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# Fruit Chemical

Use Survey

Interviewer's Manual

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## **Chapter 1 General**

## **Background, Objectives, and Purpose**

### **Pesticide Applications, and Pest Control**

The National Agricultural Statistics Service (NASS) can trace the beginning of its environmental data program to 1964 when enumerators collected fertilizer application data from fields selected for objective yield (OY) measurement. During the late 1980's, rising concern about pesticide and plant nutrient levels in well water spurred Congress to fund an initiative to enhance water quality, but data needed for assessing the scope of these issues was scarce. This Water Quality Initiative mandated the development of a comprehensive database describing the nature of agricultural chemical use in the United States.

The U. S. Department of Agriculture (USDA) was designated the lead agency for this endeavor and development became the responsibility of NASS and the Economic Research Service (ERS). The Environmental Protection Agency (EPA), the U.S. Geological Survey (USGS), and the National Oceanic and Atmospheric Administration (NOAA) were also given responsibilities under the Water Quality Initiative. As a result, NASS has been collecting agricultural chemical use data for fertilizer and pesticides on major field crops and selected fruits, vegetables, melons and strawberries since 1990. The Agricultural Marketing Service (AMS), Human Nutrition Information Service (HNIS), and other USDA agencies, also collect and analyze agricultural chemical use and residue data. The aggregation of these data form the basis of the USDA Pesticide Data Program (PDP).

In 1996, the implementation of the Food Quality Protection Act (FQPA) required the EPA to conduct a review of tolerance levels for re-registration of pesticide products. An interdepartmental working group consisting of members from NASS, AMS, EPA, and HNIS meets regularly to coordinate USDA pesticide data collection as required by the FQPA. The PDP continues to be used by these agencies to evaluate the safety of the nation's food supply, potential human exposure to pesticide residues, and water quality issues.

Generally, farmers benefit from NASS chemical use data indirectly. They see the information through contact with extension advisors, in reports issued by colleges and universities, and in farm magazines or newspapers. Most respondents probably do not realize the data comes from this survey. The most direct user of this data is the EPA. Fruit growers have a vested interest in EPA's re-registration review because many pesticides they rely on are classified as minor use. Growers often have no alternatives to these chemicals. If re-registration is not allowed on products used on specialty crops, such an action could have serious consequences for both farmers and consumers.

EPA's risk analyses require the use of actual chemical application rates. **Only the grower can provide these data.** If these data are not available, EPA assumes maximum label rates were applied on all crop acreage resulting in an over count of the true amount of pesticides being used. This could more than likely result in cancellation of product registrations and could have serious consequences in cases where growers have no alternative chemicals. NASS survey results typically show that producers are using far less than maximum recommended label rates allow. Charts showing this difference have been created for your use in promoting the benefits of this survey.

The important benefits gained from responding to the survey are:

- Growers have a chance to tell how they use chemicals responsibly to maintain a safe and abundant food supply.
- The survey results are official USDA estimates and help to establish the facts about chemical use. Accurate data can be used to lessen concern relating to marketing and exports to other countries.
- Accurate and timely information on actual usage can be used in the decision making process for product registration, reregistration and product alternatives.

## **Publication of FCUS Data**

The NASS release, *Agricultural Chemical Usage - Fruit Summary*, will highlight key elements about the acreage treated with herbicides, insecticides, fungicides, and other pesticides for each crop surveyed by participating States. The complete tables will be available only by on-line query of the Quick Stats database. Each chemical product is classified by its active ingredient. The results from the 2023 FCUS will be published on July, 2024.

All NASS reports are available on the Internet at: http://www.nass.usda.gov

## **Questions and Answers**

Below are some common questions and answers about the USDA Pesticide Data Program. Enumerators should be familiar with these questions and able to answer questions the farm operator may have about the survey, during field interviews.

#### 1. Why do we need fruit chemical use data?

When chemical usage data are not available, EPA and other organizations have to determine usage on their own. Usually they use maximum label rates and total acres of commodity. This could bias the risk assessment and thus overstate actual usage, ultimately causing cancellation of these important pesticides. The Agricultural industry needs to tell their own story and here is a chance to give EPA actual usage statistics. Summarized data from the survey will be supplied to the EPA, as well as many other organizations. The use of this information will be determined by each recipient; however, the confidentiality of individual reports will be maintained and cannot be disclosed, per public law 107-347.

#### 2. Who uses the information produced from this program?

Recipients include growers, the public, news media, processors, foreign buyers of commodities, USDA agencies, and regulatory agencies such as the EPA and the Food and Drug Administration (FDA). The confidentiality of individual reports will always be maintained.

#### 3. What agricultural chemicals will be included in NASS's survey?

The 2023 FCUS survey includes pesticides used in growing fruit, melons, strawberries and other food crops. Fertilizer data is collected every other survey cycle and is not included in this year's survey.

## 4. What coordination has taken place between USDA, EPA, and FDA regarding this program?

Coordination has occurred at the highest levels within each of these agencies. Staff from all departments meet regularly to discuss FQPA's data needs and data collection priorities, while trying to reduce respondent burden and avoid duplicating efforts. An interdepartmental working group, consisting of representatives from NASS, ERS, EPA, and AMS, meets regularly to discuss the nation's pesticide issues. This group helps set a coordinated USDA pesticide data collection policy.

#### 5. Why are pesticides used on food crops and livestock?

Pesticides are used to decrease losses in yield and/or quality by controlling insects, weeds, diseases, and other pests. Pesticides also protect livestock

and poultry from insects and other pests. Harvest aids are used to regulate growth or cause fruit to ripen more uniformly.

#### 6. How many pesticides are used on foods?

More than 21,000 pesticide products are currently on the market. About 500 chemical compounds make up the active ingredients. EPA has approved 350 compounds for food uses; 200 of which account for 98 percent of the pesticides currently applied to agricultural products. The balance is used in non-food applications, such as disinfectants, termite and rodent control.

#### 7. Why is there concern over the safety of pesticides?

The past four decades have seen a remarkable scientific revolution in agriculture with chemical technology playing a crucial role in this revolution, which has produced fundamental changes in major sections of the U.S. economy, including agriculture and food processing. The expansion of chemical technology has also brought significant benefits to the American consumer with an abundant, low-cost, and high quality food supply. Since the publication of Silent Spring (Carson, 1962), the public has been greatly concerned about the presence of chemicals in their environment and food supply.

Public concern over pesticides was evident in the 1989 survey of consumers conducted by Opinion Research Corporation for Food Marketing Institute (FMI): "Trends: Consumer Attitudes and the Supermarket." Three-quarters of those polled considered pesticides a serious hazard. The need exists to provide an ongoing statistically based monitoring program for on-farm chemical use, and how it affects fruits in the marketplace. There is also a need to communicate and educate consumers about the public health significance of detected chemicals. This chemical use survey helps regulators make good decisions from sound science concerning public health.

#### 8. Are pesticides carcinogenic?

The relationship between cancer and exposure to pesticides is an issue with many unanswered questions. Nevertheless, grounds for concern remain because pesticides have been found to cause cancer in laboratory animals. EPA has banned or significantly reduced the tolerance level for pesticides suspected of being harmful to human health.

Today we are able to detect chemical contaminants at levels many times lower than those we could detect 10 years ago. Determining a substance's safe level is guaranteed to open a controversy when the scientific community cannot agree on the data for low level or long term risks. Risk calculations are based on maximum tolerance concentration, not on actual exposure. A safety margin of at least a factor of 100 is built into the overall calculation. Some risk, however small, is posed by any commodity, regardless of how it is produced, marketed, or prepared.

#### 9. How are pesticides regulated to safeguard consumers?

State and Federal governments regulate pesticides while looking to the scientific community for guidance on health and safety concerns. The Federal government takes the lead by approving pesticides and setting standards for their use. States have the option of regulating them in a stricter fashion.

Essentially, pesticides are regulated in three ways:

- Research is conducted on the safety of pesticides to determine how exposure to residues may affect health. For individual pesticides, human health risk assessments are conducted to ensure that their use does not pose unreasonable risks to human health. Only after extensive review of scientific test data can pesticides be registered for use on food crops
- Both domestic and imported food products are tested for pesticide residues that exceed the safe tolerance levels.
- Action is taken to remove from the market any food products with unsafe levels and to penalize the parties responsible.

Notes:

## **Chapter 2 - Terms and Definitions**

Enumerators working on the FCUS should be familiar with the definitions of the terms listed below. Appendix A of the *NASDA Interviewer's Manual* provides definitions for most of these terms. Some additional definitions follow on the next page.

actual nutrients active ingredients (AI) adjuvant beneficial organism Bt **Biopesticides** chemigation **Conservation Reserve Program** (CRP) conservation tillage contour farming cover crop crop dusting crop insurance crop rotation cropland defoliant fertilizer fertilizer analysis foliar pathogen fungicide fumigation genetically enhanced growth regulator harvested acres herbicide highly erodible land host free zone idle land insecticide integrated pest management (IPM) lime low input sustainable agric. (LISA)

microbial control micro-nutrient miticide mulching N-P-K-S nematicide nematode nitrogen (N) noxious weed no-till organic matter pathogen pesticide pheromone phosphate  $(P_2O_5)$ plant tissue test potash ( $K_2O$ ) residue scouting selective herbicide selective pesticide soil fumigant spot treatment strip cropping surfactant sustainable agriculture sustainable practices tank mix thinners topically applied trap crop treated acres treatment acres wetting agent

**Bio Pesticides:** pesticides derived from natural materials such as animals, plants, bacteria, and certain minerals. For example, canola oil and baking soda have pesticidal applications and are considered bio pesticides.

Foliar Pathogen: pathogen that occurs on above-ground plant parts

**Infestation Threshold:** the level of infestation at which it will pay to make a pesticide application; varies widely depending on costs of application and chemical selected, and on projected yields and market prices

Microbial Control: use of microorganisms or their by-products to control pests

Nematode: microscopic worm which is parasitic to plants

**Pathogen:** a living disease-causing microorganism, i.e., bacteria, fungi, virus, or mycoplasma (Mycoplasma is a living microorganism lacking a true cell wall; some species of which cause plant disease.)

**Soil Borne Pathogen:** a disease-causing organism that is found in the soil or on roots of plants

Soil Borne Pest: includes pathogens as described above and such pests as nematodes, insects or weeds

**Spiral:** type of applicator for pesticides normally applied at very low rates which contains a pre-measured amount of active ingredient

**Sustainable Agriculture:** a system of integrated farming practices designed to minimize the need for chemical additives to the soil and crops, and to conserve natural resources

**Sustainable Practices:** practices designed to work with the natural biological systems of the farm to permit farmers to substantially reduce or eliminate the use of chemical pesticides, fertilizers, and other farm inputs

**Threshold:** The level of infestation at which it will pay to make a pesticide application. The threshold level varies widely depending on type of plant, costs of application, chemical selected and on projected yields and market prices.

## **Chapter 3 - Survey Procedures**

## General

The instructions in this chapter are guidelines for completing the questionnaire and turning in completed work. This manual should be studied carefully before beginning work and should be used as a reference during the survey. Review the NASDA Employee Handbook for other instructions on administrative items, agency goals, etc.

The Fruit Chemical Use Survey does not focus on <u>all</u> fruit crops grown. Information will be collected for 23 targeted fruit crops in 12 States. Each State will collect use information for only a pre-determined set of targeted fruit in their State.

Enumeration begins October 1, 2023 and can extend to February 4, 2024. The data collection period will be dependent on the crop harvesting period and State NASDA budget allocations. Enumerators should avoid contacting respondents until harvest has been completed or the last chemical applications have been applied to the 2023 fruit crop. Please check with supervisor or state survey administrator for appropriate data collection times. The goal here is to obtain the data needed with as few trips to the respondent to reduce costs and burden.

## **Supplies and Materials**

Each enumerator should have the following materials before beginning personal enumeration:

- State highway maps.
- County highway maps.
- Clipboard to hold questionnaires.
- Black lead pencils for recording information on questionnaires and a ball point pen for completing NAS-011.
- Calculator.
- iPad
- NASDA Identification Card (NAS-005).
- NASDA Interviewer's Manual.
- Survey Materials.
  - Envelopes containing extra questionnaires for use as needed. Be sure the correct identification has been entered on any extra questionnaires used.
  - Fruit Chemical Use Survey Interviewer's Manual.
  - Respondent Booklets.
  - Supplements.
  - Extra pre-survey letter & publicity materials

- An envelope containing the following administrative forms.
  - Several copies of NAS-011 (Time, Mileage and Expense Sheet).
  - Several envelopes with the State Office address for submitting NAS-011.

## Interviewing

Before beginning enumeration, mark a state highway map with the locations of the selected samples assigned to you. To locate some sampled operations it may be necessary to contact local residents, post offices, Farm Service Agency offices, county extension agents, etc. The location of the operator's residence should be indicated by a small circle with the I.D. number written beside it. Use this map to plan your daily travel. This will make time and mileage use more efficient. Notify your supervisor about operations which cannot be located.

It is essential you interview the operator or the person designated by the operator who will be able to give the "best" information. If that person is not available, follow the callback procedures given later in this chapter.

The nature of this Survey dictates that the interviewer and respondent work together to complete the questionnaire. Encourage the respondent to use farm records to complete the questionnaire. The information required will be more accurate and take less time to obtain if the respondent has farm records available.

Be prepared on the first visit to make an appointment if the respondent wishes. See "Call Back Procedures" on Page 305.

## Enumeration

An operator or operation name, mailing address and I.D. number will be provided to you, along with any related information that the Field Office has. A sticker with the name and address of the operator will be on the front of the questionnaire. The mailing address will be the key to locating operators. The spelling of the name and the entire address should be verified during the interview. If an individual name is on the label, be sure to obtain any farm, ranch or business arrangement names other than that shown on the label.

If the sampled unit operated a farm at any time during 2023, but does not operate a farm at the time of the interview, an interview should still be conducted. Data should be collected for the time during which this operation was active. If the operation was taken over and the new operator did not operate any other fruit acres, that new operation can be substituted. More explanation is given in Chapter 4.

Should another visit be necessary, and the respondent requests a questionnaire; you may give him a spare blank questionnaire. DO NOT give them the labeled questionnaire. All labeled questionnaires are your responsibility and must be returned to the Regional Office at the end of data collection.

## **Recording Data**

Use a black lead pencil.

Recording data to the appropriate number of decimals is crucial in this survey to ensure accuracy. When tenths or hundredths are required, the answer cell will contain a decimal point and blanks to indicate how many places to the right of the decimal must be recorded.

#### Follow skip instructions to avoid asking questions needlessly.

Cells requiring code entries are identified. Write notes in margins or blank spaces of the questionnaire to describe unusual conditions. Good notes are a big benefit to the office and may help the office avoid re-contacting you or the respondent. When marking boxes, it is important to keep the mark within the box. Check marks or "X's" that cover many boxes can be confusing.

## **Completing the Questionnaire**

The heading on the first page of each section is CAPITALIZED. Items or questions within sections are numeric or a combination of alpha/numeric; for example: 1. d.

Enumerator instructions are italicized and enclosed within brackets, such as [go to Section F, item 1]. Bracketed instructions should never be read to the respondent. Optional wording is enclosed in parentheses - i.e., the operator (and all partners). Additional details about a question, include and exclude instructions, and other points, which may require clarification, are italicized and enclosed with in parentheses - i.e. (*include only bearing acres, etc.*). These should be read to the respondent when necessary. Space is provided in or near sections where it may be necessary to make calculations or notes.

## **Burden Statement**

The Paperwork Reduction Act, as administered by the Office of Management and Budget (OMB), requires that all questionnaires used by federal government agencies are required to include a burden statement with an estimate of the average response time. OMB requires that the average response time include refused interviews. OMB has the duty of approving and overseeing government data collection efforts. For FCUS, the burden statement is printed in the Respondent Booklet and on the first page of the questionnaire. Any questions a respondent has about the questionnaire, the time required to complete it, the burden statement, or the Paperwork Reduction Act should be addressed in writing to OMB.

Respondents often ask, "How long will this take?" Enumerators should note the average time requirement in the burden statement and never directly contradict it. However, enumerators may provide additional information, such as, "The official average for this survey is 45 minutes, but the interviews I have been doing in this area have been anywhere from 35 to 75 minutes."

## Making an Appointment

Many times it is preferable to make an appointment over the phone for a convenient time to conduct the interview. This procedure is also economical. However, telephoning can provide an easier means for the operator to refuse. Telephoning prior to the first visit is left to the discretion of the Survey Statistician and should be communicated to you by your supervisor.

## **Call Back Procedures**

Attempt to contact the operator and complete the interview on the first visit. Occasionally the first attempt is unsuccessful and it is necessary to visit again. The following instructions should be used as a general guide.

## **First Visit:**

On the first visit try to interview or set up a future appointment with the operator. If the operator is not present but is expected shortly, wait for an interview. If other contacts need to be made nearby, continue with those and return later.

Considering the possible length of the interview, it is advisable to make appointments at the operator's convenience and to keep them.

If the operator will not be available until the survey is over, interview a well-informed person such as a spouse, partner or employee. Be sure they are knowledgeable about the farm operation.

## Second Visit:

When a second visit is required or an appointment has been made, try to interview the operator. If this is not possible, interview a well-informed person. If neither a well-informed person nor the operator is available, try to set up another time when an interview can be completed.

Make every effort to secure the operator's telephone number and to determine where and when contact can be made. If the farm operator or some well-informed person cannot be contacted until after the survey, notify your supervisor as soon as possible.

## Third and Final Visit:

On a third trip, try to interview the operator or a wellinformed person. If a respondent is not available, explain in notes why an interview was not completed. Comments regarding whether the operation is an active farm or a non-farm and why the interview was not completed will be needed by your Supervisor and the Survey Statistician.

## **Supervision**

Supervisors will set up appointments to meet with each of their enumerators early in the survey. These visits will assist enumerators in getting off to a good start and allow supervisors to review completed work. Supervisors will probably instruct enumerators to hold their first completed questionnaires until they can be reviewed since a respondent may have to be re-contacted to clear up problems.

## **Completed Questionnaires**

Completed questionnaires should be handled according to your supervisor's instructions for this survey. If you are concerned that the last few questionnaires you complete might not reach the Regional Office before the final due date, call your supervisor or the survey statistician.

Keep a record of when you complete each questionnaire and when you sent it to your supervisor or the Regional Field Office. This will help locate the survey materials if they are delayed.

## **Questionnaire Versions**

There are two questionnaire versions for this survey: Enterprise and California Enterprise.

Sections in these versions are lettered consecutively, A through E, but not every version contains every section.

## Chapter 4 - Questionnaire Completion: Face Page, Screening and Change in Operation

## Introduction

Before you introduce yourself and this survey to an operator, get comfortable with the introduction you want to use. Be sure your introduction includes who you are, whom you represent and what you want. Remind the respondent that the data is confidential and are used only in analysis and to make State and Multi-state estimates. You should also mention that farm records are extremely helpful in answering the survey questions. Study the information in Chapter 1 of this manual so you can answer questions about the survey.

All of the operators you contact should have received a pre-survey letter from the Regional Office. Some of them may have heard or read about the survey through pre-survey radio, television spots or newspaper or magazine articles.

The primary name on the label can be an individual, partnership, or operation name. Labels will be on all questionnaires. You can correct minor name misspellings and the address on the label. Restrictions to name changes have loosened since the last fruit chem survey but we still need to follow some rules. If the operation on the label has changed, this operation will need to follow the rules outlined on pages 404-405.

## **Beginning Time**

Record the beginning time *(in military time)* of the interview when you begin your introduction in item box 004. We need correct beginning and ending times to accurately calculate the average interview time for this survey. One use of the average interview time is its inclusion in the burden statement. OMB requires that the average response time include refused interviews.

For Interviews that require multiple contacts (personal or phone), you should write the date and time the interview began in a note on the face page near the Beginning Time question. Accumulate the hours and minutes of interview time and write the total on the back page near the Ending Time question. This will enable the office editor to record the total interview time in the 006 box on the back page.

Do not include time spent away from the operator editing or copying chemical printouts. This time you are recording here is going to be used to measure time burden on the operator and has nothing to do with Enumerator timesheets. Time spent researching pesticides and fertilizers at the farm supply or distributor should be included in the interview time. Time traveling to the farm supply or distributor should not be included in the interview time.

## Face Page

The questions on the face page are to be used in the screening process to find out if the operation should be interviewed.

## Item 1 - Presence of Agriculture

During 2023, were any crops (including new plantings), livestock or poultry on the total acres operated? (Exclude crops produced by a tenant if (target) operator is landlord only)

Check YES if the operation grew crops or had cattle, hogs, sheep, poultry, or other livestock on the total acres operated.

To qualify as growing a crop, the operation must have made the decisions on planting, caring for and/or harvesting the crop. Landlords are to be excluded from this survey.

INCLUDE as crops: field crops, hay, fruit and nut crops, fruits, mushrooms, flowers, nursery stock, greenhouse crops, etc.

EXCLUDE as crops: home gardens and crops received in 2023 crop year as payment for land rented to someone else.

INCLUDE as livestock: all cattle, hogs, sheep, goats, chickens, turkeys, ducks, geese, bees, horses, rabbits, mink or other fur bearing animals, fish that were raised commercially, and FFA and 4-H livestock projects.

EXCLUDE as livestock: all animals, other than horses, kept for pleasure use or as pets.

Livestock dealers or speculators own livestock which have not yet been sold for slaughter. Their ownership is usually short-term, but they should be handled the same as any other operator.

#### Item 2 - Sale of Products or Receipt of Payments

During 2023, did this operation sell any agricultural products or receive government agricultural payments? (Exclude crops produced by a tenant if (target) operator is landlord only.)

INCLUDE: sales of crops, livestock, poultry, fish and other such products from total land operated. Include as government farm payments any payments received under various farm programs.

Item 2 should be checked NO when the respondent is a landlord who sold agricultural products from, or received government farm payments for land rented to another.

#### Item 3 - Crops Stored

During 2023, were any crops stored on the total acres operated? (Exclude crops produced by a tenant if (target) operator is landlord only.)

INCLUDE: all crops in storage on the total acres operated (except those produced by a tenant), regardless of ownership.

EXCLUDE: crops produced by a tenant.

Check YES if the operation had grain in storage on the total acres operated

#### Item 4 - Fruit Acres Operated by a Management Firm

During 2023, did this operation have any fruit acres which were operated by a management firm?

Check YES if any fruit acreage was operated by a management firm, and go to item 1 on Page 3.

If items 1 - 4 on the face page are all checked NO, you are instructed to go to item 1, Change in Operation, on page 2.

## **Change in Operator**

Complete this section when all four screening questions on the face page were answered NO or if the operation has changed hands. If another operator is now operating the land of the operator named on the label, the name, address and phone number of the new operator should be recorded here. This provides the information needed to update the List Frame when operators have gone out of business.

There can be **substitution** for the 2023 survey following the instructions given here.

## **Substitution Rules**

When it is discovered that the operation has changed hands, after recording the name and address of the new operator, enumerators will need to determine whether or not the new operator qualifies for an interview.

Substitution Allowed:

When a new operator is reported during the survey, that new operator should complete the questionnaire if the following conditions exist:

The new operator can report all chemical data for the entire calendar year of 2023.

AND

The new operator did not merge or combine the operation on the label with any other fruit acres held previously.

Substitution Not Allowed:

When a new operator is reported during the survey, that new operator should not complete the questionnaire if the following conditions exist:

The new operator had existing fruit acreage and it is being combined with the newly acquired acreage under one operation. We do not want this report.

The enumerator note on the change in operator page is to remind the enumerator of the special situation.

## [ENUMERATOR

NOTE:

If the operation on the face page was in business part of the 2023 crop year, complete this questionnaire for the part of the year during which the operation did business, unless the operation has been taken over by a new operator. If the operator has changed midyear, please conduct this interview start to finish with the new operator after reading "Valid Substitution" rules in section 4 of the Interviewer's Manual.]

## Screening

## Item 1 - Target Fruit Crops Grown by Operation

Refer to the list of target crops and codes for your State (page 3 or page 6 for California). Make sure that you are familiar with the target fruit crops for your State. If the operation had bearing acres of any of the target fruit crops in 2023, check YES and continue the screening process. Even if the operator did not harvest the target crop(s) due to crop loss, weather, economic or other unforeseen conditions, answer this question yes and continue the interview.

If the operation did not have any bearing acres of target fruit crops in 2023, check NO and write notes explaining the situation. Again, no screening survey was done on the fruit producers. Some of the data on State's list frame may be outdated and, therefore, we may have sampled some operators who no longer grow the target fruit crop(s). In this case, the interview should be concluded.

## Item 2 - Who Makes Day-to-Day Decisions

This item screens to find out who makes the day-to-day decisions for the operation. These decisions may be made by an individual operator, by partners, or by a hired manager. Check the box with the appropriate decision maker for this operation. If the operation's day-to-day decisions are made by an individual operator or by a hired manager, continue to Section A on page 5. If the decisions for the operation are made by partners, go to item 4.

#### Item 3 - Number of Partners

If partners are recorded in item 3, then in item 4, record the number of partners associated with the day-to-day decisions of the operation. Record the number of partners, including the operator, in the box. Do not include landlords and tenants as partners.

#### Item 4 - Verify or Add Partners in the Operation

Operations that are known to be partnerships should have pre-printed labels in item 4. Make changes to the labels as needed. If an operation adds a new partner, please print the new partner's name, address, and phone number in the box. If a partner is no longer involved in the operation, dash through his or her label, and make notes to explain the situation

## California Screening (California Version Only)

These additional screening questions are on page 4 of the California Enterprise version of the questionnaire.

#### Item 1 - CAL-EPA Reporting ID

The data collected for each operation in this survey will be matched with pesticide use reports which must be filed with the County Agricultural Commissioner and the California Environmental Protection Agency (CAL-EPA), Department of Pesticide Regulation (DPR). The CAL-EPA ID (pesticide permit number) is needed to make that match. Record the ID under which the operation makes pesticide use reports to the County Agricultural Commissioner for the TOTAL acres reported in Section A, Item 2. The ID may contain both letters and numbers. Be very careful when recording this ID.

#### Item 2 - Additional Operations Reported Under ID

Because a one-to-one match must be made between NASS records and CAL-EPA, DPR reports, we have to know whether the operation named on the face page is the ONLY operation which uses the permit number reported in Item 1 for making pesticide reports. Usually, only one operation is associated with a CAL-EPA ID. If other operations use this ID, check YES, and continue. If NO, go to Item 3.

When the CAL-EPA ID is used to report for other operations, you must record labeled operation CAL-EPA Site Location (Field

**Identification)** Numbers only (on page 7) for all crops listed in column 1 of the Fruit Acreage table (on page 6).

#### Item 2a - Additional Operation Names

If this ID is used to report for other operations, record their identifying information in the space provided.

## Item 3 - Screening for Additional ID's

This question screens for any other ID's that this operation may use to report pesticide applications to the County Agricultural Commissioners. If the operation uses more than one CAL-EPA reporting ID, check YES, and continue. If NO, go to Item 4.

If the operation uses multiple CAL-EPA ID's, you must record CAL-EPA Site Location (Field Identification) Numbers (on page 7) for all crops listed in column 1 of the Fruit Acreage table (on page 6).

#### Item 3a - Additional ID's Used

If the operation uses more than one CAL-EPA reporting ID, record these additional ID's to associate the operation with all of its pesticide use during the 2023 crop year.

#### Item 3b - Additional Operations Using CAL-EPA ID

As with Item 2a, we need to know if any additional operations are using any of the pesticide permit numbers associated with the operation named on the face page. If another operation is using one of the other numbers associated with the operation on the face page, check YES and continue. If NO, proceed to Item 4.

#### Item 3b(1) - Additional Operation Names

As with Item 2a, we need to know the names of any additional operations using any of the pesticide permits associated with the operation named on the face page. If another operation is using one of the other pesticide permit ID's associated with the operation on the face page, indicate which additional ID(s) is involved and with which additional operation.

#### Item 4 - Fruit Management Company to Care for Fruit Crops

If the operation employs a fruit management company or service to care for the target fruit acres on this operation, check YES and continue. If NO, proceed to Section A.

When the operation employs a fruit management company or service, you must record CAL-EPA Site Location (Field Identification) Numbers (on page 7) for all crops listed in column 1 of the Fruit Acreage table (on page 6).

#### Item 4a - Name and Address of Fruit Management Company

If the operation answers 'yes' to Item 4, they DO employ a fruit management company to care for the targeted fruit acres, record the name, address, phone number, and any other relevant information in the boxes provided. The name of the fruit management employee who handles the fruit on the target operation should be included.

# Chapter 5 - Questionnaire Completion: Sections A - E & Conclusion

## **Section A - Land Operated**

The information in this section defines and describes the selected operation during the 2023 crop year. All land associated with the operation during the 2023 crop year should be reported. Western states must exclude Public, Industrial or Grazing Association (PIGA) land used on an Animal Unit Month (AUM) basis. At the time of the interview for this survey, some of the land operated during the 2023 crop year may no longer be in the operation, but count it anyway.

In this section, one tenth of an acre is the smallest acreage that can be reported. If the operator reported only whole acres, be sure to include a zero after the decimal point.

The 2023 crop year will vary from State to State, or even from commodity to commodity within a State. In some areas the 2023 crop year is a twelve month period which crosses two calendar years. Crop seasons are used to define the crop year. Often the 2023 crop year will be Fall 2022 through Summer 2023. Let the respondent determine, for her/his operation which period is considered to be in the 2023 crop year. Sometimes a crop year will be less than a twelve month period. We want to include all land from the end of harvest of the 2022 crop to the end of harvest of the 2023 crop.

If an operation grew target crops during any part of the 2023 crop year, data for the operation should be collected for the time during which it was in business.

If the selected operator operates under several land operating arrangements, pick up data only for the land operating arrangement (*individual, partnership or managed*) associated with the sampled name.

#### **INCLUDE:**

(1) All acres owned and all acres rented from others.

(2) All cropland, woodland, wasteland, wetland, pasture, idle land, and government program land regardless of location, if the operator made the day-today decisions for that land. If an operator living in one State made the day-today decisions for land across State lines, that land should be included in this section.

(3) Land worked by sharecroppers. Sharecropper operations are considered part of the landlord's operation. A sharecropper is a worker who furnishes ONLY LABOR (his own and often that of his family) for a share of the crop. Sharecroppers generally furnish no machinery, seed, fertilizer, etc.

(4) All land (owned or rented) used by a son or daughter for 4-H or FFA projects, if the operation's equipment is used.

## Item 1a - Acres Owned

#### **INCLUDE:**

(1) Land held by the operator and/or spouse and/or dependent children under title, purchase contract, homestead law, or as an heir or trustee of a divided estate.

(2) Cropland, woods, wasteland, wetland, pasture, idle land, government program land, orchards and vineyards.

(3) Land which is not currently used for agricultural purposes.

(4) All land owned and enrolled in government programs (acres in the Conservation Reserve Program (CRP), Wetlands Reserve Program (WRP), and other diverted land.)

#### **EXCLUDE:**

All non-agricultural land separate from the operation that is permanently withdrawn from agricultural uses. This includes land in sub-divisions, commercial buildings, etc.

## Item 1b - Acres Rented From Others

Farm/ranch operators often do not consider non-cropland acres such as woods, wasteland and wetland to be part of rented acreage even though the landlord considers the whole parcel rented. Rent is usually based on the number of acres of cropland or pasture land. However, if the renter was responsible for looking out for the owner's interest in the woodland, wasteland and/or wetland, these acres should be included as acres rented from others.

#### **INCLUDE:**

All land rented from private individuals, partnerships, corporations, federal, State or local governments, Indian Reservations, railroads, etc. if the operation:

(1) Paid cash rent on a per acre basis.

(2) Paid for use of the land with a share of the crops (either standing or harvested).

- (3) Paid for use of the land with a share of livestock production.
- (4) Had free use of the land.

#### **EXCLUDE:**

(1) Any land used as pasture or for grazing livestock if payment was on a per head or Animal Unit Month (AUM) basis.

(2) Land on which the respondent's livestock were fed under a contract (for example, commercial feedlots).

#### Item 1c - Acres Rented To Others INCLUDE:

(1) Land that this operation owned (or rented from someone else) which was rented (or subleased) to another operation during the 2023 crop year. This land should also be included in either Item 1a or 1b.

(2) Land rented to others for cash.

(3) Land rented to others for a share of crop or livestock production.

(4) Land that this operation allowed another operation to use free of charge.

(5) Pasture or grazing land rented out on a per acre basis.

#### **EXCLUDE:**

(1) Land which this operation has enrolled in government programs (acreage in Conservation Reserve Program (CRP), Wetlands Reserve Program (WRP), and other diverted land).

(2) Land worked by sharecroppers on this operating unit.

(3) Land used by a son or daughter for 4-H or FFA projects, if the operation's equipment was used.

(4) Land on which crops were grown under contract, if the land owner furnished machinery **or** controlled the seeding, growing and harvest of the crop.

(5) Land used for pasturing someone else's livestock when payment was made on a per head or AUM basis.

(6) Land on which the operator fed livestock under contract for someone else.

#### Item 2 - Total Acres in Operation

The total acres operated are [1a + 1b - 1c]. Add up questions 1a and 1b, then subtract 1c, and enter calculation here.

<u>Item 2a</u> should be read back to the operator to verify that your calculation sounds correct. If so, check yes. If not, redo question 1 and 2 to get a correct total acreage.

## **Item 3 - Total Cropland Acres**

Of the (Item 2) total acres operated, enter the number of acres considered to be cropland in cell 802. Cropland is any tillable land currently in crop production or land that has previously been tilled and used for crops, and could be tilled again without additional improvements.

#### **INCLUDE:**

(1) Land in crop-pasture rotation and cropland used for pasture or grazing during the current year.

(2) Land in summer fallow.

(3) Idle cropland (no crops planted or harvested in current year).

(4) Cropland diverted for government programs (including CRP), unless the land is planted in trees.

(5) Fruit orchards, vineyards, nut trees, and citrus groves.

(6) Vegetables, melon crops, and other specialty foods.

(7) Nursery crops, turf grass, sod, and Christmas trees.

(8) Land in hay crops, excluding wild hay.

(9) Pasture land tilled in the past if the land could be tilled again without first clearing brush, trees, undergrowth, etc.

#### **EXCLUDE:**

(1) Permanent pasture and rangeland that has never been tilled.

(2) Wild hay land. Although wild hay is considered a crop, wild grasses cut for hay should not be included in acres of cropland.

(3) Government program acres planted to trees. These acres are woodland.

(4) Woodland and wasteland.

## Item 4 - Total Fruit Acres

Of the (Item 2) total acres operated, enter the number of acres in trees, bushes and vines on the operation in cell 803. This question will include <u>ALL</u> fruit acreage on the operation, including **both** target fruit crops and non-target fruit crops.

#### **INCLUDE:**

(1) All BEARING and NON-BEARING acreage in trees, vineyards, and bushes.

(2) All TARGET and NON-TARGET acreage in trees, vineyards, and bushes.

#### **EXCLUDE:**

(1) Abandoned orchards and vineyards.

## **Section B - Target Fruit Acreage**

The purpose of this section is to obtain the number of bearing acres of each of the target fruit crops. Expansions of these acres will be used in coverage analysis for the fruit chemical use data.

Within this section and throughout much of the rest of the questionnaire, the terms "fruit," "fruit acreage" and "fruit crops" will be used. Unless the questionnaire or specific manual instructions say otherwise, include only the target fruit crop(s).

Do not collect acreage or pesticide data for any fruit crops or acres for operations other than the target operation.

Do not collect acreage or chemical data for any fruit acres which this operation grows outside of your State. This is because States may receive special use permits for certain pesticides that are not allowed in other States.

#### **INCLUDE:**

(1) Bearing target crops produced on the acres operated in this State on the target operation.

(2) All commercial bearing acreage equal to or greater than one tenth of an acre on the target operation.

(3) All bearing acreage of target crops on the target operation for processing or fresh market.

(4) All bearing acreage of target crops on the target operation sold at roadside stands, farmer's markets or pick-your-own sales.

(5) Bearing acreage on the target operation not harvested due to weather, economic or other conditions.

#### **EXCLUDE:**

- (1) All target crops grown in another State.
- (2) Non-commercial orchard and vineyard acreage such as home gardens
- (3) New plantings and other plantings which are not yet bearing.

(4) All target crops grown by institutional, experimental, research or university farms.

(5) Abandoned orchards and vineyards.

## **Target Fruit Acreage Table**

#### Columns 1 & 2 - Crop Name & Code

In these columns, record the name and corresponding code of each of the target fruit crops grown. Use the list of target crops and codes for your State. *(California's target crops and codes are listed at the bottom of page 6 in the questionnaire.)* After the crop name is recorded in Column 1, record the corresponding crop code in Column 2. This page will often be referred to in the following sections of the questionnaire. *(California and Florida: To reflect a change in how fruit acreage and production data is published, tangerines and tangelos are to be collected as tangerines/tangelos.)* 

## **Target Crops and Codes**

<u>California</u>			
301	Apples	<u>New Jersey</u>	
303	Apricots	309	Blueberries
305	Avocados	340	Peaches
312	Cherries, sweet		
316	Dates	New York	
320	Grapefruit	301	Apples
424	Grapes, Raisin Type	314	Cherries, Tart
524	Grapes, Table Type		
624	Grapes, Wine Type	North Carolina	
330	Kiwifruit	309	Blueberries
331	Lemons		
333	Nectarines	Oregon	
334	Olives	301	Apples
435	Oranges, Navel	309	Blueberries
535	Oranges, Valencia	312	Cherries, Sweet
340	Peaches	341	Pears
341	Pears		
550	Plums	Pennsylvania	
343	Prunes	301	Apples
748	Strawberries	340	Peaches
349	Tangerines/Tangelos		
	0	South Carolina	
<u>Florida</u>		340	Peaches
320	Grapefruit		
335	Orange, All	Texas	
748	Strawberries	320	Grapefruit
349	Tangerines/Tangelos		-
	0	Washington	
Georgia		301	Apples
309	Blueberries	309	Blueberries
340	Peaches	312	Cherries, Sweet
		314	Cherries, Tart
Michigan		622	Grapes, Juice
301	Apples	624	Grapes, Wine
309	Blueberries	520	Pears
314	Cherries, Tart	345	Raspberries
340	Peaches		-

## **Target Fruit Crops Definitions** Apples: all types. Apricots: all types. Avacados: all types. Blueberries: Tame blueberries, all types. Cherries, Sweet: all types. Cherries, Tart: all types. Dates: all types. Grapefruit: all types, includes pomelos and pomelos. Grapes, All: all types. Kiwifruit: all types. Lemons: all types. Nectarines: all types. **Olives:** all types. Oranges: all types. Peaches: all types Pears: all types. Plums and Prunes: all types. Raspberries: all types. Strawberries: all types.

**Tangerines/Tangelos:** all types, includes mandarins, tangelos, tangors (hybrid of tangerines and oranges), and temples.

#### **Column 3 - Bearing Fruit Acres**

Record the number of bearing acres to the **tenth** of an acre for each of the target crops. For purposes of this survey, bearing acres are defined as acres which the operator would expect to harvest some commercial production. This includes young plantings which are just beginning to produce.

If the operation has acreage of bearing age that is kept from bearing due to water shortage, market considerations, etc., these acres should still be counted as bearing acres.

#### **Column 4 - Were Pesticides Applied?**

At the individual target crop level, this item screens for pesticide applications. This column will help you keep track of the crops for which you will later collect pesticide application data. Include herbicides, insecticides, fungicides, growth regulators, fumigants, etc. Include all applications made to the target crop during the 2023 crop year.

If herbicides, insecticides, fungicides, etc., were applied to an individual crop, code this column with a "1." If no pesticides were applied, simply make a "dash" through the cell.

Target crops reported in Table B, Column 4 (Yes=1), report all questions in section E, including questions 20-31. If no target crops are reported in Table B, Column 4 (NO=3), skip questions 1-3 in Section E (see below) and answer questions 4-19, as appropriate. Answer only questions 25-27 and 29-31 for OPMP questions in Section E. See page 545 for additional documentation.



## Column 6 - Harvest Completion Date for Prior Crop Year - (California Version Only)

Record the month, day, and year in which the 2022 crop year harvest was completed for each target crop. This will identify the appropriate starting month of pesticide applications for the 2023 crop year. If the respondent does not have the date recorded or is not reporting from his records, probe to determine the approximate timing. Try to get the month and then determine which third of the month the harvest was completed. If harvest was completed during the first ten days of the month, use 05 as the day. If it was sometime in the middle part of the month and the respondent is unsure of the exact date, use 15. If it was during the last part of the month and the respondent is unsure of the exact date, use 25.

Record the date in the format mm-dd-yy. For example, if the respondent knows that harvest was completed within the first ten days of November of 2022 but doesn't know the exact date, record 110522; 11 for November, 05 for the midpoint of the first ten days, and 22 for 2022. Do not use dashes (11-05-22) or slashes (11/05/22) when recording dates.

If the operator abandoned the bearing acres due to weather or other reasons, record the date the operator stopped applying chemicals for the 2022 crop and began applying for the 2023 crop.

## Column 7 - Harvest Completion Date for Current Crop Year - (California Version Only)

Record the month, day and year in which harvest of each 2023 target fruit crop was completed. If the harvest has not been completed for the 2023 crop, record the month, day and year in which the respondent expects to complete harvest of the 2023 crop. If the respondent does not know the exact dates, use the same coding pattern as described in the instructions for Column 7 to approximate dates.

If the operator abandoned the bearing acres due to weather or other reasons, record the date the operator stopped applying chemicals for the 2023 crop and began applying for the 2024 crop

#### CAL-EPA Site Location Number (California Version Only)

CAL-EPA Site Location Numbers are **required for all crops** listed in column 1 when any California Screening question was answered YES. Refer back to items 2, 3, and 4 on page

If item 2 was answered YES, then the CAL-EPA ID is used to report for

other operations and you must record Site Location Numbers.

If item 3 was answered YES, then the operation uses multiple CAL-EPA ID=s and you must record Site Location Numbers.

If item 4 was answered YES, then the operation employs a fruit management company or service. Please record Site Location Numbers.

Collecting the Site Location Numbers will allow matching the data from this survey to the CAL-EPA, DPR chemical application information. If more than 6 fields are needed, use a blank table from a blank questionnaire or if possible, go to the next line on the table and change the line number on page 7 to the line number you are using.

## **Fruit Acreage Supplements**

**Fruit Acreage Supplements were not created**. If the need arises for additional lines, pull out Section B from a blank questionnaire and renumber the lines beginning with the next unused number. Also, copy the identifying numbers from the label on the face page of the questionnaire onto the top of any Fruit Acreage supplements. Be sure these supplemental pages are returned with the questionnaire to the State Office. Record the number of supplemental pages used in the blank space at the bottom of Section B.

## **Section C - Fertilizer Applications**

## General

In this section, the respondent is asked to provide data on applications of fertilizers to the target fruit crop(s) during the 2023 crop year. The data provided in this section of the questionnaire will be summarized by applications of nitrogen (N), phosphate ( $P_2O_5$ ), potash ( $K_2O$ ), and sulfur (S).

#### Include:

- all chemical fertilizer materials applied specifically for the 2023 crop,
- fertilizer applied in the fall of 2022 if no crop was grown,
- fertilizers applied by custom applicators,
- nitrogen products applied with herbicides to make the herbicide more effective,
- commercially prepared manure products.

#### Exclude:

- micro-nutrients, such as iron, zinc, and boron,
- lime and gypsum/land plaster,
- non-purchased manure and manure produced and used on the operation (unprocessed),
- fertilizers applied to previous crops planted in this field (even if the carryover was beneficial to the crop currently in the field).

## Item 1 Fertilizer Application Table

Look back at Column 4 of the table in Section B: Fruit Acreage. The fertilizer applications table must be completed for each of the target crops to which commercial fertilizers were applied. All applications made after harvest of the 2022 crop through harvest of the 2023 target crop should be included. Do not include any applications made after harvest of the 2023 target crops. Commercial fertilizers include the common N-P-K-S types as well as commercially prepared organic materials, such as manure and milorganite, which have an N-P-K-S analysis provided by the fertilizer supplier. Include foliar sprays and leaf feeds. Exclude non-purchased manure or any manure produced and used on the operation.

## Office Use – Office Use Box, item code=200

• Leave blank if table is completed. Usable

- Code 1: Indicates an incomplete table (refusal or partially complete). All questions answered in the table should be crossed out. The table should be blank and no data keyed. **Not usable**.
- Code 3: Indicates no pesticide applications were made to the target crop(s) and the table is blank. Usable.

#### Column 1, Crop Name

Record the name of each crop to which the operation applied commercial fertilizers during the 2023 crop year. Refer to Section B to be sure that all reported crops (or separately reported acreage of the same crop) are accounted for in the table if fertilizers were applied to them.

#### Column 2, Crop Code

Refer to Column 2 in the Section B table for the crop code for each of the crops to which commercial fertilizers were applied.

#### Columns 3-6, Nitrogen (N), Phosphate (P<sub>2</sub>O<sub>5</sub>), Potash (K<sub>2</sub>O), & Sulfur (S)

Record the plant nutrients [nitrogen (N), phosphate ( $P_2O_5$ ), potash ( $K_2O$ ), and Sulfur (S)] of each fertilizer material applied to the selected target commodity field. These nutrients can be reported in either of two ways:

- 1. **Percent analysis:** This is the percentage composition of the product expressed in terms that the law requires and permits.
- 2. **Pounds of actual plant nutrients:** Use pounds of actual plant nutrients, if absolutely necessary.

Percent analysis is the preferred method of obtaining the data. Use actual plant nutrients, only if absolutely necessary. Percent analysis is preferred because products used can be more easily identified by this method.

Record the fertilizer data in terms of pounds, gallons, quarts, liquid ounces, dry ounces or pounds of actual plant nutrients applied PER ACRE. Be careful that the respondent does not give you the total amount of fertilizer applied to the entire acreage. If a respondent knows only the total pounds of fertilizer or plant nutrients applied to the total acreage, calculate rate per acre and enter it in the table. Rate per acre is calculated as the total quantity applied divided by the acres to which the application was made. Show the computations for deriving the rate per acre in the margin of the form.

For some crops, farmers may say that fertilizer applied to the previous crop grown on the field was partly for the benefit of the selected field. Only part of this fertilizer was actually carry-over for the target commodity. Watch out for this because we DO NOT want to include these fertilizer applications in the table. **Important:** Record each individual fertilizer application made to the target crop on a separate line only if the rate per acre or the total acres it was applied to were different. Otherwise put in the number of times it was applied in column 10.

When fertilizer materials are bulk blended for application (for example, 10-10-10-3 combined with 21-0-0-24), record each product on a separate line in the fertilizer table, even though the fertilizer blend was applied in one trip over the field

#### **Percent Analysis**

The most common method for reporting fertilizer materials is by percent analysis of their content of Nitrogen (N), Phosphate ( $P_2O_5$ ), Potash ( $K_2O$ ), and Sulfur (S) in that order, though in many cases Sulfur many be left off. For example, 13-13-13-5 is 13 percent Nitrogen, 13 percent Phosphate, 13 percent Potash, and 5 percent Sulfur. This means that forty-four (13+13+13+5) out of every one hundred pounds of this fertilizer is active ingredients (N, P2O5, K2O, S). Fifty-six (100 - 44) pounds of every one hundred pounds of this fertilizer is carrier material (inert ingredients).

Two of the more common fertilizers used in crop production are 18-46-0 (Diammonium phosphate or DAP) and 82-0-0 (anhydrous ammonia). If 18-46-0 were reported, you'd record 18 in Column 3 under N (nitrogen) and 46 under  $P_2O_5$  (phosphate). The K<sub>2</sub>O (potash) and S (sulfur) columns would be dashed since there is no potassium (potash) or sulfur in the mixture. For anhydrous ammonia, you'd record 82 under N. Since there is no phosphorus, potash, or sulfur in anhydrous, the phosphate and potash columns should be dashed.

Some fertilizer materials are applied in liquid form. A common liquid fertilizer material used in crop production is 32-0-0 (nitrogen solution). For this material, you would record a 32 under N for nitrogen and dash the columns for phosphate, potash, and sulfur.

Carrier or filler material makes up the rest of the total weight for commercial fertilizers. If a farmer reports 35-45-20, he's probably reporting pounds of actual nutrients instead of analysis since the three amounts (35 + 45 + 20) add up to more than 85 percent. However, if sulfur is incorporated into the material, this rule no longer holds true when all four analysis are added together.

For fertilizer applications reported by percent analysis, record the quantity applied per acre (including carrier) in Column 7 and the appropriate unit of measure in Column 8.

For bulk blended fertilizer materials, use a separate line for each of the fertilizers that the dealer blended in the mixture. If the dealer mixed 150 pounds of 18-46-0-0 and 250 pounds of 0-0-21-23 together, record each on a separate line. DO NOT just add it up and record it on one line as 400 pounds of 18-46-21-23. This

would be a major error, because the correct analysis of this fertilizer is 7-17-13-14, calculated by:

N 
$$(150 \div 400) \times .18 = .068 \text{ (or } 7\%)$$

because there were 150 pounds of 18-46-0-0 in the mixture and of those 150 pounds, 18% was Nitrogen.

$$P_2O_5$$
 (150 ÷ 400) x .46 = .173 (or 17%)

because 46 percent of the 150 pounds was available Phosphorus.

$$K_2O$$
 (250 ÷ 400) x .21 = .131 (or 13%)

because there were 250 pounds of 0-0-21-23 in the mixture and of those 250 pounds 21% was Potash.

S 
$$(250 \div 400) \times .23 = .143 \text{ (or } 14\%)$$

because 23 percent of the 250 pounds was available Sulfur.

#### **Actual Plant Nutrients**

Another way farmers might report fertilizer use is in terms of Actual Plant Nutrients (AN) applied per acre. This may also be called pounds of active ingredients. If the farmer knew he applied 60 pounds of nitrogen, 35 pounds of phosphorus, 40 pounds of potash, and 35 pounds of sulfur PER ACRE, record this information in Columns 3 through 6 and record code 19 in Column 8. In this case, Column 7 should be blank because we know the actual amount applied for each of the four materials so we don't need to calculate it from percentages.

When farmers report "units" of N,  $P_2O_5$ ,  $K_2O$ , or S this is usually a clue that they are reporting pounds of actual nutrients. Fertilizer materials will amount to more than the actual nutrient contents of the products applied, because part of the material applied is carrier material, just like when the farmer reports by percent analysis.

For example, if the farmer reported that he applied 100 units of Nitrogen in the form of anhydrous ammonia, he would have applied about 122 pounds of 82% nitrogen ( $100 \div .82 = 122$ ). If this were reported by percent analysis, "82" would be recorded in the N column, "122" in Column 7 and "1" in Column 8. If it were reported as pounds of actual nutrients it would be recorded as 100 in the N column and 19 in Column 8. Column 7 would be left blank.

When actual plant nutrients (active ingredients) or "units" of a fertilizer are reported, you should probe to be sure the quantity applied is correct. One way to do this is to ask (when units were reported) if the actual weight of material applied was more than the number of units reported. For example, "You said you put down 100 units of UAN32 per acre. Did the material you applied actually weigh more than 100 pounds per acre?"

#### **Other Methods of Reporting Fertilizer Use**

Farmers may also report fertilizers by name. The Respondent Booklet shows some of the more common fertilizers with their usual analysis.

**Anhydrous ammonia** is the strongest nitrogen fertilizer available. It must be stored in a tank under pressure. It is applied by injection into the ground or into irrigation water. Anhydrous is a liquid when under pressure, but turns into a gas when released and is lost if not injected into the soil. Anhydrous ammonia is a very popular fertilizer because it is often cheaper (per pound of nutrient) than other forms. It may be reported as "anhydrous", "gas", "NH<sub>3</sub>", "82-0-0", "units of nitrogen", or as "pounds of actual nitrogen" (N).

**Aqua ammonia** is one of the more common types of liquid nitrogen fertilizers. It is made up of anhydrous ammonia and water and is often used in Western states. It is reported in pounds (actual N) or gallons (material or product). Although it is a liquid, it is reported in pounds of actual N.

**Urea** is another commonly used nitrogen fertilizer because it has a high nitrogen analysis. It may be added through an irrigation system, usually as a nitrogen solution.

With many of the other fertilizers listed in the Respondent Booklet, the analysis may vary. Probe to find out if the farmer knows the analysis or the pounds of actual nutrients applied. If he doesn't know the analysis but knows the name, use the analysis in the Respondent Booklet.

#### **Column 7, Quantity Applied Per Acre**

Leave this column blank if actual nutrients were reported. If pounds, gallons, quarts or ounces were reported, record the amount used **PER ACRE**. Be sure the operator does not report the total amount applied to all acres. More than one application (of the same fertilizer made to the same crop) may be recorded on the same line; however, quantity used per acre should be for one application only (and the application rate for each of the applications must be identical).

#### Column 8, Unit Codes

Units which the respondent may report are listed. If the operator reports in pounds, enter code 1. If gallons are reported, enter code 12. For quarts, enter code 13. If ounces of **liquid** are reported, enter code 15. If ounces of **dry** product are reported, enter code 28. If actual nutrients are reported, enter code 19. As covered in the discussion of Columns 3 through 6, be sure to properly record the unit that the respondent reports.

#### **Column 9, Acres Applied**

Record the total number of acres receiving the reported fertilizer application. Again, record **treated acres**, which is the actual land acres treated with fertilizer.

#### Column 10, Number of Times Applied

If more than one application of the same fertilizer material, with the same quantity used per acre for each application, was made to the same acres, account for this in Column 10.

The minimum entry in this Column is 1, since each acre reported must have been fertilized with the specific fertilizer at least once. If the entry in this column is greater than 1, be sure that Column 7 (amount applied per acre per application) is for one application only, and not the sum of all the applications.

#### **Fertilizer Supplement**

You may or may not have been provided with a fertilizer applications supplement. If not, and it takes more than the 40 lines available in the questionnaire to record fertilizer applications, you may use as many copies of the Fertilizer Table from blank questionnaires as you need. Copy the identifying numbers from the label on the face page of the questionnaire onto each extra table used, and be sure it is returned inside the questionnaire to the RFO. Supplemental tables should begin with 002 and increase by one (i.e. 002, 003, 004).

## Section D - Pesticide Applications (Except California Version)

## **Pesticide Screening Questions**

The screening questions on page 7 screen for pesticide use on the target fruit crops. Refer to the answers to these questions as you complete the pesticide table. For example, be sure that if the respondent reported that herbicides were used in item 1, there is at least one herbicide application listed in the table.

The crop year begins at the end of harvest for the 2022 crop. All applications made after harvest of the 2022 crop up through harvest of the 2023 crop should be included.

#### Include

- All pesticide materials applied for 2023 fruit crops.
- Custom applied pesticides.
- Defoliants or desiccants.
- Biological and botanical pesticides, such as Bt.
- Applications made by airplane.
- Partial field treatments (including spot treatments)

#### Exclude

• Adjuvants, surfactants or crop oils (e.g., wetting agents, stickers, and spreaders).

Applications to fence rows, ditch banks, canals, and ponds.

## Spot treatments

Spot treatments occur when pesticide material is applied only to scattered spots in the orchard or field, such that the area treated is hard to define. Spot treatments will need to be included in the pesticide table this year as opposed to previous years when we omitted them. It will be difficult to determine the cumulative number of acres spot treated. Please get the operator to give their best estimate of acres spot treatments and record the acreage in column 9.

#### Adjuvants

Adjuvants are used to aid the operation or improve the effectiveness of

pesticides. A spray adjuvant may contain one or more surfactants, solvents, solubilizers, buffering agents, and stickers needed to formulate a specific type adjuvant. By using the proper adjuvant, it is often possible to use certain chemical pesticides in a tank mix that otherwise would present compatibility problems. However, if you or the respondent are in doubt about whether a product should be included, record it anyway and write notes to explain the situation.

#### Applications to fence rows, ponds, canals and ditch banks

This land should not be considered part of the target fruit acres. Often the chemicals used for killing weeds and other pests in these areas are not labeled for use on fruit crops.

#### Item 1 - Herbicide Use

This question determines whether herbicides were used during the 2023 crop year on the target fruit crops grown by the operation.

Check YES or NO, and continue.

#### Item 2 - Insecticide, Nematicide, Miticide Use

This question determines if insecticides, nematicides or miticides were used during the 2023 crop year on any of the target fruit crops grown by the operation.

Check YES or NO, and continue.

#### Item 3 - Fungicide Use

This question determines if fungicides were used on any of the target fruit crops grown by the operation during the 2023 crop year.

Check YES or NO, and continue.

#### Item 4 - Other Chemical Use

This question determines whether any other agricultural chemicals such as growth regulators, microbial agents, rodenticides, repellents, thinners, soil fumigants, pheromones, defoliants, desiccants, etc. were used on any of the target fruit crops during the 2023 crop year.

Check YES or NO, and continue.

#### **Enumerator Note**

This item routes you to the next appropriate question. If no pesticides were applied (items 1 through 4 were all NO), the rest of Section D should be skipped. If pesticides were applied to any of the target fruit crops, continue with item 6 on page 8.

### **Use of Records**

Because of record keeping requirements for restricted use pesticides, most operators will have records of chemical applications for each field. Encourage the respondent to use these records if they are available. Restricted use pesticides are identified as such on the product label.

## RESTRICTED USE PESTICIDE

(GROUND AND SURFACE WATER CONCERNS) FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION, AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION. THIS PRODUCT IS A RESTRICTED-USE HERBICIDE DUE TO GROUND AND SURFACE WATER CONCERNS. USERS MUST READ AND FOLLOW ALL PRECAUTIONARY STATEMENTS AND INSTRUCTIONS FOR USE IN ORDER TO MINIMIZE POTENTIAL FOR ATRAZINE TO REACH GROUND AND SURFACE WATER.

## **Use of the Respondent Booklet**

Both the field enumerator and the respondent should use the Respondent Booklet. Most of the pesticide products used on the target fruits are listed in the Respondent Booklet. It is very important to obtain the trade name as well as the formulation from the operator to insure that the correct product code is recorded. In order to report the formulation and whether the product is liquid or dry, the respondent may have to look at the product label or detailed itemized receipts for the product.

Some respondents may be willing to use the booklet and to report the product code for each of the products they used. You should encourage this since it makes the job of enumeration easier as well as making reporting faster and more accurate.

To aid in identification, the products in the Respondent Booklet are categorized as liquid (L) or dry (D) formulations. Ask the respondent if the product was in a liquid or dry state **when it was purchased**. This should help you and the respondent find and record the correct product codes.

The Respondent Booklet also lists the type or class of each product:

- X Herbicide (H);
- X Insecticide (I);
- X Fungicide (F);
- X Miscellaneous (M);
- X Miscellaneous Defoliant (MD);
- X Miscellaneous Growth Regulator (MG);
- X Miscellaneous Rodenticide (MR);
- X Miscellaneous Soil Fumigant (MS); and
- X Other products (O).

Some chemicals and pesticides have more than one use. Some products with more than one use may be listed twice if the second use is associated with a separate product code. For example,

L	Н	40942	Roundup
L	MD	90167	Roundup

For products that are listed more than once, be sure to probe for what it was used for and record the correct product code associated with that use.

Note that each product code listed in the Respondent Booklet specifies the trade name and formulation. The numbers and letters after the product name identify the concentration and form. For example, Captan 80-WP: Captan is the trade name, and the 80WP indicates the formulation. The 80 indicates the concentration as the percent of active ingredient in a pound of product, and the WP indicates that the form of the product is Wettable Powder.

Also note that for several products there is more than one formulation for a given trade name: Diazinon 50W, Diazinon 4E, and Diazinon AG500. Different formulations of a product have different concentrations of the active ingredient and inert materials.

It is extremely important that you get the correct product code because active ingredient concentrations for different products and different formulations vary greatly. Since we summarize by active ingredient in the product, recording a product or its formulation incorrectly will make a difference when the active ingredient application rate per acre is calculated.

If you cannot find a reported product in the Pesticide Code List in the

Respondent Booklet, complete the line at the bottom of section D which requests data on the unknown product. If you run out of space to report unknown chemicals in this section, use a blank page in the questionnaire, or write down the information on a blank sheet of paper to send to the Regional Office. Make sure that if you use a blank sheet of paper to record unknown chemical products, you print the operation name, operation ID from the front page of the questionnaire, and the target crop on the sheet of paper. The Regional Office will research the product and assign a new product code if necessary.

## **Pesticide Applications Table**

Item 6 is a lead-in to completing the pesticide applications table. All applications made after harvest of the 2022 crop through harvest of the 2023 crop should be included. **Do not include any applications made to the target fruit crops after the 2023 crop year harvest.** 

There are several ways a respondent may report within this section. The questionnaire is flexible enough to handle most of them. Depending on the way records are kept or the way the respondent thinks about chemical and pesticide applications, it may be easier to report all applications to one crop before going on to the next crop, versus reporting applications to all target crops in chronological order.

If the operator prefers to report chemical applications to target fruit crops one at a time, make sure that applications to all target crops are reported before you continue with the rest of the interview. Refer to Section B to identify any target crops the operator may have mistakenly skipped over.

The respondent may report applications in the order in which products were applied, especially if application records are used. In this case, applications to a specific crop may be mixed in with applications to other target crops. Take care that only applications to target fruit crops are reported in the chemical applications table. Chronological reporting is probably the most accurate form of reporting and the most likely form of reporting if whole farm records are used.

#### Office Use - Office Use Box, item code=300

- Leave blank if table is completed. Usable
- Code 1: Indicates an incomplete table (refusal or partially complete). All questions answered in the table should be crossed out. The table should be blank and no data keyed. **Not usable**.
- Code 3: Indicates no pesticide applications were made to the target crop(s) and the table is blank. Usable.

#### Columns 1 & 2 - Crop & Code

Record the crop name and code for each pesticide application. Each pesticide product must be recorded on a separate line, so you may have several lines for each crop receiving chemical applications.

#### **Column 3 - Product Code**

Record the product code from the respondent booklet of the herbicide, insecticide, fungicide, etc., reported.

In some cases fruit growers may report the use of something called **Bordeaux mixture**, which is a fungicide spray. It is made of hydrated lime, copper sulfate and water. Only copper sulfate (product code 70050 or 70051) is an active ingredient in the spray. If the respondent reports using Bordeaux mixture, record the amount of copper sulfate used, not the amount of the whole Bordeaux mixture.

#### **Information for Unlisted Pesticides**

If you cannot find a code for a pesticide in the Respondent Booklet, it still must be included in the table. You must also complete the descriptive items in the lines below the table to provide information needed to identify the unlisted products. Record the line number(s) of the pesticide from the table, the pesticide type (herbicide, insecticide, fungicide, etc.), the EPA Registration number or the name and formulation of the product, the product form (liquid or dry) and finally, where the product was purchased.

**The EPA Registration number is the best means of identifying a product**. If the respondent does not know the EPA Registration number or the trade name and formulation, record as much information about the product as you can. Where purchased can be especially helpful because the Regional Office can check with the sales outlet to get the correct formulation. A good, complete entry for an unlisted product follows.

#### **Unlisted Product Example:**

For pesticides not listed on card, specify:							
Line #	Pesticide Type (Herb., Insect., Fung., etc.)	Trade name & Formulation	Form Purchased (Liquid or Dry)	EPA Number			
22	<u> </u>	Danitol 2.4	L	<u>59639-35</u>			

#### What is What is an EPA Registration Number?

All pesticide products, if properly registered, are identified by a unique EPA Registration Number (EPA Reg. No.) which is required to be printed on the product label. A label example is shown below. EPA Reg. No's. are several digits long, such as 312-1813 or 2980-4. In the example, the **EPA Reg. No. is 100-673**. Be aware that the EPA Reg. No. is not the same thing as an EPA Establishment (EPA Est.) number. EPA Est. numbers indicate which companies are licensed to market the product, but do not uniquely identify the product.

EPA Reg. No. 100-673 EPA Est. 34704-MS-1<sup>®</sup>, EPA EPA Est. 5905-GA-01<sup>®</sup>

At a minimum, the EPA Reg. No. includes two components separated by a "-":

1 - **Firm Number**: identifies the company that is the primary registrant with the U.S. EPA; one to six digits long. California assigns their own unique firm numbers to companies that register products which are not required to be registered by U.S. EPA.

2 - **Product Number**: identifies the product; generally assigned sequentially (i.e., with each new EPA product registration for a company, a new product number is assigned); one to five digits long.

Occasionally, the EPA Reg. No. will include additional components. For example, 31703-EUP-1673, where EUP means the registration is for an Experimental Use Permit. Also, products registered in California have an extra component called the **California Revision Code** which identifies individual brand name registrations. This consists of two letters and creates a unique identifier for each product. A single product may have many brand names registered within the state. Unique revision codes assigned to each allow for identification of the specific brand name. The letters may or may not appear on actual product labeling.

Remember that EPA Est. numbers do not identify products, therefore, **do not record numbers labeled EPA Est. in lines 2 or 3 of example above of the Pesticide Applications section**. These numbers identify companies that are registered under an existing agreement certified by the U.S. EPA to market a product owned by another company. For a product registered in California, this number represents the company that holds the license for pesticide registration within the state.

Below are definitions of some common product state abbreviations.

L (Liquid)	These products flow like water. Concentrations are usually expressed in pounds per gallon.
E (EC)	Emulsifiable concentrates. These are usually thicker than water and are mixed with water and applied as sprays. They contain one or more active ingredients, one or more solvents and an emulsifier. Their concentrations are generally indicated in pounds per gallon.
F (FL)	These products are in liquid form. They contain
(Flowable)	finely ground active ingredients suspended in the liquid. They are mixed with water for application. Their concentrations are indicated in pounds per gallon.
D (Dust)	Dusts contain a low percentage of active ingredients on a very fine dry inert carrier such as talc, chalk or clay. They are usually applied directly as purchased. Their concentrations are expressed as percentages.
WP (W)	Wettable or Soluble Powders. These are dry
SP (S)	products, much like flour, which will dissolve or disperse in water. Their concentrations are indicated as percentages

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G (Granular)	Granular products contain active ingredients coated or absorbed onto coarse particles like clay, ground walnut shells or ground corn cobs. The pellets are about the diameter of the lead in a pencil (or larger); during shipment the granules have a tendency to break down and create dust. These are used as purchased. Their concentrations are expressed as percentages.
DF (Dry	Also known as water dispersible granules. These
Flowable),	are small pellets formulated to reduce the dust
WSG	problem created with granules. They are like
(Water	wettable powders, except that the active
Soluble	ingredient is formulated on a granule instead of a
Granules)	powder. The product pours easily into spray tanks for mixing with water. Their concentrations are expressed as percentages.
Bait	Bait products contain active ingredients mixed with food or another attractive substance. Concentrations are expressed as percentages.

#### Column 4 - Liquid or Dry

Record an "L" or a "D" to indicate in what form the product was purchased. Be sure the liquid or dry designation listed by the product code selected from the Respondent Booklet agrees with what you record here for the product.

#### **Column 5 - Tank Mix Line Number**

For products not applied as part of a tank mix, leave this column blank.

Products applied in a tank mix (two or more products mixed in the tank by the farmer/custom applicator and applied together) must be identified on the questionnaire. Since the table is designed for one product per line, each product in a tank mix must be recorded on a separate line. Identify the products in a tank mix by recording in Column 5 the line number of the first product in the tank mix.

For example, consider a tank mix where you recorded the first product on line 9, the second product on line 10 and the last product on line 11. In Column 5 of line 9 you should record "9" which signals that this line is the beginning of the list of products in that tank mix. In column 5 of line 10, record "9" again to indicate this product as part of the same tank mix listed on line 9. Record "9" in column 5 of line 11 also.

In a tank mix situation, column 5 (tank mix line), column 9 (percent

covered), column 10 (acres treated), and column 11 (number of times applied) must all be the same for each product in the mix.

#### Tank Mix Example:

The operation had 50 acres of bearing apples. All acres received a tank mix containing Agri-Mek 0.15EC at 20 oz/acre, Malathion 8 at 3 qt/acre, and Superior Oil at 1 gal/acre. This was applied once over all rows.

L	1	2	3	4	5	6 OR	7	8	9	10	11
I N E	CROP	CROP CODE	What products were applied?	۲L or	[line no. of first product in tank mix]	applied per acre per application?	total amount applied?	[unit code]	[percent covered]	How many acres were treated?	How many times was it applied?
				D]							
09	Apples	301	10405	L	9	20.00		15	100	50.0	1
10	Apples	301	10307	L	9	3.00		13	100	50.0	1
11	Apples	301	10386	L	9	1.00		12	100	50.0	1

#### Column 6 - Rate Per Acre Per Application OR

#### **Column 7 - Total Amount Applied Per Application**

The rate per acre per application or the total amount applied per application may be used for each product reported. **Get data for either column 6 or column 7, not both**. Do not use both on the same line.

If the respondent is able to give either total quantity applied per application or rate per acre, select the option which the respondent feels will give the most accurate data.

Record application rates to one-hundredth of the respective unit, that is, to two decimal places. Be sure that if whole numbers are reported, two zeros are entered after the decimal point.

For column 6, rate per acre is the amount used in one application to one acre. If the same amount of a chemical was applied several times to the same crop, more than one application may be recorded on a line by entering a number greater than 1 in column 11 (number of times applied).

In column 7, record the total quantity applied per application to all acres treated. If column 11 (number of times applied) is more than 1, be sure this figure is the total quantity for **one application only**, rather than a total for all applications.

See the example under the discussion about Column 11 below.

Note: For both columns, please notice cell values are needed to two decimal places.

#### Alternative Methods of Reporting Rate or Quantity:

In some cases, respondents cannot report either the rate per acre per application of a product or the total amount of the product applied per application. In these cases, there is an additional way to possibly collect the data.

If the respondent knows:

- 1) the amount of the product mixed with every 100 gallons of water,
- 2) the number of gallons in each tank,
- 3) the number of tanks used to cover the acres,

Make a note of these figures. The Survey Statistician will be able to calculate the amount of product used.

Other ways of reporting amount applied include parts per million (PPM), and rate per 100 gallons of water. In these cases, try to find out the amount of actual product used (before mixing with water), and **write notes** to give the Survey Statistician as much information as possible.

#### Alternative Method of Reporting Example:

The operation had 25 acres of bearing apples. Dupont Asana XL was applied once at full coverage by the operator. Exactly 5.8 ounces were applied per 100 gallons. To cover the 25 acres, 17 tanks were used and each tank holds 300 gallons.

L	1	2	3	4	5	6 OR	7	8	9	10	11
I	CROP	CROP	What		[line no.	applied per	total	[unit		How many	How many
Ν		CODE	products		of first	acre per	amount	code]		acres were	times was
Е			were		product in	application?	applied?		[percent	treated?	it applied?
			applied?	[L or	tank mix]				covered]		
				D]							

15	Apples	301	10004	L					100	25.0	1
----	--------	-----	-------	---	--	--	--	--	-----	------	---

Example of a note:

Line 15: 5.8 oz. of Dupont Asana XL was applied per 100 gal. of water. Operator used 17 tanks with 300 gal. in each tank.

#### Column 8 - Unit Code

Unit codes relate to the rate per acre or the total quantity reported in column 6 or 7. Spirals and packets are available as units. Even though these are not units of measure, our summary system knows how much active ingredient (AI) is in each packet or spiral and can calculate the AI for each. Please write notes if any unit is reported other than the ones listed in the questionnaire.

#### **Column 9 - Percent Coverage**

You should understand the difference between the **broadcast rate** per acre (amount needed for full coverage) and the **effective rate** (amount actually applied). Picture a two-lane country road which requires 40 cubic yards of gravel per mile to resurface the full width of the road. If one lane of the road is resurfaced, only 20 yards are used on a mile of road. Here, the broadcast rate (the amount required to resurface both lanes of a mile of road) is 40 cubic yards, while the effective rate (the amount this mile of road actually received) is 20 cubic yards.

The effective rate is the correct way to report actual chemical usage. This column provides an adjustment factor when broadcast rates per acre are reported.

If coverage included all rows or area of target crop acres, entering "100" in column 9 means that 100 percent of the rate per acre will be used in the data summary. If only every other row was treated, entering "50" in column 9 means that the rate per acre will be cut in half for the summary. If some other coverage was used (every third row, every fourth row, etc.) record the percent of the total acres actually covered.

If total amount applied per application is reported (Column 7) rather than rate (Column 6), enter 100 in percent of the rows covered (Column 9).

#### **Column 10 - Acres Treated**

Here, a differentiation must be made between treated acres and treatment acres. **Treated acres** are the actual physical (land) acres of crop which were treated B it does not matter how many times the acres were treated. It matters that these acres are only counted once. **Treatment acres** are the

total number of acres covered by applications of a product regardless of whether they are the same acres or different acres. If the same 40 acres are treated 4 times, the number of treated acres is 40 and treatment acres is 160 (4 x 40). In this example 40 acres would be recorded in column 10. Never record treatment acres in these questionnaires.

Acres must be reported to one decimal place in column 10. Zero must be recorded after the decimal point if whole acres are recorded. For example, if the farmer treated exactly 25 acres, the entry in column 10 must be 25.0. Otherwise, if "25" is entered in the cell, the summary will consider the entry to be 2.5, and a preventable error will be summarized.

#### **Column 11 - How Many Times Applied**

The minimum entry in this column is 1, since each acre that you will record in column 9 must have been treated at least once. However, multiple treatments may be reported. In some cases it may be easier to use more than one line to record information than to find a previous entry of a specific product application to that crop and change the number of times applied. It should be noted that in order to have a number greater than 1 in Column 11, all application data must be the same, i.e., same crop, product, rate or total applied, unit, and acres treated. (Washington State will record the date MMDDYY of the application in column 11.)

#### Number of Times Applied Example:

The operation had 5 acres of blackberries. Diazinon 4E was applied 4 times at full coverage by the operator. For the season, the producer used a total of 8 pints on his blackberries. Using 8 pints total for the year, this would mean that each application used 2 pints on his 5 acres of blackberries. This was applied over all 5 acres on each application.

L	1	2	3	4	5	6 OR	7	8	9	10	11
I N	CROP	CROP	What		[line no.	applied per	total	[unit		How many	How many
E		CODE	were applied?	[L or	product in tank mix]	application?	applied?	code]	[percent covered]	treated?	it applied?
				נט							
01	Blackberry	307	10056	L			2.00	14	100	5.0	4

## **Pesticide Applications Supplements**

More than one page of pesticide applications tables are printed in each questionnaire. If you need more than the 50 lines provided, use a **Supplemental Pesticide Applications Table**. Copy the identifying numbers from the label on the face page of the questionnaire onto each supplement used. Supplemental tables should be numbered beginning with Table 002. Every table used in completing the questionnaire must have a unique number. Be sure the supplement is returned to the Regional Office inside the questionnaire. When all Pesticide Supplements are complete, record the total number used in the **Pesticide Supplements cell 068** on the last page of the questionnaire.

## **Section E - Pest Management Practices**

## What is this Section for? How is the Information Used?

This section provides data about pest management practices the grower used on the total fruit acres on the operation in 2023.

Integrated Pest Management (IPM) is an approach to control pests in a more environmentally responsible manner than strictly relying on pesticides. IPM combines physical, biological, cultural, and chemical methods of pest control which decrease the reliance on chemicals.

- An integrated pest management approach can:
- Be an alternative to pesticide use;
- Reduce the number of pesticide applications needed;
- Reduce the toxicity of the pesticides used by producers;
- Improve the effectiveness of the pesticides applied.

The pest management data allows researchers to determine grower adoption levels of non-chemical pest management practices, the reduction in chemical use of those using alternative pesticide treatment strategies, and the corresponding environmental, public health, and cost benefits derived from decreased pesticide usage.

This section will also provide information about growers practices to reduce off-field pesticide drift; growers participation in programs to manage drift; grower decisions regarding application methods, nozzle choices, and spray tank management; sources of information growers are using to inform their pest resistance management decisions; grower practices employed to manage pesticide resistance; grower Best Management Practices (BMPs) to prevent pesticide exposure to pollinators; Grower awareness of BMPs to prevent pesticide exposure to pollinators. This data will be used to develop and coordinate Department policy on pest management and pesticides. This information is also used to work with EPA, FDA and other Federal and State agencies to provide information to help assure that pesticide tolerance reassessments are based on actual agricultural practices and the most accurate data available.

#### **Introduction and Definition of Pests**

The introductory statement:

1) Explains to the operator that you will be asking about pest management practices used on the **TOTAL** fruit acres on the operation in 2023;

2) Defines PESTS to include WEEDS, INSECTS, AND DISEASES. Many operators tend to focus on one kind of pest depending on the crop, but we are interested in control practices for all types of pests.

#### **Pesticide Applications Reported in Section D**

If any pesticides were reported in Section B – Fruit Acreage column 6, continue with item 2. If no pesticide applications were made, begin with item 4.

#### Item 1: Weather Data to Assist Determining Pesticide Applications

Weather data used by operators to determine either the need or when to make pesticide applications is another form of pest management. By monitoring weather data, the timing of spraying orchards or fields may increase effectiveness, allow for a lower application rate, reduce drift, or decrease the total number of applications needed. Temperature and precipitation data can be used to determine whether a chemical application is likely needed. Fungi development is more likely to occur in damp conditions with low temperatures. If conditions have been dry and hot, a fungicide treatment may not be needed.

If this practice was used during the 2023 crop year, enter code 1 = YES.

#### **Item 2: Biological Pesticides Applied**

Determine if any biological pesticides were used for the 2023 crop year. A biological pesticide is a product such as an insect growth regulator, neem, or an active bacteria.

**Neem** is extracted from the seeds and leaves of the neem tree. The primary mode of action of neem is to cover the plant with this natural pesticide. The insect pests refuse to eat any plant covered with neem, eventually starving to death. Another effect is that it acts as a repellent and will not permit an insect to reproduce.

The active bacteria, **Bacillus thuringiensis (Bt)**, is a natural insecticide found in the soil and acts as a biological pesticide when it is applied to a crop.

There are numerous biological insecticides on the market.

If this practice was used during the 2023 crop year, enter code 1 =YES.

#### Item 3: Pesticides Rotated or Tank Mixed to Prevent Pest Resistance

A common pest management practice is to rotate (from one year to another) or tank mix chemicals with different mechanisms of action. By different mechanisms of action we are talking about HOW the chemical kills the pest (attacks the nervous system, digestive system, etc).

If the operator rotated or tank mixed chemicals for the primary purpose of slowing the development of pest resistance in 2023, enter code 1 = YES.

#### **Item 4: Method of Pest Scouting**

This question serves as a screening question to determine the intensity level of pest scouting. Scouting involves some means of monitoring the orchard or field for the presence of pests. Scouting is an activity, and there are differences in the ways producers scout for pests. Scouting may be done once in a while when an operator is doing fieldwork, or scouting may be done every so many days during the growing season or even daily when weather conditions favor rapid development of specific pests.

Enter the code that represents the primary approach the respondent used to scout for pests on the operation=s fruit acres. Continue with item 6 if code = 1, with item 8 if code = 2, or with item 11 if code = 3.

#### <u>Code 1</u>

By deliberately going to the orchard or field specifically for scouting activities: The operator has an established scouting strategy (based on time and/or method) and goes to the orchard deliberately for the purpose of checking for pests. The orchard may be scouted based on a schedule such as every four days. The operator may have some predetermined approach to how the scouting will be done (check every x number of rows and every x number of plants per row, etc.). Insect traps may be used for monitoring infestation levels. These are more deliberate, thorough, and scientific approaches to scouting than conducting Ageneral observations or scouting only if there is field work to be done in or adjacent to the orchard.

#### Be sure to code deliberate scouting as "1"

#### <u>Code 2</u>

Conducting general observations while performing routine tasks: The operator does not have a structured scouting strategy where deliberate scouting trips are made to the orchards or fields at determined intervals or when weather conditions favor rapid development of specific pests. Rather, the operator periodically checks for the presence of pests as field tasks are performed. The scouting approach is somewhat casual where the operator may not even get off the tractor to look more closely for pest presence. What part of the orchard or field the operator may look for pests is random and counts of pests are not taken.

#### Be sure to code scouting while performing routine tasks as "2"

#### <u>Code 3</u>

The fruit acres were not scouted for pests.

#### Be sure to code acres were not scouted as a "3"

#### Item 5: Established Scouting Process Used

If the operator's method of deliberately scouting the fruit acres includes using a recommended system of checking every x number of rows and every x number of trees or bushes per row, or another mathematically sound approach for accurately determining pest levels, or if pest counts are taken while randomly checking in the orchard or field or if pest traps are used to monitor insect levels, enter code 1 = YES.

If the operator deliberately scouts the fruit acres for pests by randomly spot checking one or more parts of the orchard (not using a systematic system), and does not keep records of pest population counts or use pest traps, the answer is NO, leave the column blank.

#### Item 6: Why Scouting Was Done 6. a. A pest advisory warning?

Under certain climatic conditions, the potential for pest infestation is higher than normal. The County, Cooperative or University Extension advisor, crop consultant or other advisory source will often issue a pest advisory warning - a recommendation that growers scout their orchards or fields for particular pests.

If scouting was done based on a pest advisory warning, enter code 1 = YES.

#### 6. b. A pest development model?

Pest monitoring consists primarily of "in field" scouting surveys. However, there are also area-wide programs that monitor pest development, population levels, migration and seasonal emergence of overwintering insects. These predictive models are used to forecast the time and development stage of pest infestations. Often, a trapping network is used in conjunction with a predictive degree-day model to forecast insect larval growth and development and predict when growers need to scout for particular pests.

If scouting was based on information from a pest development model, enter code 1 = YES.

Item 7: Pest Scouting Column 1: Was Field Scouted for Pests

Determine if any fruit acres were scouted for weeds, insects or diseases.

For each type of pest (weeds, insects, or diseases) scouted for, enter 1 for YES, and then ask column 2.

#### Column 2: Who Performed Scouting for Pests

Ask the respondent who did the majority of the scouting for weeds, insects, and diseases. If two or more people did equal amounts and there is no clearcut major "scouter", enter the lowest code of those scouting. If the operator, a partner, or a family member did the most scouting, enter code 1. If most was done by an employee (other than the operator, a partner, or a family member), enter code 2. If most of the scouting was done by an employee of a farm supply or chemical company, enter code 3. If a hired crop consultant or a commercial scouting service was used, enter code 4.

#### **Item 8: Records Kept to Track Pests**

Only organized, formal records, must be considered, not just notes jotted down on scraps of paper. It doesn't matter who kept the records -- it can be the operator, an employee, scouting service or someone else. Determine if some type of formal written, electronic, or map records were kept for this operation on pest activities, counts, etc.

**Important Note:** If scouting was performed by someone outside of the farm operation (codes 3 or 4, above), some type of formal scouting records were most likely kept. If not, please make a note as to why no records were kept.

Enter code 1 = YES., if records were kept on scouting.

#### Item 9: Scouting Data Compared to Published Thresholds

This question asks if the operator compared scouting data against published infestation threshold information to determine whether or not to make a chemical application to control the pest(s). The threshold generally relates to an economic breakeven point. If the pest count from scouting is below the threshold number, it would likely cost more to apply the chemical than the economic loss the pest is likely to cause through reduced crop yield or quality.

#### Item 10: Use of Field Mapping

Ask if this operation used field mapping of previous years' pest problems to assist in making pest management decisions this year. The level of insect, weed and disease infestation is not always uniform throughout an orchard or field. Previous years' mapping data can help an operator determine if it would be more cost efficient to treat portions of an orchard rather than the whole orchard. Operators sometimes use a topographic map from the National Resource and Conservation Service (NRCS) for this purpose. There are also software programs available for field mapping. By identifying trouble spots, the map can help in making future pest management decisions.

If this practice was used, enter code 1 = YES.

#### Item 11: Diagnostic Laboratory Used for Pest Identification

Diagnostic laboratories can assist producers in identifying pests found on their operations. Soil samples can be analyzed for the presence of soil borne pests and plant tissues can be analyzed to identify diseases and pathogens. Determine if the operator had such a biological analysis performed by a diagnostic laboratory for any fruit acres in 2023.

#### **Item 12: Removed Crop Residues**

By removing crop residue after a crop is harvested, a vital habitat for pests is removed. Methods of removal could include baling, burning, and/or removing debris from the orchard or field. If the operator used this practice to control pests, enter code 1 = YES.

#### **Item 13: Maintained Ground Covers**

Determine if any ground covers, mulches, or physical barriers were maintained in or around the fruit acres to reduce pest problems. If this practice was used, enter code 1 = YES.

#### Item 14: Applied or Released Beneficial Organisms

Beneficial organisms are predators, parasites or other natural enemies of crop pests. Some kinds can be purchased by operators and used on their orchards.

Find out if the operator purchased and released any beneficial species of insects.

#### **Item 15: Used Biological Pest Controls**

Determine whether any floral lures, attractants, repellants, pheromone traps or other biological pest controls were used on any fruit acres.

#### **Item 16: Cultivation for Weed Control**

Determine whether any fruit acres were cultivated for weed control during the growing season.

#### Item 17: Tilling, Chopping, Mowing, Burning

Eliminating habitat where pests can breed and grow is an important pest management strategy. Producers often mow or otherwise maintain areas immediately adjacent to orchards and fields to minimize the habitat where insects live.

Find out if practices such as mowing, burning, tilling, and chopping of field edges, lanes or roadways, were used to slow or control the spreading of pests into orchards.

#### **Item 18: Cleaning of Equipment**

Cleaning of equipment used in an orchard or field prevents carrying pests (such as weeds and disease) from one field to another. Find out if the operator cleaned the harvesting and/or tillage equipment to reduce or prevent the spread of pests.

#### **Item 19: Irrigation**

If any fruit acres were irrigated for the 2023 crop year, then answer YES and ask the water management question.

#### **Item 19a: Water Management Practices**

Water management practices which can be used to manage pests include irrigation scheduling, using irrigation methods which minimize plant tissue dryness, drainage control, and treatment of retention water. Find out if water management practices were used to control pests on any fruit acres. **Completion Code for Pest Management Practices.** 

COMPLETIO	N CODE for PEST ENT PRACTICES
1 Incomp/R	500
g	86

Code box 500 as 1 if questions 1-19(a) are incomplete, otherwise do not code this item.

Conclusion - Back Cover

#### **Survey Results**

After completing the interview, offer the results of the survey. The official survey results will be available after the publication date on Wednesday July 29, 2024, and can be viewed on line from the location listed below:

To receive the complete results of this survey on the release date, go to https://www.nass.usda.gov/Surveys/Guide to NASS Surveys/

Survey results can be sent electronically to respondent. Write in current email address, cell 1095, to receive survey results:

To have a summary emailed to you at a later date, please enter vour email address.

[Thank the respondent, then review this questionnaire.]

#### **Ending Time**

Record the ending time *(in military time)* of the interview in cell number 005.We need correct beginning and ending times to accurately calculate the average interview time for this survey. One use of the average interview time is its inclusion in the burden statement. OMB requires that the average response time include refused interviews.

For interviews that require multiple contacts (personal or phone), you should write the date and time the interview began in a note on the face page near the Beginning Time question. Accumulate the hours and minutes of interview time and write the total on the back page near the Ending Time question. This will enable the office editor to record the total interview time in the 006 box.

Exclude the time you spend reviewing the questionnaire or verifying calculations by yourself after you have completed the interview. Be sure the ending time is after the beginning time entered on the face page.

#### **Record Use**

If the respondent used records to report pesticide and/or insecticide data during the interview, enter a code 1 in cell 064.

## Supplement Use

Record the number of pesticide supplements (cell 068) used to complete the interview in the designated cell. These items provide a means to check for misplaced or lost supplement sheets during the computer edit. Be sure all of the supplements have complete identification and are inside the questionnaire before mailing or turning it over to a supervisor.

Record the respondent's name and phone number.

#### **Response Codes**

When you complete the interview, enter the appropriate **RESPONSE CODE** in the 9901 cell by MMDDYY.

Code 1 = **Complete** Code 2 = **Refusal** Code 3 = **Inaccessible** Code 4 = **Office Hold** 

## **Respondent Codes**

The **RESPONDENT CODES** identify the person who was interviewed. Enter the code identifying the person who provided most of the data in cell 9902.

- Code 1 = **Operator or Manager**
- Code 2 = **Operator's Spouse**
- Code 3 = Accountant or Bookkeeper
- Code 4 = Partner
- Code 9 = Other Someone other than those listed in codes 1 4

## **Mode Codes**

The **MODE CODES** identifies the how the interview was conducted. Enter the mode code which best describes how the data was collected in cell 9903.

Code 2 = PATI-Paper Assisted Telephone Interview (Telephone)

Code 3 = PAPI-Paper Assisted Personal Interview (Face To Face)

#### Enumerator

Sign the questionnaire in the S/E name box and record your enumerator ID number in cell 098.

#### Date

Record the date the questionnaire was completed. Enter the date in MMDDYY format on the lines provided in cell 9910. For example, if the interview was completed on November 6, 2023, enter  $\underline{11} \ \underline{06} \ \mathbf{23}$  in the date cell.

## **Final Review**

Review the entire questionnaire before forwarding it to your Supervisor or the Regional office. Make sure all items are complete, including 'Yes' and 'No' boxes checked, yes boxes coded with a 1, and dashes (--) in cells when the response is 'None' or 'No' as appropriate. Make sure notes are present and complete for unusual situations.