,896
	Nectarines	5,514	10,728
	Apples	3,374	6,831
Triforine	Cherries	2,773	6,879
	Cranberries	2,604	2,604
	Apricots	1,776	3,344
	Asparagus	682	3,130
Trimethacarb	Corn	151,150	151,150
Triphenyltin hydroxide	Pecans	188,252	253,402
	Sugar Beets for Sugar	161,526	404,008
	Potatoes	60,173	218,045
Vernolate	Peanuts	489,052	254,429
	Sweet Corn	9,635	3,300
Vinclozolin	Lettuce	50,820	37,841
	Green Beans	23,436	39,710
	Strawberries	21,688	15,763
	Peaches	13,598	11,268
	Raspberries	3,804	3,942
	Cherries	2,786	2,856
	Nectarines	1,161	1,430
	Plums	844	1,305
	Apricots	828	1,194
	Onions	622	658
Ziram	Almonds	1,460,271	268,926
	Apples	679,782	99,234
	Peaches	193,831	34,695
	Pears	180,525	36,572
	Pecans	160,100	38,511
	Nectarines	39,428	7,152
	Apricots	20,647	3,583
	Cherries	12,628	2,331
	Blueberries	12,601	1,526
	Strawberries	562	187

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995
[H, herbicide; I, insecticide; F, fumigant; OP, other pesticide; lb a.i., pounds active ingredient]

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Acadian–Pontchartrain (ACAD)								
[Study Unit Area: 16,497,232 acres; Area in Cropland and Pasture: 2,356,012 acres]								
Atrazine	H	890,515	687,191	1.39	1.21	0.38	13.82	3.17
2,4-D	H	881,177	1,344,789	2.37	1.73	0.37	13.68	6.56
Propanil	H	851,492	272,914	11.78	11.67	0.36	13.22	14.65
Molinate	H	820,484	249,387	16.73	17.56	0.35	12.73	20.2
Pendimethalin	H	394,383	213,675	1.9	0.99	0.17	6.12	3.68
Trifluralin	H	360,805	251,462	1.82	0.99	0.15	5.6	3.68
Methyl parathion	I	252,351	297,244	2.83	3.97	0.11	3.92	4.55
Metolachlor	H	233,960	129,641	0.4	0.42	0.1	3.63	0.86
Alachlor	H	137,974	119,939	0.54	0.83	0.06	2.14	1.21
Azinphos methyl	I	132,399	176,228	5.31	6.82	0.06	2.06	9.47
Carbofuran	I	123,907	193,842	2.42	2.98	0.05	1.92	5.47
Asulam	H	112,458	51,824	15.6	15.51	0.05	1.75	15.75
Metribuzin	H	91,409	179,241	3.38	2.13	0.04	1.42	5.53
Glyphosate	H	79,100	143,329	0.49	0.6	0.03	1.23	0.95
Apalachicola–Chattahoochee–Flint River Basin (ACFB)								
[Study Unit Area: 12,906,062 acres; Area in Cropland and Pasture: 1,701,090 acres]								
Chlorothalonil	F	2,307,838	428,626	18.03	13.66	1.36	18.14	25.55
1,3-D	OP	2,045,959	42,615	5.11	8.65	1.2	16.08	8.33
Sulfur	F	1,216,482	166,373	1.4	6.73	0.72	9.56	2
Methyl bromide	OP	844,656	3,772	2.15	1.85	0.5	6.64	3.01
Aldicarb	I	540,229	387,259	12.61	8.97	0.32	4.25	17
Chlorpyrifos	I	443,325	315,581	2.88	2.26	0.26	3.48	5.51
Metolachlor	H	341,562	179,486	0.59	0.57	0.2	2.68	1.26
Atrazine	H	310,675	201,177	0.49	0.35	0.18	2.44	1.11
MSMA	H	297,927	139,555	5.17	3.67	0.18	2.34	6.36
Bentazon	H	283,109	377,647	4.21	3.77	0.17	2.22	7.29
Pendimethalin	H	267,082	282,061	1.29	1.31	0.16	2.1	2.49
2,4-D	H	161,826	296,613	0.44	0.38	0.1	1.27	1.21
Ethalfluralin	H	159,530	217,612	6.49	7.06	0.09	1.25	11.08
Carbaryl	I	155,994	83,681	3.43	2.83	0.09	1.23	6.68
PCNB	F	146,795	94,948	8.66	5.99	0.09	1.15	11.98
Vernolate	H	139,714	78,961	28.02	30.64	0.08	1.1	32.74
Ethephon	OP	135,463	90,895	4.4	3.09	0.08	1.06	5.77
Metam sodium	OP	133,937	4,212	0.42	1.1	0.08	1.05	0.55
Albemarle–Pamlico Drainage (ALBE)								
[Study Unit Area: 18,010,678 acres; Area in Cropland and Pasture: 3,398,439 acres]								
1,3-D	OP	7,837,999	116,983	19.58	23.74	2.31	34.79	31.91
Metam sodium	OP	2,922,329	91,897	9.07	23.94	0.86	12.97	11.92
Metolachlor	H	914,403	471,278	1.58	1.51	0.27	4.06	3.36
Chlorpyrifos	I	693,138	334,070	4.5	2.39	0.2	3.08	8.61

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Albemarle–Pamlico Drainage (ALBE)—Continued								
Alachlor	H	595,398	376,662	2.32	2.59	0.18	2.64	5.21
Chlorothalonil	F	537,828	213,284	4.2	6.8	0.16	2.39	5.95
Acephate	I	526,309	328,322	14.46	10.3	0.15	2.34	25.5
Maleic hydrazide	OP	493,458	159,696	23.22	22.14	0.15	2.19	45.66
Atrazine	H	408,459	365,854	0.64	0.64	0.12	1.81	1.46
Aldicarb	I	380,977	439,612	8.9	10.19	0.11	1.69	11.99
2,4-D	H	325,241	684,729	0.87	0.88	0.1	1.44	2.42
Pendimethalin	H	314,730	407,128	1.52	1.89	0.09	1.4	2.93
Allegheny and Monongahela Basins (ALMN)								
[Study Unit Area: 12,219,692 acres; Area in Cropland and Pasture: 1,401,659 acres]								
Metolachlor	H	236,098	131,184	0.41	0.42	0.17	16.07	0.87
Atrazine	H	192,926	165,413	0.3	0.29	0.14	13.13	0.69
Mancozeb	F	110,929	20,413	1.34	1	0.08	7.55	2.07
Pendimethalin	H	92,184	73,576	0.45	0.34	0.07	6.28	0.86
Glyphosate	H	68,533	73,400	0.43	0.31	0.05	4.67	0.82
Alachlor	H	63,184	36,814	0.25	0.25	0.05	4.3	0.55
Sulfur	F	57,859	4,863	0.07	0.2	0.04	3.94	0.1
Simazine	H	55,049	59,016	1.14	1.72	0.04	3.75	1.79
Oil	I	54,522	1,779	0.1	0.13	0.04	3.71	0.14
Chlorpyrifos	I	48,032	44,386	0.31	0.32	0.03	3.27	0.6
Cyanazine	H	47,927	28,324	0.16	0.18	0.03	3.26	0.35
Dimethoate	I	42,906	70,582	1.26	1.37	0.03	2.92	3.88
Carbaryl	I	35,493	12,961	0.78	0.44	0.03	2.42	1.52
2,4-D	H	33,157	67,782	0.09	0.09	0.02	2.26	0.25
Captan	F	26,647	4,759	0.7	0.81	0.02	1.81	1.37
Carbofuran	I	23,425	33,608	0.46	0.52	0.02	1.59	1.03
Ferbam	F	17,885	6,518	7.99	9.29	0.01	1.22	13.51
Terbufos	I	17,288	12,887	0.24	0.19	0.01	1.18	0.56
Chlorothalonil	F	15,799	4,592	0.12	0.15	0.01	1.08	0.18
Dicamba	H	15,731	53,532	0.16	0.14	0.01	1.07	0.39
Central Arizona Basins (CAZB)								
[Study Unit Area: 21,537,788 acres; Area in Cropland and Pasture: 448,332 acres]								
Sodium chlorate	OP	621,644	108,489	11.86	6.34	1.39	16.01	15.35
1,3-D	OP	444,830	13,413	1.11	2.72	0.99	11.46	1.81
Acephate	I	307,803	235,078	8.46	7.38	0.69	7.93	14.91
Chlorpyrifos	I	237,618	169,179	1.54	1.21	0.53	6.12	2.95
2,4-D	H	232,258	462,976	0.62	0.6	0.52	5.98	1.73
Endosulfan	I	148,103	105,008	7.09	6.5	0.33	3.81	10.97
Sulfur	F	129,506	6,999	0.15	0.28	0.29	3.34	0.21
Azinphos methyl	I	112,953	31,562	4.53	1.22	0.25	2.91	8.08
Trifluralin	H	105,992	105,436	0.54	0.42	0.24	2.73	1.08

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Central Arizona Basins (CAZB)—Continued								
Profenofos	I	102,459	78,213	4.83	4.61	0.23	2.64	7.01
Tribufos	OP	100,668	95,874	2.71	2.41	0.22	2.59	3.79
Propargite	I	96,354	47,937	2.81	2.47	0.21	2.48	4.47
Prometryn	H	87,195	80,736	4.73	3.16	0.19	2.25	8.46
Dicofol	I	86,642	77,524	7.95	9.27	0.19	2.23	10.25
Fenpropathrin	I	81,499	171,427	55.55	53.53	0.18	2.1	94.8
Malathion	I	75,128	38,124	2.42	1.97	0.17	1.94	5.21
Diuron	H	63,849	130,187	1.7	4.01	0.14	1.64	2.36
Thidiazuron	OP	62,520	148,857	13.82	5.48	0.14	1.61	22.16
Methyl parathion	I	57,984	38,610	0.65	0.52	0.13	1.49	1.05
Methomyl	I	56,232	72,093	2.3	2.11	0.13	1.45	3.86
Pendimethalin	H	50,511	65,598	0.24	0.31	0.11	1.3	0.47
Aldicarb	I	49,199	63,075	1.15	1.46	0.11	1.27	1.55
Glyphosate	H	44,723	33,738	0.28	0.14	0.1	1.15	0.54
Central Columbia Plateau (CCPT)								
[Study Unit Area: 8,371,111 acres; Area in Cropland and Pasture: 2,922,874 acres]								
Metam sodium	OP	7,090,563	45,881	22	11.95	2.43	38.63	28.93
1,3-D	OP	3,126,158	19,058	7.81	3.87	1.07	17.03	12.73
Oil	I	1,732,642	46,091	3.26	3.4	0.59	9.44	4.49
Sulfuric acid	OP	1,341,165	6,534	5.17	6.19	0.46	7.31	6.17
2,4-D	H	526,520	991,350	1.41	1.27	0.18	2.87	3.92
EPTC	H	326,598	101,251	2.32	2.52	0.11	1.78	4.95
Diuron	H	314,555	261,189	8.4	8.04	0.11	1.71	11.62
Chlorothalonil	F	284,512	70,275	2.22	2.24	0.1	1.55	3.15
Sulfur	F	259,228	35,576	0.3	1.44	0.09	1.41	0.43
MCPA	H	243,746	608,257	5.23	4.94	0.08	1.33	10.81
Chloropicrin	OP	242,113	4,901	3.25	4	0.08	1.32	5.63
Triallate	H	190,130	159,891	8.33	7.19	0.07	1.04	18.99
Cheyenne and Belle Fourche Basins (CHEY)								
[Study Unit Area: 15,491,569 acres; Area in Cropland and Pasture: 1,015,577acres]								
2,4-D	H	329,605	470,723	0.89	0.61	0.32	54	2.45
Dicamba	H	50,009	182,944	0.52	0.47	0.05	8.19	1.23
Picloram	H	40,458	186,204	2.35	2.62	0.04	6.63	11.55
1,3-D	OP	22,342	155	0.06	0.03	0.02	3.66	0.09
Carbaryl	I	18,644	8,296	0.41	0.28	0.02	3.05	0.8
MCPA	H	17,591	46,689	0.38	0.38	0.02	2.88	0.78
EPTC	H	17,178	5,671	0.12	0.14	0.02	2.81	0.26
Glyphosate	H	9,675	30,337	0.06	0.13	0.01	1.58	0.12
Ethyl parathion	I	8,842	25,148	0.43	0.74	0.01	1.45	1.64
Chlorpyrifos	I	7,271	10,351	0.05	0.07	0.01	1.19	0.09
Trifluralin	H	7,268	9,265	0.04	0.04	0.01	1.19	0.07
Alachlor	H	7,191	4,020	0.03	0.03	0.01	1.18	0.06

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Cheyenne and Belle Fourche Basins (CHEY)—Continued								
Metolachlor	H	6,731	3,566	0.01	0.01	0.01	1.1	0.03
Atrazine	H	6,572	7,689	0.01	0.01	0.01	1.08	0.02
2,4-Db	H	6,227	12,455	0.65	0.28	0.01	1.02	1.22
Acetochlor	H	6,154	3,626	0.03	0.03	0.01	1.01	0.06
Central Nebraska Basins (CNBR)								
[Study Unit Area: 19,462,958 acres; Area in Cropland and Pasture: 7,822,815 acres]								
Atrazine	H	3,453,670	3,057,287	5.4	5.37	0.44	25.6	12.3
Metolachlor	H	2,253,285	1,441,447	3.89	4.61	0.29	16.71	8.28
Cyanazine	H	1,147,039	709,493	3.88	4.48	0.15	8.5	8.28
Alachlor	H	1,117,741	876,392	4.36	6.03	0.14	8.29	9.79
Acetochlor	H	749,404	407,284	3.14	3.44	0.1	5.56	6.76
2,4-D	H	602,727	1,144,065	1.62	1.47	0.08	4.47	4.49
Terbufos	I	396,985	410,285	5.51	6.15	0.05	2.94	12.87
Chlorpyrifos	I	389,052	389,853	2.53	2.79	0.05	2.88	4.83
Methyl parathion	I	371,468	629,571	4.16	8.4	0.05	2.75	6.7
Butylate	H	337,673	74,051	4.39	3.73	0.04	2.5	11.35
Trifluralin	H	311,074	412,173	1.57	1.63	0.04	2.31	3.17
Propachlor	H	251,745	109,092	6.51	6.51	0.03	1.87	19.13
Pendimethalin	H	246,841	297,405	1.19	1.38	0.03	1.83	2.3
Fonofos	I	208,824	222,153	7.43	9.19	0.03	1.55	16.48
Dicamba	H	184,360	623,207	1.92	1.6	0.02	1.37	4.53
EPTC	H	165,132	45,651	1.17	1.14	0.02	1.22	2.5
Carbofuran	I	156,616	195,191	3.06	3	0.02	1.16	6.92
Carbaryl	I	140,812	109,468	3.09	3.71	0.02	1.04	6.03
Connecticut, Housatonic, and Thames River Basins (CONN)								
[Study Unit Area: 10,037,989 acres; Area in Cropland and Pasture: 508,084 acres]								
Oil	I	228,626	7,827	0.43	0.58	0.45	24.24	0.59
Metolachlor	H	119,622	62,762	0.21	0.2	0.24	12.68	0.44
Atrazine	H	115,399	80,903	0.18	0.14	0.23	12.24	0.41
Chlorothalonil	F	56,632	7,547	0.44	0.24	0.11	6.01	0.63
Captan	F	50,092	7,073	1.32	1.21	0.1	5.31	2.57
Mancozeb	F	48,867	9,762	0.59	0.48	0.1	5.18	0.91
Alachlor	H	23,773	12,394	0.09	0.09	0.05	2.52	0.21
Cyanazine	H	22,848	14,450	0.08	0.09	0.04	2.42	0.17
2,4-D	H	21,403	52,724	0.06	0.07	0.04	2.27	0.16
Azinphos methyl	I	19,481	8,395	0.78	0.33	0.04	2.07	1.39
Cryolite	I	19,120	1,202	0.62	0.25	0.04	2.03	0.9
Metiram	F	16,979	1,061	1.84	0.84	0.03	1.8	4.03
Methyl bromide	OP	16,583	98	0.04	0.05	0.03	1.76	0.06
Thiram	F	15,526	3,093	5.83	6.66	0.03	1.65	12.46

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Connecticut, Housatonic, and Thames River Basins (CONN)—Continued								
Chlorpyrifos	I	12,165	11,863	0.08	0.09	0.02	1.29	0.15
Carbofuran	I	11,299	10,252	0.22	0.16	0.02	1.2	0.5
Dicamba	H	10,583	24,640	0.11	0.06	0.02	1.12	0.26
Delaware River Basin (DELR)								
[Study Unit Area: 7,728,528 acres; Area in Cropland and Pasture: 1,116,698 acres]								
Metolachlor	H	512,258	281,033	0.88	0.9	0.46	17.04	1.88
Sulfur	F	505,202	8,909	0.58	0.36	0.45	16.81	0.83
Atrazine	H	308,352	256,144	0.48	0.45	0.28	10.26	1.1
Oil	I	199,546	7,297	0.38	0.54	0.18	6.64	0.52
Alachlor	H	127,328	70,547	0.5	0.49	0.11	4.24	1.12
Captan	F	108,133	14,995	2.84	2.56	0.1	3.6	5.55
Pendimethalin	H	101,350	87,112	0.49	0.41	0.09	3.37	0.95
Mancozeb	F	89,411	16,797	1.08	0.82	0.08	2.98	1.67
Glyphosate	H	75,848	68,312	0.47	0.29	0.07	2.52	0.91
Cyanazine	H	70,884	45,259	0.24	0.29	0.06	2.36	0.51
Chlorothalonil	F	70,219	14,752	0.55	0.47	0.06	2.34	0.78
2,4-D	H	56,915	117,026	0.15	0.15	0.05	1.89	0.42
Chlorpyrifos	I	56,914	49,102	0.37	0.35	0.05	1.89	0.71
Cryolite	I	45,256	2,982	1.47	0.62	0.04	1.51	2.14
Linuron	H	44,663	87,343	2.26	2.77	0.04	1.49	4.13
Simazine	H	36,890	36,792	0.77	1.07	0.03	1.23	1.2
Maneb	F	34,248	9,564	1.14	1.36	0.03	1.14	1.99
Methomyl	I	32,115	23,438	1.31	0.69	0.03	1.07	2.2
Delmarva Peninsula (DLMV)								
[Study Unit Area: 3,608,286 acres; Area in Cropland and Pasture: 1,307,479 acres]								
Metolachlor	H	951,197	516,034	1.64	1.65	0.73	25.74	3.5
Atrazine	H	504,176	335,746	0.79	0.59	0.39	13.64	1.8
Alachlor	H	341,809	191,021	1.33	1.32	0.26	9.25	2.99
Mancozeb	F	170,242	25,860	2.05	1.27	0.13	4.61	3.17
Linuron	H	146,078	302,610	7.4	9.61	0.11	3.95	13.49
Chlorothalonil	F	135,021	22,308	1.06	0.71	0.1	3.65	1.5
Simazine	H	133,735	133,959	2.78	3.9	0.1	3.62	4.36
Glyphosate	H	107,393	93,857	0.67	0.39	0.08	2.91	1.29
Paraquat	H	94,421	226,578	2.23	2.39	0.07	2.55	4.01
2,4-D	H	88,555	234,385	0.24	0.3	0.07	2.4	0.66
Cyanazine	H	77,269	53,131	0.26	0.34	0.06	2.09	0.56
Maneb	F	68,021	15,836	2.26	2.25	0.05	1.84	3.96
Chlorpyrifos	I	66,531	62,379	0.43	0.45	0.05	1.8	0.83
Cryolite	I	66,407	4,328	2.16	0.9	0.05	1.8	3.14
Methyl bromide	OP	64,435	730	0.16	0.36	0.05	1.74	0.23

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Delmarva Peninsula (DLMV)—Continued								
Pendimethalin	H	63,736	81,739	0.31	0.38	0.05	1.72	0.59
Carbofuran	I	52,246	42,849	1.02	0.66	0.04	1.41	2.31
Terbufos	I	44,831	44,428	0.62	0.67	0.03	1.21	1.45
Eastern Iowa Basins (EIWA)								
[Study Unit Area: 12,508,670 acres; Area in Cropland and Pasture: 8,839,389 acres]								
Metolachlor	H	3,557,616	1,669,292	6.14	5.34	0.4	19.3	13.07
Atrazine	H	2,660,692	2,968,923	4.16	5.21	0.3	14.44	9.48
Acetochlor	H	2,634,229	1,271,458	11.05	10.73	0.3	14.29	23.77
Cyanazine	H	2,121,908	868,143	7.18	5.48	0.24	11.51	15.32
Trifluralin	H	807,171	956,997	4.08	3.77	0.09	4.38	8.23
Pendimethalin	H	758,342	762,845	3.66	3.55	0.09	4.11	7.07
EPTC	H	631,126	152,967	4.48	3.81	0.07	3.42	9.57
Dicamba	H	591,858	1,765,026	6.17	4.53	0.07	3.21	14.55
Chlorpyrifos	I	563,425	517,461	3.66	3.71	0.06	3.06	7
Alachlor	H	472,561	222,938	1.84	1.53	0.05	2.56	4.14
2,4-D	H	472,294	1,115,737	1.27	1.43	0.05	2.56	3.52
Bentazon	H	372,886	572,714	5.54	5.72	0.04	2.02	9.6
Terbufos	I	346,289	331,880	4.81	4.97	0.04	1.88	11.23
Glyphosate	H	339,195	610,274	2.12	2.56	0.04	1.84	4.08
Propachlor	H	284,103	146,835	7.35	8.77	0.03	1.54	21.58
Dimethenamid	H	229,584	210,627	8.78	9.07	0.03	1.25	17.51
Bromoxynil	H	203,687	817,195	6.03	6.6	0.02	1.11	14.17
Georgia–Florida Coastal Plain (GAFL)								
[Study Unit Area: 37,164,232 acres; Area in Cropland and Pasture: 3,687,851 acres]								
Oil	I	5,615,907	110,986	10.56	8.19	1.52	18.01	14.54
Methyl bromide	OP	4,335,167	21,072	11.05	10.31	1.18	13.9	15.44
1,3-D	OP	2,499,870	55,733	6.25	11.31	0.68	8.02	10.18
Sulfur	F	2,403,357	184,394	2.77	7.46	0.65	7.71	3.95
Chlorothalonil	F	2,241,644	411,978	17.51	13.13	0.61	7.19	24.81
Copper	F	736,008	143,798	6.99	5.74	0.2	2.36	8.45
Aldicarb	I	700,620	451,885	16.36	10.47	0.19	2.25	22.04
Chloropicrin	OP	679,591	11,409	9.13	9.3	0.18	2.18	15.81
Chlorpyrifos	I	673,804	463,344	4.37	3.32	0.18	2.16	8.37
Atrazine	H	656,797	422,398	1.03	0.74	0.18	2.11	2.34
Mancozeb	F	621,122	101,059	7.48	4.95	0.17	1.99	11.58
MSMA	H	489,794	223,030	8.5	5.86	0.13	1.57	10.46
Glyphosate	H	440,992	291,223	2.75	1.22	0.12	1.41	5.3
Bromacil	H	439,790	141,412	36.81	32.13	0.12	1.41	39.87
2,4-D	H	419,889	740,818	1.13	0.95	0.11	1.35	3.13
Diuron	H	413,874	208,495	11.05	6.42	0.11	1.33	15.29
Simazine	H	375,003	104,092	7.8	3.03	0.1	1.2	12.22

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Georgia–Florida Coastal Plain (GAFL)—Continued								
Pendimethalin	H	364,061	396,162	1.76	1.84	0.1	1.17	3.39
Metolachlor	H	346,057	192,913	0.6	0.62	0.09	1.11	1.27
Ethion	I	338,884	93,457	39.03	37.51	0.09	1.09	41.25
Great Salt Lake Basins (GRSL)								
[Study Unit Area: 9,296,353 acres; Area in Cropland and Pasture: 758,301 acres]								
Sulfur	F	245,116	3,247	0.28	0.13	0.32	27.35	0.4
2,4-D	H	136,671	247,728	0.37	0.32	0.18	15.25	1.02
Sulfuric acid	OP	61,962	217	0.24	0.21	0.08	6.91	0.29
Oil	I	61,439	2,150	0.12	0.16	0.08	6.85	0.16
Metam sodium	OP	31,476	203	0.1	0.05	0.04	3.51	0.13
Carbofuran	I	25,764	39,951	0.5	0.61	0.03	2.87	1.14
Trifluralin	H	25,529	13,430	0.13	0.05	0.03	2.85	0.26
Hexazinone	H	22,799	22,236	4.94	3.82	0.03	2.54	14.3
1,3-D	OP	20,403	123	0.05	0.03	0.03	2.28	0.08
MCPA	H	17,996	39,171	0.39	0.32	0.02	2.01	0.8
Triallate	H	16,992	15,147	0.74	0.68	0.02	1.9	1.7
Propargite	I	13,652	6,966	0.4	0.36	0.02	1.52	0.63
Diclofop	H	12,971	12,410	1.16	0.88	0.02	1.45	2.09
Metribuzin	H	12,258	18,584	0.45	0.22	0.02	1.37	0.74
Alachlor	H	11,981	3,977	0.05	0.03	0.02	1.34	0.11
Diuron	H	10,383	8,643	0.28	0.27	0.01	1.16	0.38
Disulfoton	I	9,453	12,958	0.53	0.55	0.01	1.05	1.11
Dicamba	H	9,176	37,128	0.1	0.1	0.01	1.02	0.23
EPTC	H	9,090	2,480	0.06	0.06	0.01	1.01	0.14
Hudson River Basin (HDSN)								
[Study Unit Area: 8,552,050 acres; Area in Cropland and Pasture: 753,039 acres]								
Oil	I	464,851	16,264	0.87	1.2	0.62	23.65	1.2
Mancozeb	F	164,360	21,995	1.98	1.08	0.22	8.36	3.06
Pendimethalin	H	163,395	90,949	0.79	0.42	0.22	8.31	1.52
Atrazine	H	116,847	75,416	0.18	0.13	0.16	5.95	0.42
Sulfur	F	108,326	8,981	0.13	0.36	0.14	5.51	0.18
Captan	F	96,773	15,287	2.55	2.61	0.13	4.92	4.97
Chlorpyrifos	I	87,035	60,912	0.57	0.44	0.12	4.43	1.08
Alachlor	H	85,476	51,889	0.33	0.36	0.11	4.35	0.75
Metolachlor	H	84,941	41,507	0.15	0.13	0.11	4.32	0.31
Terbufos	I	58,016	36,329	0.81	0.54	0.08	2.95	1.88
Cyanazine	H	52,517	18,508	0.18	0.12	0.07	2.67	0.38
Glyphosate	H	50,508	55,278	0.32	0.23	0.07	2.57	0.61
Chlorothalonil	F	32,567	5,840	0.25	0.19	0.04	1.66	0.36
Dicamba	H	28,038	38,056	0.29	0.1	0.04	1.43	0.69
Propargite	I	25,093	10,594	0.73	0.55	0.03	1.28	1.16
Azinphos methyl	I	24,506	14,040	0.98	0.54	0.03	1.25	1.75

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Kanawha–New River Basin (KANA)								
[Study Unit Area: 7,850,595 acres; Area in Cropland and Pasture: 724,871 acres]								
1,3-D	OP	82,228	1,175	0.21	0.24	0.11	16.55	0.34
2,4-D	H	72,432	114,116	0.2	0.15	0.1	14.58	0.54
Atrazine	H	42,282	31,304	0.07	0.06	0.06	8.51	0.15
Oil	I	32,388	991	0.06	0.07	0.04	6.52	0.08
Metolachlor	H	31,420	16,884	0.05	0.05	0.04	6.32	0.12
Methyl bromide	OP	30,419	75	0.08	0.04	0.04	6.12	0.11
Alachlor	H	24,282	13,289	0.1	0.09	0.03	4.89	0.21
Sulfur	F	19,500	564	0.02	0.02	0.03	3.93	0.03
Chlorpyrifos	I	12,239	9,983	0.08	0.07	0.02	2.46	0.15
Simazine	H	9,238	8,062	0.19	0.24	0.01	1.86	0.3
Captan	F	8,750	940	0.23	0.16	0.01	1.76	0.45
Carbofuran	I	8,558	10,564	0.17	0.16	0.01	1.72	0.38
Maleic hydrazide	OP	7,229	2,340	0.34	0.32	0.01	1.46	0.67
Terbufos	I	7,048	6,555	0.1	0.1	0.01	1.42	0.23
Carbaryl	I	6,951	6,895	0.15	0.23	0.01	1.4	0.3
Acephate	I	6,451	3,013	0.18	0.1	0.01	1.3	0.31
Ziram	F	5,688	785	0.21	0.16	0.01	1.14	0.26
Mancozeb	F	5,385	1,085	0.07	0.05	0.01	1.08	0.1
Dicamba	H	5,156	16,385	0.05	0.04	0.01	1.04	0.13
Methomyl	I	4,996	8,508	0.2	0.25	0.01	1.01	0.34
Kentucky River Basin (KNTY)								
[Study Unit Area: 4,457,860 acres; Area in Cropland and Pasture: 1,142,120 acres]								
Methyl bromide	OP	340,807	684	0.87	0.34	0.3	27.73	1.21
Maleic hydrazide	OP	162,456	52,405	7.64	7.26	0.14	13.22	15.03
Acephate	I	152,516	68,085	4.19	2.14	0.13	12.41	7.39
Atrazine	H	70,910	46,722	0.11	0.08	0.06	5.77	0.25
2,4-D	H	51,163	75,874	0.14	0.1	0.04	4.16	0.38
Metolachlor	H	45,379	29,623	0.08	0.1	0.04	3.69	0.17
Butylate	H	40,406	9,485	0.53	0.48	0.04	3.29	1.36
Pebulate	H	38,113	9,528	6.8	6.06	0.03	3.1	11.81
Carbofuran	I	36,235	22,076	0.71	0.34	0.03	2.95	1.6
Chloropicrin	OP	34,196	684	0.46	0.56	0.03	2.78	0.8
Metalaxyl	F	34,062	68,086	3.84	2.78	0.03	2.77	6.54
Pendimethalin	H	27,095	36,145	0.13	0.17	0.02	2.2	0.25
Chlorpyrifos	I	21,650	13,407	0.14	0.1	0.02	1.76	0.27
Fenamiphos	I	21,098	21,098	3.18	4.38	0.02	1.72	6.43
Simazine	H	19,726	17,567	0.41	0.51	0.02	1.61	0.64
Alachlor	H	17,346	8,701	0.07	0.06	0.02	1.41	0.15
Napropamide	H	14,995	14,980	3.16	4.19	0.01	1.22	5.03
Isopropalin	H	12,931	12,931	9.28	9.29	0.01	1.05	19.52

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Lake Erie–Lake Saint Clair Drainage (LERI)								
[Study Unit Area: 13,333,230 acres; Area in Cropland and Pasture: 5,883,633 acres]								
Metolachlor	H	2,216,737	1,145,825	3.83	3.67	0.38	17.01	8.14
Atrazine	H	1,851,634	1,539,853	2.9	2.7	0.31	14.21	6.59
Alachlor	H	1,237,672	647,554	4.83	4.46	0.21	9.5	10.84
Cyanazine	H	880,058	435,381	2.98	2.75	0.15	6.75	6.35
Acetochlor	H	739,783	374,197	3.1	3.16	0.13	5.68	6.68
Pendimethalin	H	598,269	615,039	2.89	2.86	0.1	4.59	5.58
Glyphosate	H	561,964	904,199	3.5	3.8	0.1	4.31	6.76
2,4-D	H	307,424	673,121	0.83	0.87	0.05	2.36	2.29
Mancozeb	F	277,705	48,063	3.35	2.35	0.05	2.13	5.18
Bentazon	H	258,364	334,993	3.84	3.34	0.04	1.98	6.65
Butylate	H	257,012	74,819	3.34	3.77	0.04	1.97	8.64
Linuron	H	253,303	378,807	12.83	12.03	0.04	1.94	23.4
Chlorothalonil	F	207,283	30,014	1.62	0.96	0.04	1.59	2.3
Dicamba	H	206,425	645,043	2.15	1.66	0.04	1.58	5.08
EPTC	H	204,155	58,140	1.45	1.45	0.03	1.57	3.1
Chlorpyrifos	I	202,600	186,745	1.32	1.34	0.03	1.55	2.52
Metribuzin	H	182,152	489,213	6.74	5.82	0.03	1.4	11.02
Trifluralin	H	168,679	180,511	0.85	0.71	0.03	1.29	1.72
Maneb	F	160,829	26,800	5.35	3.81	0.03	1.23	9.36
Oil	I	155,216	4,426	0.29	0.33	0.03	1.19	0.4
Terbufos	I	144,680	128,341	2.01	1.92	0.02	1.11	4.69
Long Island–New Jersey Coastal Drainages (LINJ)								
[Study Unit Area: 3,811,281 acres; Area in Cropland and Pasture; 239,471 acres]								
Sulfur	F	266,031	4,872	0.31	0.2	1.11	25.27	0.44
Metolachlor	H	95,993	50,505	0.17	0.16	0.4	9.12	0.35
Oil	I	70,187	2,746	0.13	0.2	0.29	6.67	0.18
Mancozeb	F	57,603	11,130	0.69	0.55	0.24	5.47	1.07
Captan	F	50,325	9,731	1.32	1.66	0.21	4.78	2.58
Atrazine	H	47,853	33,358	0.08	0.06	0.2	4.55	0.17
Chlorothalonil	F	44,319	10,446	0.35	0.33	0.19	4.21	0.49
Maneb	F	27,643	5,494	0.92	0.78	0.12	2.63	1.61
Alachlor	H	23,128	12,199	0.09	0.08	0.1	2.2	0.2
2,4-D	H	22,887	41,951	0.06	0.05	0.1	2.17	0.17
Glyphosate	H	17,741	14,275	0.11	0.06	0.07	1.69	0.21
Methomyl	I	16,875	9,812	0.69	0.29	0.07	1.6	1.16
Methyl bromide	OP	13,369	84	0.03	0.04	0.06	1.27	0.05
Bensulide	H	13,210	3,072	4.1	3.33	0.06	1.25	9.48
Cryolite	I	12,995	975	0.42	0.2	0.05	1.23	0.61
Linuron	H	12,747	23,901	0.65	0.76	0.05	1.21	1.18
Metiram	F	12,292	1,308	1.33	1.03	0.05	1.17	2.92

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Long Island–New Jersey Coastal Drainages (LINJ)—Continued								
Diuron	H	11,030	6,000	0.29	0.19	0.05	1.05	0.41
Chlorpyrifos	I	10,880	7,256	0.07	0.05	0.05	1.03	0.14
Carbaryl	I	10,712	4,195	0.24	0.14	0.04	1.02	0.46
Lower Illinois River Basin (LIRB)								
[Study Unit Area: 11,478,316 acres; Area in Cropland and Pasture: 8,025,297 acres]								
Atrazine	H	3,097,037	2,814,321	4.84	4.94	0.39	16.86	11.03
Metolachlor	H	2,944,265	1,421,943	5.08	4.55	0.37	16.03	10.82
Cyanazine	H	2,367,499	921,324	8.02	5.81	0.3	12.89	17.09
Acetochlor	H	1,938,830	959,817	8.13	8.1	0.24	10.56	17.5
Pendimethalin	H	1,527,056	1,539,983	7.37	7.16	0.19	8.32	14.23
Alachlor	H	997,006	450,655	3.89	3.1	0.12	5.43	8.73
EPTC	H	521,351	120,163	3.7	2.99	0.06	2.84	7.91
Glyphosate	H	508,989	912,395	3.17	3.83	0.06	2.77	6.12
2,4-D	H	477,967	1,199,934	1.28	1.54	0.06	2.6	3.56
Trifluralin	H	420,950	548,113	2.13	2.16	0.05	2.29	4.29
Simazine	H	375,425	280,540	7.81	8.18	0.05	2.04	12.23
Dicamba	H	358,065	918,272	3.73	2.36	0.04	1.95	8.8
Chlorpyrifos	I	339,987	336,253	2.21	2.41	0.04	1.85	4.22
Terbufos	I	334,613	281,194	4.65	4.21	0.04	1.82	10.85
Bentazon	H	291,302	503,289	4.33	5.02	0.04	1.59	7.5
Butylate	H	259,156	79,986	3.37	4.03	0.03	1.41	8.71
Lower Susquehanna River Basin (LSUS)								
[Study Unit Area: 5,969,969 acres; Area in Cropland and Pasture: 1,544,414 acres]								
Metolachlor	H	758,964	425,738	1.31	1.36	0.49	21.69	2.79
Atrazine	H	518,195	464,045	0.81	0.81	0.34	14.81	1.85
Oil	I	357,076	11,556	0.67	0.85	0.23	10.2	0.92
Pendimethalin	H	209,512	186,043	1.01	0.87	0.14	5.99	1.95
Alachlor	H	170,231	95,619	0.66	0.66	0.11	4.86	1.49
Captan	F	129,002	17,906	3.39	3.06	0.08	3.69	6.62
Sulfur	F	121,387	5,906	0.14	0.24	0.08	3.47	0.2
Cyanazine	H	119,132	77,896	0.4	0.49	0.08	3.4	0.86
Chlorpyrifos	I	102,273	95,068	0.66	0.68	0.07	2.92	1.27
Methyl bromide	OP	82,828	250	0.21	0.12	0.05	2.37	0.3
Glyphosate	H	78,586	77,235	0.49	0.32	0.05	2.25	0.95
Simazine	H	78,524	82,925	1.63	2.42	0.05	2.24	2.56
Mancozeb	F	65,289	11,569	0.79	0.57	0.04	1.87	1.22
Dimethoate	I	58,940	93,161	1.73	1.81	0.04	1.68	5.34
2,4-D	H	53,912	114,700	0.15	0.15	0.03	1.54	0.4
Carbofuran	I	42,636	50,156	0.83	0.77	0.03	1.22	1.88
Ziram	F	40,316	4,943	1.46	1	0.03	1.15	1.87

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Lower Tennessee River Basin (LTEN)								
[Study Unit Area: 12,490,377 acres; Area in Cropland and Pasture: 2,661,003 acres]								
Atrazine	H	460,274	306,980	0.72	0.54	0.17	11.3	1.64
MSMA	H	311,882	161,860	5.41	4.25	0.12	7.66	6.66
2,4-D	H	224,732	393,639	0.6	0.51	0.08	5.52	1.67
Metolachlor	H	201,293	132,197	0.35	0.42	0.08	4.94	0.74
Methyl parathion	I	174,152	115,111	1.95	1.54	0.07	4.28	3.14
Fluometuron	H	143,411	179,062	3.19	3.59	0.05	3.52	4.13
Trifluralin	H	140,088	211,127	0.71	0.83	0.05	3.44	1.43
Alachlor	H	139,493	81,662	0.54	0.56	0.05	3.43	1.22
Butylate	H	132,976	34,984	1.73	1.76	0.05	3.27	4.47
Methyl bromide	OP	117,903	411	0.3	0.2	0.04	2.9	0.42
Pendimethalin	H	113,985	146,676	0.55	0.68	0.04	2.8	1.06
Cyanazine	H	113,409	124,814	0.38	0.79	0.04	2.78	0.82
Glyphosate	H	105,289	161,844	0.66	0.68	0.04	2.59	1.27
Thiodicarb	I	98,127	142,500	6.59	7.26	0.04	2.41	9.14
Tribufos	OP	97,098	104,621	2.61	2.63	0.04	2.38	3.66
1,3-D	OP	83,342	2,193	0.21	0.45	0.03	2.05	0.34
Norflurazon	H	83,149	111,734	3.66	4.66	0.03	2.04	4.42
Ethephon	OP	79,809	53,739	2.59	1.83	0.03	1.96	3.4
Aldicarb	I	78,975	152,306	1.84	3.53	0.03	1.94	2.48
Sodium chlorate	OP	70,308	20,096	1.34	1.17	0.03	1.73	1.74
Simazine	H	65,422	52,727	1.36	1.54	0.02	1.61	2.13
PCNB	F	64,793	80,910	3.82	5.1	0.02	1.59	5.29
Malathion	I	63,075	52,968	2.03	2.74	0.02	1.55	4.38
DSMA	H	61,620	21,101	4.42	2.75	0.02	1.51	5.57
Profenofos	I	61,352	61,334	2.89	3.62	0.02	1.51	4.2
Acephate	I	60,577	94,084	1.67	2.95	0.02	1.49	2.93
Chlorpyrifos	I	47,062	53,838	0.31	0.39	0.02	1.16	0.59
Sulfur	F	41,003	734	0.05	0.03	0.02	1.01	0.07
Great and Little Miami River Basins (MIAM)								
[Study Unit Area: 4,699,665 acres; Area in Cropland and Pasture: 2,424,660 acres]								
Atrazine	H	1,042,409	843,791	1.63	1.48	0.43	19.4	3.71
Metolachlor	H	966,176	498,051	1.67	1.59	0.4	17.98	3.55
Cyanazine	H	471,913	220,984	1.6	1.4	0.19	8.78	3.41
Acetochlor	H	439,270	216,950	1.84	1.83	0.18	8.18	3.96
Alachlor	H	439,130	227,553	1.71	1.57	0.18	8.17	3.85
Glyphosate	H	250,324	426,408	1.56	1.79	0.1	4.66	3.01
Pendimethalin	H	238,539	255,835	1.15	1.19	0.1	4.44	2.22
Butylate	H	182,492	51,781	2.37	2.61	0.08	3.4	6.13
2,4-D	H	145,671	306,503	0.39	0.39	0.06	2.71	1.09
Dicamba	H	104,695	336,154	1.09	0.86	0.04	1.95	2.57
Bentazon	H	94,904	124,668	1.41	1.24	0.04	1.77	2.44

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Great and Little Miami River Basins (MIAM)—Continued								
EPTC	H	89,614	22,218	0.64	0.55	0.04	1.67	1.36
Chlorpyrifos	I	84,644	79,940	0.55	0.57	0.03	1.58	1.05
Terbufos	I	69,070	59,939	0.96	0.9	0.03	1.29	2.24
Simazine	H	68,409	63,337	1.42	1.85	0.03	1.27	2.23
Trifluralin	H	60,294	58,147	0.31	0.23	0.02	1.12	0.62
Metribuzin	H	55,746	173,436	2.06	2.06	0.02	1.04	3.37
Dimethenamid	H	53,960	54,505	2.06	2.35	0.02	1	4.12
Mississippi Embayment (MISE)								
[Study Unit Area: 31,778,108 acres; Area in Cropland and Pasture: 14,381,259 acres]								
Propanil	H	4,227,967	1,410,104	58.48	60.31	0.29	8.89	72.75
Methyl parathion	I	3,669,139	1,882,710	41.09	25.13	0.26	7.71	66.21
MSMA	H	2,968,317	2,091,627	51.5	54.94	0.21	6.24	63.39
Trifluralin	H	2,657,933	3,556,741	13.43	14.02	0.18	5.59	27.09
Fluometuron	H	2,629,665	2,930,077	58.43	58.8	0.18	5.53	75.66
Metolachlor	H	2,586,603	1,610,940	4.47	5.15	0.18	5.44	9.5
Atrazine	H	1,867,881	1,385,861	2.92	2.43	0.13	3.93	6.65
Cyanazine	H	1,599,680	1,632,502	5.42	10.3	0.11	3.36	11.55
Pendimethalin	H	1,560,016	2,022,508	7.53	9.41	0.11	3.28	14.54
Molinate	H	1,521,071	469,316	31.02	33.05	0.11	3.2	37.44
Alachlor	H	1,254,442	792,668	4.89	5.46	0.09	2.64	10.98
Tribufos	OP	1,094,015	1,374,094	29.4	34.54	0.08	2.3	41.23
Glyphosate	H	1,091,804	1,664,522	6.81	6.99	0.08	2.3	13.13
Profenofos	I	992,243	800,013	46.77	47.18	0.07	2.09	67.84
Ethephon	OP	893,406	950,262	29.02	32.28	0.06	1.88	38.04
Norflurazon	H	885,458	1,094,332	38.98	45.67	0.06	1.86	47.07
2,4-D	H	846,269	1,428,906	2.27	1.84	0.06	1.78	6.3
Sodium chlorate	OP	820,478	347,883	15.65	20.32	0.06	1.72	20.26
DSMA	H	807,976	455,263	57.91	59.34	0.06	1.7	73.05
Aldicarb	I	697,546	1,111,171	16.29	25.75	0.05	1.47	21.94
Bentazon	H	609,633	1,087,746	9.06	10.86	0.04	1.28	15.7
PCNB	F	599,920	723,819	35.39	45.63	0.04	1.26	48.96
Prometryn	H	593,900	1,039,793	32.18	40.63	0.04	1.25	57.6
Clomazone	H	565,348	1,008,095	28.82	28.96	0.04	1.19	48.26
Acifluorfen	H	557,887	2,031,593	32.98	27.98	0.04	1.17	48.64
Thiodicarb	I	518,022	655,769	34.81	33.39	0.04	1.09	48.27
Thiobencarb	H	484,686	171,502	33.74	36.24	0.03	1.02	52.1
Mobile River and Tributaries (MOBL)								
[Study Unit Area: 27,970,254 acres; Area in Cropland and Pasture: 2,726,827 acres]								
Methyl bromide	OP	846,290	3,522	2.16	1.72	0.31	15.03	3.02
2,4-D	H	522,846	934,544	1.4	1.2	0.19	9.29	3.89
Sulfur	F	381,553	10,166	0.44	0.41	0.14	6.78	0.63
MSMA	H	296,019	161,291	5.14	4.24	0.11	5.26	6.32

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Mobile River and Tributaries (MOBL)—Continued								
Methyl parathion	I	245,118	159,802	2.75	2.13	0.09	4.35	4.42
Atrazine	H	221,092	138,042	0.35	0.24	0.08	3.93	0.79
Trifluralin	H	190,838	272,158	0.96	1.07	0.07	3.39	1.95
Pendimethalin	H	169,324	206,871	0.82	0.96	0.06	3.01	1.58
Fluometuron	H	152,422	181,739	3.39	3.65	0.06	2.71	4.39
Chloropicrin	OP	139,215	2,175	1.87	1.77	0.05	2.47	3.24
Tribufos	OP	106,723	120,107	2.87	3.02	0.04	1.9	4.02
Alachlor	H	104,190	94,826	0.41	0.65	0.04	1.85	0.91
1,3-D	OP	101,245	2,611	0.25	0.53	0.04	1.8	0.41
Glyphosate	H	95,264	225,679	0.59	0.95	0.03	1.69	1.15
Thiodicarb	I	92,466	128,697	6.21	6.55	0.03	1.64	8.62
Metolachlor	H	92,366	62,331	0.16	0.2	0.03	1.64	0.34
Cyanazine	H	88,332	113,860	0.3	0.72	0.03	1.57	0.64
Oil	I	85,915	5,080	0.16	0.38	0.03	1.53	0.22
Aldicarb	I	82,887	136,102	1.94	3.15	0.03	1.47	2.61
Ethephon	OP	82,279	66,741	2.67	2.27	0.03	1.46	3.5
Profenofos	I	81,630	68,903	3.85	4.06	0.03	1.45	5.58
Sodium chlorate	OP	79,162	22,977	1.51	1.34	0.03	1.41	1.96
Norflurazon	H	76,713	107,203	3.38	4.47	0.03	1.36	4.08
PCNB	F	68,541	82,010	4.04	5.17	0.03	1.22	5.59
Acephate	I	62,828	95,527	1.73	3	0.02	1.12	3.04
DSMA	H	59,679	22,395	4.28	2.92	0.02	1.06	5.4
Butylate	H	58,729	16,359	0.76	0.82	0.02	1.04	1.97
Malathion	I	58,148	43,112	1.87	2.23	0.02	1.03	4.04
New England Coastal Basins (NECB)								
[Study Unit Area: 14,636,166 acres; Area in Cropland and Pasture: 392,572 acres]								
Oil	I	241,120	8,118	0.45	0.6	0.61	26.46	0.62
Mancozeb	F	76,207	18,372	0.92	0.9	0.19	8.36	1.42
Captan	F	62,707	8,216	1.65	1.4	0.16	6.88	3.22
Metolachlor	H	58,650	31,218	0.1	0.1	0.15	6.44	0.22
Atrazine	H	58,558	41,171	0.09	0.07	0.15	6.43	0.21
Chlorothalonil	F	43,555	10,633	0.34	0.34	0.11	4.78	0.48
Dichlobenil	H	24,504	8,271	37.96	29.82	0.06	2.69	66.59
Metiram	F	23,965	1,720	2.6	1.35	0.06	2.63	5.68
Diazinon	I	23,833	9,563	1.48	0.89	0.06	2.61	2.03
Azinphos methyl	I	20,502	11,796	0.82	0.46	0.05	2.25	1.47
Chlorpyrifos	I	20,251	10,802	0.13	0.08	0.05	2.22	0.25
Maneb	F	19,749	5,114	0.66	0.73	0.05	2.17	1.15
Carbaryl	I	17,775	12,557	0.39	0.43	0.05	1.95	0.76
Copper	F	17,362	3,990	0.17	0.16	0.04	1.9	0.2
Napropamide	H	16,621	4,300	3.51	1.2	0.04	1.82	5.57

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
New England Coastal Basins (NECB)—Continued								
Methyl bromide	OP	16,146	96	0.04	0.05	0.04	1.77	0.06
Propargite	I	15,176	6,641	0.44	0.34	0.04	1.67	0.7
Ferbam	F	13,377	2,973	5.97	4.24	0.03	1.47	10.1
Alachlor	H	11,553	6,020	0.05	0.04	0.03	1.27	0.1
Cryolite	I	11,097	667	0.36	0.14	0.03	1.22	0.52
Cyanazine	H	11,054	7,075	0.04	0.05	0.03	1.21	0.08
Dodine	F	10,492	6,616	3.53	3.66	0.03	1.15	7.99
Northern Rockies Intermontane Basins (NROK)								
[Study Unit Area: 20,153,264 acres; Area in Cropland and Pasture: 1,079,780 acres]								
2,4-D	H	114,659	243,213	0.31	0.31	0.11	17.99	0.85
EPTC	H	58,937	20,218	0.42	0.5	0.05	9.25	0.89
Diuron	H	40,867	30,308	1.09	0.93	0.04	6.41	1.51
MCPA	H	39,827	98,080	0.86	0.8	0.04	6.25	1.77
DCPA	H	31,793	3,179	3.19	1.72	0.03	4.99	9.21
Triallate	H	29,247	26,687	1.28	1.2	0.03	4.59	2.92
Oil	I	23,745	663	0.05	0.05	0.02	3.73	0.06
Bromoxynil	H	17,514	73,539	0.52	0.59	0.02	2.75	1.22
Propargite	I	17,490	12,966	0.51	0.67	0.02	2.74	0.81
Metribuzin	H	16,492	37,596	0.61	0.45	0.02	2.59	1
Diclofop	H	16,283	19,382	1.46	1.38	0.02	2.56	2.63
Ethalfluralin	H	11,942	15,367	0.49	0.5	0.01	1.87	0.83
Trifluralin	H	11,588	21,719	0.06	0.09	0.01	1.82	0.12
Glyphosate	H	11,467	22,520	0.07	0.1	0.01	1.8	0.14
Chlorpyrifos	I	11,138	12,296	0.07	0.09	0.01	1.75	0.14
Dicamba	H	10,737	80,313	0.11	0.21	0.01	1.68	0.26
Malathion	I	10,304	8,320	0.33	0.43	0.01	1.62	0.72
Alachlor	H	8,855	3,841	0.04	0.03	0.01	1.39	0.08
Dicofol	I	8,622	8,594	0.79	1.03	0.01	1.35	1.02
Carbaryl	I	8,157	8,029	0.18	0.27	0.01	1.28	0.35
Carbofuran	I	8,145	30,168	0.16	0.46	0.01	1.28	0.36
Simazine	H	7,517	7,642	0.16	0.22	0.01	1.18	0.25
Benomyl	F	7,212	13,670	0.58	0.92	0.01	1.13	0.78
Thiabendazole	F	6,752	12,277	4.24	4.24	0.01	1.06	6.77
2,4-Db	H	6,725	13,449	0.7	0.3	0.01	1.06	1.32
Picloram	H	6,565	27,353	0.38	0.39	0.01	1.03	1.87
Ethyl parathion	I	6,548	13,909	0.32	0.41	0.01	1.03	1.22
Nevada Basin and Range (NVBR)								
[Study Unit Area: 5,660,898 acres; Area in Cropland and Pasture: 70,350 acres]								
Oil	I	23,722	435	0.05	0.03	0.34	27.12	0.06
Sulfur	F	16,242	461	0.02	0.02	0.23	18.57	0.03
Copper	F	11,729	1,369	0.11	0.06	0.17	13.41	0.14
Molinate	H	8,141	2,066	0.17	0.15	0.12	9.31	0.2

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Nevada Basin and Range (NVBR)—Continued								
Methyl bromide	OP	2,636	22	0.01	0.01	0.04	3.01	0.01
Hexazinone	H	2,455	2,469	0.53	0.42	0.03	2.81	1.54
2,4-Db	H	2,184	4,335	0.23	0.1	0.03	2.5	0.43
2,4-D	H	1,425	1,714	0	0	0.02	1.63	0.01
Thiobencarb	H	1,371	341	0.1	0.07	0.02	1.57	0.15
Carbofuran	I	1,281	2,199	0.03	0.03	0.02	1.46	0.06
Metribuzin	H	1,049	1,747	0.04	0.02	0.01	1.2	0.06
Glyphosate	H	1,013	1,482	0.01	0.01	0.01	1.16	0.01
DCPA	H	1,007	134	0.1	0.07	0.01	1.15	0.29
Propargite	I	893	535	0.03	0.03	0.01	1.02	0.04
Ozark Plateaus (OZRK)								
[Study Unit Area: 30,471,632 acres; Area in Cropland and Pasture: 8,310,109 acres]								
2,4-D	H	619,950	1,199,373	1.67	1.54	0.07	14.42	4.62
Propanil	H	556,285	145,725	7.69	6.23	0.07	12.94	9.57
Atrazine	H	542,124	427,806	0.85	0.75	0.07	12.61	1.93
Metolachlor	H	369,986	217,370	0.64	0.7	0.04	8.61	1.36
Glyphosate	H	274,266	615,461	1.71	2.58	0.03	6.38	3.3
Alachlor	H	215,606	125,416	0.84	0.86	0.03	5.01	1.89
Trifluralin	H	191,382	236,577	0.97	0.93	0.02	4.45	1.95
Pendimethalin	H	173,081	208,896	0.84	0.97	0.02	4.03	1.61
Molinate	H	111,672	33,590	2.28	2.37	0.01	2.6	2.75
Dicamba	H	100,433	615,070	1.05	1.58	0.01	2.34	2.47
Thiobencarb	H	89,660	25,580	6.24	5.41	0.01	2.09	9.64
Carbofuran	I	86,950	115,529	1.7	1.77	0.01	2.02	3.84
Cyanazine	H	84,668	45,723	0.29	0.29	0.01	1.97	0.61
Propachlor	H	76,810	25,042	1.99	1.5	0.01	1.79	5.84
Chlorpyrifos	I	58,369	84,689	0.38	0.61	0.01	1.36	0.73
Bentazon	H	53,372	93,053	0.79	0.93	0.01	1.24	1.37
Butylate	H	44,712	10,505	0.58	0.53	0.01	1.04	1.5
Potomac River Basin (POTO)								
[Study Unit Area: 9,065,738 acres; Area in Cropland and Pasture: 1,794,987 acres]								
Oil	I	913,982	28,739	1.72	2.12	0.51	21.21	2.37
Sulfur	F	457,252	15,129	0.53	0.61	0.25	10.61	0.75
Metolachlor	H	417,324	220,804	0.72	0.71	0.23	9.68	1.53
Atrazine	H	377,874	279,091	0.59	0.49	0.21	8.77	1.35
Captan	F	255,168	33,669	6.71	5.75	0.14	5.92	13.1
Alachlor	H	203,602	108,850	0.79	0.75	0.11	4.72	1.78
2,4-D	H	161,023	274,636	0.43	0.35	0.09	3.74	1.2
Ziram	F	131,545	17,158	4.77	3.48	0.07	3.05	6.09
Mancozeb	F	128,363	25,509	1.55	1.25	0.07	2.98	2.39
Simazine	H	94,422	88,937	1.96	2.59	0.05	2.19	3.08
Chlorpyrifos	I	82,355	71,128	0.53	0.51	0.05	1.91	1.02

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Potomac River Basin (POTO)—Continued								
Azinphos methyl	I	71,786	35,921	2.88	1.39	0.04	1.67	5.13
Metiram	F	71,432	6,983	7.75	5.49	0.04	1.66	16.94
Pendimethalin	H	58,785	55,920	0.28	0.26	0.03	1.36	0.55
Glyphosate	H	52,704	58,955	0.33	0.25	0.03	1.22	0.63
Paraquat	H	50,465	106,131	1.19	1.12	0.03	1.17	2.14
Cyanazine	H	47,083	29,919	0.16	0.19	0.03	1.09	0.34
Methyl bromide	OP	46,295	165	0.12	0.08	0.03	1.07	0.17
Carbofuran	I	45,567	50,606	0.89	0.78	0.03	1.06	2.01
Methomyl	I	44,809	45,938	1.83	1.35	0.02	1.04	3.07
Puget Sound Drainages (PUGT)								
[Study Unit Area: 8,418,539 acres; Area in Cropland and Pasture: 305,796 acres]								
Metam sodium	OP	701,062	4,542	2.18	1.18	2.29	42.61	2.86
1,3-D	OP	360,247	2,189	0.9	0.44	1.18	21.9	1.47
Sulfuric acid	OP	135,591	661	0.52	0.63	0.44	8.24	0.62
Oil	I	45,895	1,718	0.09	0.13	0.15	2.79	0.12
Sulfur	F	33,092	4,155	0.04	0.17	0.11	2.01	0.05
Chlorothalonil	F	29,309	7,549	0.23	0.24	0.1	1.78	0.32
EPTC	H	28,411	8,185	0.2	0.2	0.09	1.73	0.43
Chloropicrin	OP	26,666	525	0.36	0.43	0.09	1.62	0.62
2,4-D	H	25,338	36,437	0.07	0.05	0.08	1.54	0.19
Captan	F	23,188	5,279	0.61	0.9	0.08	1.41	1.19
Red River of the North (REDN)								
Study Unit Area: 22,404,260 acres; Area in Cropland and Pasture: 12,336,646 acres]								
Sulfuric acid	OP	1,926,030	13,564	7.43	12.84	0.16	13.59	8.87
MCPA	H	1,227,234	3,478,319	26.34	28.24	0.1	8.66	54.45
2,4-D	H	1,208,129	3,636,655	3.24	4.68	0.1	8.52	9
Trifluralin	H	1,069,687	1,689,610	5.41	6.66	0.09	7.55	10.9
EPTC	H	817,950	237,990	5.8	5.93	0.07	5.77	12.4
Chlorothalonil	F	618,234	157,985	4.83	5.04	0.05	4.36	6.84
Ethalfluralin	H	516,193	635,563	20.98	20.61	0.04	3.64	35.86
Triallate	H	492,751	488,437	21.58	21.96	0.04	3.48	49.21
Mancozeb	F	467,679	171,923	5.63	8.41	0.04	3.3	8.72
Bentazon	H	407,354	532,886	6.05	5.32	0.03	2.87	10.49
Sodium chlorate	OP	389,256	129,752	7.42	7.58	0.03	2.75	9.61
Metolachlor	H	351,605	169,076	0.61	0.54	0.03	2.48	1.29
Bromoxynil	H	345,419	1,302,867	10.22	10.52	0.03	2.44	24.02
Pendimethalin	H	290,515	229,502	1.4	1.07	0.02	2.05	2.71
Alachlor	H	279,015	138,012	1.09	0.95	0.02	1.97	2.44
Dicamba	H	269,755	2,004,067	2.81	5.14	0.02	1.9	6.63
Terbufos	I	243,581	239,734	3.38	3.59	0.02	1.72	7.9
Cycloate	H	219,707	73,236	23.73	20.15	0.02	1.55	37.11
Acetochlor	H	211,697	110,629	0.89	0.93	0.02	1.49	1.91

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Red River of the North (REDN)—Continued								
Chlorpyrifos	I	209,552	169,674	1.36	1.22	0.02	1.48	2.6
Diclofop	H	207,761	258,520	18.59	18.37	0.02	1.47	33.53
Imazamethabenz	H	189,351	573,390	42.09	39.35	0.02	1.34	72.99
Cyanazine	H	148,423	105,845	0.5	0.67	0.01	1.05	1.07
Rio Grande Valley (RIOG)								
[Study Unit Area: 29,381,958 acres; Area in Cropland and Pasture: 683,138 acres]								
Sulfuric acid	OP	1,583,174	4,645	6.1	4.4	2.32	57.28	7.29
2,4-D	H	317,785	638,334	0.85	0.82	0.47	11.5	2.37
EPTC	H	189,823	47,306	1.35	1.18	0.28	6.87	2.88
Mancozeb	F	54,291	14,809	0.65	0.73	0.08	1.96	1.01
Ethoprop	I	47,993	11,033	3.78	3.28	0.07	1.74	5.39
Chlorothalonil	F	47,301	26,167	0.37	0.83	0.07	1.71	0.52
Sodium chlorate	OP	46,797	10,301	0.89	0.6	0.07	1.69	1.16
Picloram	H	45,926	191,331	2.67	2.69	0.07	1.66	13.11
DCPA	H	39,110	5,494	3.92	2.97	0.06	1.42	11.33
Trifluralin	H	32,261	22,663	0.16	0.09	0.05	1.17	0.33
1,3-D	OP	32,127	1,068	0.08	0.22	0.05	1.16	0.13
Endosulfan	I	30,205	20,280	1.45	1.26	0.04	1.09	2.24
Chlorpyrifos	I	28,034	37,474	0.18	0.27	0.04	1.01	0.35
Sacramento Basin (SACR)								
[Study Unit Area: 17,154,866 acres; Area in Cropland and Pasture: 1,880,360 acres]								
Sulfur	F	6,832,764	179,435	7.88	7.26	3.63	30.96	11.23
Oil	I	4,751,392	125,370	8.93	9.25	2.53	21.53	12.3
Copper	F	2,713,644	371,565	25.77	14.83	1.44	12.3	31.14
Molinate	H	1,438,632	365,135	29.34	25.71	0.77	6.52	35.41
Methyl bromide	OP	994,167	11,072	2.53	5.42	0.53	4.51	3.54
Metam sodium	OP	940,354	25,128	2.92	6.55	0.5	4.26	3.84
Ziram	F	366,616	67,845	13.28	13.77	0.19	1.66	16.98
Glyphosate	H	272,073	314,464	1.7	1.32	0.14	1.23	3.27
Diazinon	I	243,434	134,657	15.07	12.52	0.13	1.1	20.69
Thiobencarb	H	242,239	60,228	16.87	12.73	0.13	1.1	26.04
Chlorpyrifos	I	230,418	161,260	1.5	1.16	0.12	1.04	2.86
Santa Ana Basin (SANA)								
[Study Unit Area: 1,705,405 acres; Area in Cropland and Pasture: 51,627 acres]								
Sulfur	F	422,944	6,685	0.49	0.27	8.19	36.45	0.7
Oil	I	207,038	3,405	0.39	0.25	4.01	17.84	0.54
Methyl bromide	OP	190,832	888	0.49	0.43	3.7	16.45	0.68
Chloropicrin	OP	79,137	801	1.06	0.65	1.53	6.82	1.84
Copper	F	24,576	7,637	0.23	0.31	0.48	2.12	0.28
Chlorpyrifos	I	19,439	9,558	0.13	0.07	0.38	1.68	0.24
Glyphosate	H	18,678	16,648	0.12	0.07	0.36	1.61	0.23

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Santa Ana Basin (SANA)—Continued								
Metam sodium	OP	17,352	221	0.05	0.06	0.34	1.5	0.07
Cryolite	I	15,656	2,551	0.51	0.53	0.3	1.35	0.74
Carbaryl	I	12,349	1,959	0.27	0.07	0.24	1.06	0.53
Simazine	H	11,633	6,054	0.24	0.18	0.23	1	0.38
San Joaquin–Tulare (SANJ)								
[Study Unit Area: 19,966,328 acres; Area in Cropland and Pasture: 4,207,813 acres]								
Sulfur	F	42,154,237	795,288	48.59	32.18	10.02	48.49	69.27
Oil	I	12,096,055	357,814	22.74	26.41	2.87	13.91	31.31
Methyl bromide	OP	5,149,392	37,156	13.12	18.18	1.22	5.92	18.34
Metam sodium	OP	3,112,316	68,151	9.65	17.75	0.74	3.58	12.7
Copper	F	2,819,839	681,123	26.78	27.18	0.67	3.24	32.36
Cryolite	I	1,784,366	301,968	57.99	62.98	0.42	2.05	84.27
Sodium chlorate	OP	1,693,511	588,609	32.3	34.38	0.4	1.95	41.81
Chlorpyrifos	I	1,479,897	965,403	9.6	6.92	0.35	1.7	18.38
Glyphosate	H	1,282,279	1,405,979	7.99	5.9	0.3	1.48	15.42
Ziram	F	1,221,458	223,434	44.25	45.35	0.29	1.41	56.58
Propargite	I	1,130,815	642,696	32.93	33.12	0.27	1.3	52.43
Santee Basin and Coastal Drainage (SANT)								
[Study Unit Area: 14,907,489 acres; Area in Cropland and Pasture: 1,336,276 acres]								
Methyl bromide	OP	1,629,975	7,513	4.15	3.68	1.22	26.25	5.81
Sulfur	F	1,243,081	21,039	1.43	0.85	0.93	20.02	2.04
2,4-D	H	246,250	411,540	0.66	0.53	0.18	3.97	1.83
Captan	F	235,001	19,776	6.18	3.38	0.18	3.78	12.07
Atrazine	H	225,911	172,334	0.35	0.3	0.17	3.64	0.8
Oil	I	220,621	6,516	0.42	0.48	0.17	3.55	0.57
Chloropicrin	OP	165,509	2,635	2.22	2.15	0.12	2.67	3.85
1,3-D	OP	152,916	3,965	0.38	0.8	0.11	2.46	0.62
Alachlor	H	144,681	94,807	0.56	0.65	0.11	2.33	1.27
Mancozeb	F	139,913	11,944	1.69	0.58	0.1	2.25	2.61
Chlorothalonil	F	136,117	26,592	1.06	0.85	0.1	2.19	1.51
Metolachlor	H	114,274	81,309	0.2	0.26	0.09	1.84	0.42
MSMA	H	84,873	60,969	1.47	1.6	0.06	1.37	1.81
Carbaryl	I	83,650	56,312	1.84	1.91	0.06	1.35	3.58
Chlorpyrifos	I	82,465	59,841	0.54	0.43	0.06	1.33	1.02
Ziram	F	72,908	6,812	2.64	1.38	0.05	1.17	3.38
Aldicarb	I	64,704	60,016	1.51	1.39	0.05	1.04	2.04
South Central Texas (SCTX)								
[Study Unit Area: 19,384,346 acres; Area in Cropland and Pasture: 2,983,850 acres]								
2,4-D	H	478,345	854,308	1.29	1.1	0.16	16.88	3.56
Atrazine	H	368,535	449,834	0.58	0.79	0.12	13	1.31
Metolachlor	H	200,622	166,262	0.35	0.53	0.07	7.08	0.74

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
South Central Texas (SCTX)—Continued								
1,3-D	OP	149,862	2,855	0.37	0.58	0.05	5.29	0.61
Trifluralin	H	134,100	187,703	0.68	0.74	0.04	4.73	1.37
Chlorothalonil	F	86,227	40,729	0.67	1.3	0.03	3.04	0.95
Picloram	H	76,806	286,454	4.46	4.03	0.03	2.71	21.93
Terbufos	I	76,683	90,374	1.07	1.35	0.03	2.71	2.49
Chlorpyrifos	I	72,678	84,087	0.47	0.6	0.02	2.56	0.9
Carbaryl	I	69,245	42,065	1.52	1.42	0.02	2.44	2.97
Alachlor	H	67,311	47,273	0.26	0.33	0.02	2.38	0.59
Pendimethalin	H	54,617	83,902	0.26	0.39	0.02	1.93	0.51
Cyanazine	H	54,290	24,556	0.18	0.16	0.02	1.92	0.39
Methyl parathion	I	46,955	38,642	0.53	0.52	0.02	1.66	0.85
Dimethoate	I	39,473	83,031	1.16	1.61	0.01	1.39	3.57
Malathion	I	39,305	17,845	1.27	0.92	0.01	1.39	2.73
PCNB	F	38,844	11,022	2.29	0.7	0.01	1.37	3.17
Propargite	I	37,492	24,333	1.09	1.25	0.01	1.32	1.74
Prometryn	H	33,758	45,619	1.83	1.78	0.01	1.19	3.27
Glyphosate	H	32,326	44,482	0.2	0.19	0.01	1.14	0.39
Butylate	H	30,884	7,721	0.4	0.39	0.01	1.09	1.04
Southern Florida (SOFL)								
[Study Unit Area: 12,537,358 acres; Area in Cropland and Pasture: 1,667,583 acres]								
Methyl bromide	OP	10,876,215	59,275	27.71	29.01	6.52	31.54	38.74
Oil	I	7,747,359	151,084	14.57	11.15	4.65	22.46	20.06
Chloropicrin	OP	2,269,960	35,060	30.5	28.58	1.36	6.58	52.82
Copper	F	1,739,324	240,319	16.52	9.59	1.04	5.04	19.96
Sulfur	F	1,427,677	61,273	1.65	2.48	0.86	4.14	2.35
Atrazine	H	1,330,634	464,739	2.08	0.82	0.8	3.86	4.74
Mancozeb	F	1,179,966	106,743	14.21	5.22	0.71	3.42	22
Chlorothalonil	F	860,835	96,961	6.72	3.09	0.52	2.5	9.53
Bromacil	H	611,010	196,466	51.14	44.63	0.37	1.77	55.4
Asulam	H	597,438	276,037	82.86	82.6	0.36	1.73	83.67
Simazine	H	485,534	119,592	10.09	3.49	0.29	1.41	15.82
Ethion	I	471,991	126,449	54.36	50.75	0.28	1.37	57.46
Glyphosate	H	440,713	204,899	2.75	0.86	0.26	1.28	5.3
Diuron	H	435,766	193,662	11.63	5.96	0.26	1.26	16.1
Maneb	F	393,555	47,068	13.08	6.7	0.24	1.14	22.91
Phorate	I	352,458	99,531	9.25	3.31	0.21	1.02	16.11
Trinity River Basin (TRIN)								
[Study Unit Area: 11,872,636 acres; Area in Cropland and Pasture: 2,689,808 acres]								
2,4-D	H	326,427	477,953	0.88	0.61	0.12	19.17	2.43
Propanil	H	142,802	45,770	1.98	1.96	0.05	8.39	2.46
Atrazine	H	134,669	167,752	0.21	0.29	0.05	7.91	0.48

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Trinity River Basin (TRIN) —Continued								
Molinate	H	90,350	27,462	1.84	1.93	0.03	5.31	2.22
Metolachlor	H	85,106	66,917	0.15	0.21	0.03	5	0.31
Carbaryl	I	79,292	59,802	1.74	2.03	0.03	4.66	3.4
Thiobencarb	H	67,831	23,800	4.72	5.03	0.03	3.98	7.29
Trifluralin	H	57,422	79,018	0.29	0.31	0.02	3.37	0.59
Picloram	H	42,152	120,483	2.45	1.7	0.02	2.48	12.04
Chlorpyrifos	I	41,077	55,928	0.27	0.4	0.02	2.41	0.51
1,3-D	OP	39,596	806	0.1	0.16	0.01	2.33	0.16
Methyl parathion	I	37,426	52,437	0.42	0.7	0.01	2.2	0.68
Sulfur	F	34,364	2,042	0.04	0.08	0.01	2.02	0.06
Alachlor	H	34,169	26,506	0.13	0.18	0.01	2.01	0.3
Terbufos	I	24,898	29,757	0.35	0.45	0.01	1.46	0.81
Pendimethalin	H	22,469	32,740	0.11	0.15	0.01	1.32	0.21
Chlorothalonil	F	19,815	9,935	0.16	0.32	0.01	1.16	0.22
Oil	I	19,741	1,354	0.04	0.1	0.01	1.16	0.05
Malathion	I	18,800	8,986	0.61	0.46	0.01	1.1	1.31
Dimethoate	I	18,106	41,979	0.53	0.81	0.01	1.06	1.64
Glyphosate	H	17,134	22,640	0.11	0.1	0.01	1.01	0.21
Upper Colorado Basin (UCOL)								
[Study Unit Area: 11,445,479 acres; Area in Cropland and Pasture: 402,027 acres]								
2,4-D	H	141,884	285,960	0.38	0.37	0.35	30.89	1.06
Sulfuric acid	OP	95,169	279	0.37	0.26	0.24	20.72	0.44
EPTC	H	24,535	7,359	0.17	0.18	0.06	5.34	0.37
Alachlor	H	16,793	6,983	0.07	0.05	0.04	3.66	0.15
Terbufos	I	11,899	9,155	0.17	0.14	0.03	2.59	0.39
Metam sodium	OP	11,373	66	0.04	0.02	0.03	2.48	0.05
Atrazine	H	10,831	10,039	0.02	0.02	0.03	2.36	0.04
Chlorpyrifos	I	9,159	13,108	0.06	0.09	0.02	1.99	0.11
Carbofuran	I	8,756	19,143	0.17	0.29	0.02	1.91	0.39
Sulfur	F	8,754	1,893	0.01	0.08	0.02	1.91	0.01
DCPA	H	8,559	1,247	0.86	0.68	0.02	1.86	2.48
Copper	F	8,202	5,759	0.08	0.23	0.02	1.79	0.09
Azinphos methyl	I	7,911	5,405	0.32	0.21	0.02	1.72	0.57
Metolachlor	H	7,265	4,121	0.01	0.01	0.02	1.58	0.03
Endosulfan	I	6,120	3,548	0.29	0.22	0.02	1.33	0.45
Chlorothalonil	F	5,019	3,288	0.04	0.11	0.01	1.09	0.06
Dicamba	H	4,942	11,431	0.05	0.03	0.01	1.08	0.12
Upper Illinois River Basin (UIRB)								
[Study Unit Area: 6,996,354 acres; Area in Cropland and Pasture: 3,915,252 acres]								
Atrazine	H	1,855,991	1,571,630	2.9	2.76	0.47	19.44	6.61
Metolachlor	H	1,500,833	748,450	2.59	2.39	0.38	15.72	5.51

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Upper Illinois River Basin (UIRB) —Continued								
Cyanazine	H	1,118,412	467,558	3.79	2.95	0.29	11.72	8.07
Acetochlor	H	958,521	454,666	4.02	3.84	0.24	10.04	8.65
Pendimethalin	H	606,779	620,315	2.93	2.89	0.15	6.36	5.66
Alachlor	H	568,865	275,503	2.22	1.9	0.15	5.96	4.98
Glyphosate	H	283,344	487,709	1.77	2.05	0.07	2.97	3.41
EPTC	H	245,111	57,511	1.74	1.43	0.06	2.57	3.72
2,4-D	H	231,639	571,423	0.62	0.74	0.06	2.43	1.73
Butylate	H	223,925	59,122	2.91	2.98	0.06	2.35	7.52
Dicamba	H	184,480	452,016	1.92	1.16	0.05	1.93	4.54
Chlorpyrifos	I	165,139	160,003	1.07	1.15	0.04	1.73	2.05
Trifluralin	H	160,145	204,481	0.81	0.81	0.04	1.68	1.63
Terbufos	I	158,292	136,131	2.2	2.04	0.04	1.66	5.13
Bentazon	H	154,316	241,563	2.29	2.41	0.04	1.62	3.97
Simazine	H	134,897	104,967	2.8	3.06	0.03	1.41	4.4
Upper Mississippi River Basin (UMIS)								
[Study Unit Area: 30,291,534 acres; Area in Cropland and Pasture: 12,053,794 acres]								
Acetochlor	H	2,469,593	1,281,828	10.36	10.82	0.2	13.4	22.28
Metolachlor	H	2,397,267	1,135,083	4.14	3.63	0.2	13	8.81
Atrazine	H	1,538,189	1,951,098	2.41	3.42	0.13	8.34	5.48
EPTC	H	1,295,937	309,867	9.19	7.72	0.11	7.03	19.65
Pendimethalin	H	1,172,831	960,108	5.66	4.47	0.1	6.36	10.93
Alachlor	H	1,161,163	551,096	4.53	3.79	0.1	6.3	10.17
Cyanazine	H	1,128,232	693,975	3.82	4.38	0.09	6.12	8.14
Trifluralin	H	1,078,748	1,408,420	5.45	5.55	0.09	5.85	11
Dicamba	H	978,390	2,907,019	10.2	7.46	0.08	5.31	24.06
2,4-D	H	542,984	1,147,354	1.46	1.48	0.05	2.95	4.04
Dimethenamid	H	532,884	483,818	20.37	20.84	0.04	2.89	40.64
Bentazon	H	495,004	695,371	7.36	6.94	0.04	2.69	12.75
Glyphosate	H	368,972	547,939	2.3	2.3	0.03	2	4.44
Propachlor	H	365,805	151,494	9.46	9.05	0.03	1.98	27.79
Terbufos	I	237,239	210,992	3.3	3.16	0.02	1.29	7.69
Chlorpyrifos	I	223,869	217,170	1.45	1.56	0.02	1.21	2.78
Upper Snake River Basin (USNK)								
[Study Unit Area: 22,931,020 acres; Area in Cropland and Pasture: 2,017,8868 acres]								
Sulfuric acid	OP	15,759,582	55,078	60.75	52.15	5.59	45.38	72.54
Metam sodium	OP	8,005,645	51,636	24.83	13.45	2.84	23.05	32.66
1,3-D	OP	5,493,173	33,601	13.73	6.82	1.95	15.82	22.36
Sulfur	F	1,208,681	61,713	1.39	2.5	0.43	3.48	1.99
EPTC	H	739,252	233,544	5.24	5.82	0.26	2.13	11.21
Phorate	I	440,639	163,228	11.56	5.43	0.16	1.27	20.14

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Upper Tennessee River Basin (UTEN)								
[Study Unit Area: 13,690,767 acres; Area in Cropland and Pasture: 1,868,185 acres]								
Methyl bromide	OP	422,986	1,124	1.08	0.55	0.23	16.72	1.51
1,3-D	OP	341,932	4,908	0.85	1	0.18	13.52	1.39
Oil	I	256,370	7,097	0.48	0.52	0.14	10.14	0.66
2,4-D	H	139,182	246,941	0.37	0.32	0.07	5.5	1.04
Maleic hydrazide	OP	132,968	42,917	6.26	5.95	0.07	5.26	12.31
Atrazine	H	116,252	83,304	0.18	0.15	0.06	4.6	0.41
Captan	F	108,361	7,567	2.85	1.29	0.06	4.28	5.56
Acephate	I	80,714	55,896	2.22	1.75	0.04	3.19	3.91
Chlorpyrifos	I	71,534	38,161	0.46	0.27	0.04	2.83	0.89
Ziram	F	69,549	3,719	2.52	0.76	0.04	2.75	3.22
Sulfur	F	58,651	2,151	0.07	0.09	0.03	2.32	0.1
Metolachlor	H	46,256	29,725	0.08	0.1	0.02	1.83	0.17
Chloropicrin	OP	45,086	916	0.61	0.75	0.02	1.78	1.05
Alachlor	H	40,879	21,628	0.16	0.15	0.02	1.62	0.36
Mancozeb	F	40,445	5,745	0.49	0.28	0.02	1.6	0.75
Carbaryl	I	38,473	22,377	0.85	0.76	0.02	1.52	1.65
Pebulate	H	31,366	7,831	5.6	4.98	0.02	1.24	9.72
Metalaxyl	F	28,128	56,333	3.17	2.3	0.02	1.11	5.4
White River Basin (WHIT)								
[Study Unit Area: 7,260,658 acres; Area in Cropland and Pasture: 3,492,449 acres]								
Atrazine	H	1,904,800	1,410,990	2.98	2.48	0.55	24.59	6.78
Metolachlor	H	1,177,058	618,727	2.03	1.98	0.34	15.2	4.32
Acetochlor	H	789,630	340,358	3.31	2.87	0.23	10.2	7.13
Cyanazine	H	678,351	308,395	2.3	1.95	0.19	8.76	4.9
Alachlor	H	537,903	275,544	2.1	1.9	0.15	6.95	4.71
Pendimethalin	H	370,900	418,837	1.79	1.95	0.11	4.79	3.46
Glyphosate	H	343,055	608,844	2.14	2.56	0.1	4.43	4.13
Butylate	H	341,979	81,038	4.44	4.08	0.1	4.42	11.49
2,4-D	H	224,257	538,633	0.6	0.69	0.06	2.9	1.67
EPTC	H	133,877	32,416	0.95	0.81	0.04	1.73	2.03
Bentazon	H	127,340	186,847	1.89	1.87	0.04	1.64	3.28
Dicamba	H	97,294	255,935	1.02	0.66	0.03	1.26	2.39
Terbufos	I	90,940	81,215	1.26	1.22	0.03	1.17	2.95
Trifluralin	H	83,328	91,824	0.42	0.36	0.02	1.08	0.85
Willamette Basin (WILL)								
[Study Unit Area: 7,660,515 acres; Area in Cropland and Pasture: 1,014,018 acres]								
Diuron	H	392,901	313,386	10.49	9.65	0.39	12.76	14.52
Sulfur	F	325,640	43,883	0.38	1.78	0.32	10.57	0.54
Oil	I	218,819	8,527	0.41	0.63	0.22	7.11	0.57

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Willamette Basin (WILL) —Continued								
1,3-D	OP	171,158	1,084	0.43	0.22	0.17	5.56	0.7
2,4-D	H	151,273	275,839	0.41	0.36	0.15	4.91	1.13
EPTC	H	117,138	36,853	0.83	0.92	0.12	3.8	1.78
Glyphosate	H	108,054	156,572	0.67	0.66	0.11	3.51	1.3
Copper	F	94,504	23,128	0.9	0.92	0.09	3.07	1.09
Chlorpyrifos	I	88,635	75,138	0.58	0.54	0.09	2.88	1.1
Metolachlor	H	81,493	39,632	0.14	0.13	0.08	2.65	0.3
MCPA	H	69,280	148,609	1.49	1.21	0.07	2.25	3.07
Chlorothalonil	F	54,300	36,043	0.42	1.15	0.05	1.76	0.6
Atrazine	H	51,152	38,288	0.08	0.07	0.05	1.66	0.18
Propargite	I	48,712	27,381	1.42	1.41	0.05	1.58	2.26
Paraquat	H	44,676	69,036	1.06	0.73	0.04	1.45	1.9
Propiconazole	F	44,412	314,770	15.24	17.07	0.04	1.44	23.59
Bentazon	H	44,177	31,908	0.66	0.32	0.04	1.43	1.14
Fonofos	I	40,246	22,034	1.43	0.91	0.04	1.31	3.18
Dicamba	H	39,338	285,589	0.41	0.73	0.04	1.28	0.97
Carbaryl	I	38,863	21,783	0.85	0.74	0.04	1.26	1.67
Ethofumesate	H	37,467	107,049	9.74	24.02	0.04	1.22	26.65
Ethoprop	I	33,114	18,235	2.61	5.42	0.03	1.08	3.72
Simazine	H	32,784	22,630	0.68	0.66	0.03	1.06	1.07
Alachlor	H	31,337	11,623	0.12	0.08	0.03	1.02	0.27
Diazinon	I	30,911	22,022	1.91	2.05	0.03	1	2.63
Western Lake Michigan Drainage (WMIC)								
[Study Unit Area: 12,780,389 acres; Area in Cropland and Pasture: 2,817,763 acres]								
Metolachlor	H	592,116	312,436	1.02	1	0.21	12.01	2.18
Cyanazine	H	504,440	305,293	1.71	1.93	0.18	10.23	3.64
Sulfuric acid	OP	488,998	3,252	1.89	3.08	0.17	9.92	2.25
Atrazine	H	484,322	572,840	0.76	1.01	0.17	9.82	1.73
Metam sodium	OP	325,558	2,216	1.01	0.58	0.12	6.6	1.33
Alachlor	H	274,719	149,822	1.07	1.03	0.1	5.57	2.41
EPTC	H	252,897	72,744	1.79	1.81	0.09	5.13	3.84
Mancozeb	F	204,486	33,639	2.46	1.65	0.07	4.15	3.81
Dicamba	H	182,659	437,033	1.91	1.12	0.06	3.7	4.49
Pendimethalin	H	178,916	141,664	0.86	0.66	0.06	3.63	1.67
Chlorothalonil	F	151,837	29,670	1.19	0.95	0.05	3.08	1.68
Dimethenamid	H	115,600	91,746	4.42	3.95	0.04	2.34	8.82
Chlorpyrifos	I	115,240	117,838	0.75	0.84	0.04	2.34	1.43
Glyphosate	H	94,692	107,619	0.59	0.45	0.03	1.92	1.14
Oil	I	90,429	2,322	0.17	0.17	0.03	1.83	0.23
Terbufos	I	78,566	74,554	1.09	1.12	0.03	1.59	2.55

Table 5. Ranking of pesticides used in the National Water-Quality Assessment Program study units during 1992–1995—Continued

Compound	Pesticide type	Average amount applied (lb a.i.)	Study unit area treated (acres)	Percentage of national use	Percentage of U.S. area treated	Average amount applied to cropland and pasture area (lb a.i.)	Percentage of all reported pesticides used in the study unit	Percentage of total use among study units
Western Lake Michigan Drainage (WMIC) —Continued								
Maneb	F	60,370	12,491	2.01	1.78	0.02	1.22	3.51
2,4-D	H	53,683	108,670	0.14	0.14	0.02	1.09	0.4
Yakima River Basin (YAKI)								
[Study Unit Area: 3,931,978 acres; Area in Cropland and Pasture: 422,213 acres]								
Oil	I	2,392,999	62,744	4.5	4.63	5.67	42.03	6.2
Metam sodium	OP	1,005,122	6,506	3.12	1.7	2.38	17.65	4.1
1,3-D	OP	396,975	2,448	0.99	0.5	0.94	6.97	1.62
Sulfur	F	203,203	24,779	0.23	1	0.48	3.57	0.33
Sulfuric acid	OP	191,371	932	0.74	0.88	0.45	3.36	0.88
Azinphos methyl	I	104,671	54,799	4.2	2.12	0.25	1.84	7.48
Chlorpyrifos	I	96,895	49,650	0.63	0.36	0.23	1.7	1.2
2,4-D	H	96,009	175,097	0.26	0.23	0.23	1.69	0.72
Mancozeb	F	77,636	19,954	0.94	0.98	0.18	1.36	1.45
Ziram	F	73,975	15,983	2.68	3.24	0.18	1.3	3.43
Carbaryl	I	57,247	39,938	1.26	1.35	0.14	1.01	2.45
Yellowstone River Basin (YELL)								
[Study Unit Area: 44,868,888 acres: Area in Cropland and Pasture: 2,556,753 acres]								
1,3-D	OP	1,158,519	8,032	2.9	1.63	0.45	44.34	4.72
2,4-D	H	468,317	1,158,219	1.26	1.49	0.18	17.93	3.49
Triallate	H	89,929	90,848	3.94	4.08	0.04	3.44	8.98
Aldicarb	I	69,466	27,907	1.62	0.65	0.03	2.66	2.19
Cycloate	H	63,650	36,543	6.87	10.05	0.02	2.44	10.75
Dicamba	H	62,607	650,181	0.65	1.67	0.02	2.4	1.54
Glyphosate	H	62,009	46,294	0.39	0.19	0.02	2.37	0.75
Terbufos	I	59,633	56,752	0.83	0.85	0.02	2.28	1.93
Picloram	H	59,009	246,809	3.42	3.47	0.02	2.26	16.85
MCPA	H	46,954	135,807	1.01	1.1	0.02	1.8	2.08
EPTC	H	43,157	14,449	0.31	0.36	0.02	1.65	0.65
Ethofumesate	H	39,063	44,540	10.16	10	0.02	1.5	27.78
Diethatyl ethyl	H	36,006	31,757	9.06	11.88	0.01	1.38	24.82
Diclofop	H	35,384	52,714	3.17	3.75	0.01	1.35	5.71
Malathion	I	27,342	23,281	0.88	1.2	0.01	1.05	1.9