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The Use of California Environmental Protection Agency Pesticide Use Data by NASS

John Amrhein

THE USE OF CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY PESTICIDE USE DATA BY NASS, by John Amrhein, Survey Quality Research Section, Survey Research Branch, Research Division, National Agricultural Statistics Service, United States Department of Agriculture, Washington, DC 20250-2000, February 1994, Report No. SRB-94-04.

ABSTRACT

The National Agricultural Statistics Service (NASS) collected data on the use of pesticides on vegetable crops in 1992 through its Vegetable Chemical Use Survey (VCUS). The California Environmental Protection Agency (CAL-EPA) requires all pesticide use to be reported to its Department of Pesticide Regulation (DPR). To avoid duplication of effort and reduce respondent burden, NASS decided to use DPR's pesticide use data in lieu of collecting it during the VCUS in California. Other portions of the survey remained unchanged.

NASS encountered numerous difficulties using DPR's pesticide data. This paper reviews an initial investigation into the reasons for these difficulties. Examples of the discrepancies that occurred in the data recorded by the two agencies are presented. Reasons for the discrepancies, with recommendations for avoiding the difficulties in the 1994 VCUS are discussed. Long term goals for making the use of DPR's data possible are also presented.

KEY WORDS

Administrative data; Pesticide use; Chemical Use Survey.

This paper was prepared for limited distribution to the research community outside the U.S. Department of Agriculture. The views expressed herein are not necessarily those of NASS or USDA.

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SUMMARY

The National Agricultural Statistics Service (NASS) collected data concerning the use of pesticides on vegetable crops in 1992 through its Vegetable Chemical Use Survey (VCUS). The California Environmental Protection Agency (CAL-EPA) requires all pesticide use to be reported to its Department of Pesticide Regulation (DPR). To avoid duplication of effort and reduce respondent burden, NASS decided to use DPR's pesticide use data in lieu of collecting similar data during the VCUS in California. Other portions of the survey remained unchanged.

NASS encountered numerous difficulties using DPR's pesticide data. Many NASS sampled units could not be matched to a DPR reporting unit in the file supplied to NASS. For those units that were matched, many commodities reported to the two agencies did not match. For those commodities that did match, much of the acreage reported to the two agencies did not agree. Rates of application were in error, and with the original document unobtainable, it was impossible to determine the reasons for the errors.

Research was initiated in August of 1993 to determine the reasons for these discrepancies. Grower identification numbers reported to NASS during the 1992 VCUS did not match those in the DPR 1992 data file for one of the following reasons: (1) data for the grower were not included in the file supplied to NASS either because no pesticides were applied by the grower to NASS targeted crops or because an error associated with the commodity codes caused exclusion of the data; (2) the grower identification number recorded by NASS during the VCUS was in error because it was obsolete, less than 11 digits or was simply recorded incorrectly; or (3) the grower identification number on DPR's data tape was in error. There were frequent occurrences of numbers missing and numbers shorter than the required 11 digits.

Commodities did not match because DPR and NASS require different levels of detail. NASS requires specific commodity identification and use whereas DPR requires a general commodity name; for example melons versus cantaloupe or tomatoes versus processing tomatoes. This same problem contributed to disagreement of acreage. Other reasons for acreage disagreements include the occurrence of double and triple cropping sometimes being counted only once for DPR data (depending on the field numbering strategy) but twice or three times for NASS data. Also, crop year dates define which acreage to include in NASS' summarization whereas the calendar year defines DPR's time frame of interest.

This report does not address the problems encountered with rates of application, since the data overlapping between the two sources was limited to planted acres for the targeted crops. This issue is discussed more fully in the section "Limitations of the Analysis."

INTRODUCTION

The National Agricultural Statistics Service (NASS) collects data on pesticide use through its Chemical Use Survey Program. Data collected in the 1992 Vegetable Chemical Use Survey (VCUS) from vegetable growers in 12 states included the amounts of pesticide products applied to their crops. The data were recorded in one table of a paper questionnaire (see Appendix A).

California is unique to this survey program in that the Department of Pesticide Regulation (DPR) within the California Environmental Protection Agency (CAL-EPA) requires all pesticide use to be reported to DPR through monthly pesticide use reports (see Appendix B). This raises the possibility of NASS using the data that DPR has collected rather than collecting it via the VCUS. However, many problems were encountered when this was attempted in 1992.

An analysis of the 1992 DPR and VCUS data was initiated in August of 1993 to determine the compatibility of the DPR data with NASS' VCUS program. This report presents the findings of this analysis and will discuss the problems that were encountered during the 1992 VCUS, the reasons for these problems, and actions that have been/can be taken to avoid these problems in the future. Also presented is a discussion of the limitations of the analyses performed.

As the analysis progressed, it divided naturally into two phases. The first phase involved matching NASS survey respondents (or sampled units) to DPR growers (or reporting units). The second phase involved comparing commodities and the associated planted acres reported to each organization for those growers that were matched. This report addresses both phases of the analysis.

MATCHING DPR GROWERS AND NASS RESPONDENTS

DPR assigns an 11 digit grower identification number to each grower when they apply for a pesticide use permit. The permits must be obtained annually, prior to any pesticide applications each calendar year. The 11 digits of the number have the following meanings:

digits 1 & 2:	county of pesticide application
digits 3 & 4:	current calendar year
digits 5 & 6:	county assigning the permit number
digits 7 - 11:	permit number.

For example, the number 57925701234 indicates that the grower was assigned permit number 01234 for 1992 in county 57 and that they apply pesticides in that same county. The number 48925701234 indicates that this same grower applied pesticides in county 48. The last seven digits are unique and remain constant for the grower throughout California and for successive years of application. However, the use reports are submitted to, and maintained in, the county in which the pesticide was applied.

Two sources of grower identification numbers were available from DPR for analysis. The first was a subset of the file containing the 1992 pesticide use reports. This file was produced for NASS by subsetting the complete file based on the

codes for the commodities in which NASS was interested. The other source was a listing of all grower identification numbers on record for 1991. Neither of these sources contained names nor addresses of the growers associated with the identification numbers. This prohibited verification of a match between NASS and DPR records.

Two sources of grower identification numbers were also available from NASS. The California version of the 1992 VCUS collected the grower's identification number. The page of the questionnaire pertaining to this activity is duplicated in Appendix C. The California Agricultural Statistics Service (CASS - the California field office of NASS) also maintains grower identification numbers for each sampling unit on its list frame. These identification numbers were obtained from DPR by CASS and posted to the list frame prior to 1992.

The identification numbers from the two sources from NASS (herein referred to NASS-source ids) were matched to the identification numbers from the two sources from DPR (herein referred to as DPR-source ids). There are many possible combinations in which one or both of the NASS-source ids match none, one or two of the DPR-source ids. Matching the grower id reported in the VCUS to the 1992 DPR pesticide use report file was the primary concern. If a matching record was not found, then either the id reported in the VCUS was in error or the data for that grower was not included in the use report file. When the initial attempt at matching failed, a match was then attempted in one or more of the following ways:

(1) the grower id reported in the VCUS questionnaire was altered in some way so as to be valid. This was done for obvious mistakes such as county code 30 being recorded as 3.
(2) the grower id maintained on CASS' list frame was matched to DPR's 1992 use report data file.
(3) the NASS-source id was matched against DPR's 1991 file of grower ids.

Some key counts of the investigation are displayed in Table 1.

Two situations in particular merit emphasis. The first concerns the large reduction in usable questionnaires due to sampled units who were not in the target population. Of the 631 reports in this nonusable category, 338 did not grow any of the targeted crops and another 135 were "out-of-scope"; that is, the operation did not fit the definition required of the target population. These two categories represent 38% of the original sample. This is a serious reduction in sample size before any attempt is made to incorporate DPR's pesticide use data.

While NASS' Chemical Use and Farm Finance pilot survey has experienced the same problem, in 1993 the administrative team of this survey implemented a survey design to correct it. Briefly, the original sample is contacted prior to data collection to screen the sampled units for the commodities of interest. The sample is then restratified based on the information collected. Those units with a targeted crop are then eligible for subsampling. This ensures a very high percentage of sampled units possessing a commodity of interest and will likely result in smaller variances.

Table 1: Counts of sampled units in phase 1 of the investigation.

Situation	Count of Sampled Units 1/
Original 1992 California VCUS sample size	1245
Sampled units that were not in the target population, grew no crops of interest, refused to participate or were inaccessible	631
Sampled units with no grower id available	7
Sampled units with at least one grower id reported	607
Sampled units with a reported grower id that matched to a grower id in DPR's 1992 use report file	490
Sampled units whose reported grower id was altered to match the use report file or the grower id maintained on CASS' list frame was matched to the use report file	26
Sampled units whose reported or list frame grower id did not match the 1992 use report file, but did match a grower id in DPR's 1991 grower id file	68
Sampled units whose reported grower id and list frame grower id matched neither DPR's 1992 use report file nor DPR's 1991 file of grower ids	23

1/ Indented numbers sum to the previous total or subtotal.

This design merits consideration by the CUS Program administrators.

The second situation concerns the 68 reported grower identification numbers that were valid (i.e. matched the 1991 file of grower ids) but did not match DPR's 1992 use report data file. There are several possible explanations for this occurrence, including the following:

(1) the grower id number reported by the respondent was valid in 1991 but not in 1992.
(2) the respondent did not report any pesticide applications in 1992.
(3) DPR's 1992 use report data file was incomplete.

All three of these situations are likely to have occurred. Because the complete 1992 use report data file was subset for NASS based on commodity code, rather than grower identification number, it could not be determined if a nonmatch resulted from an inactive grower id number being reported, a valid grower id number reporting no pesticide applications or from the use report data file being incomplete. It is known that the commodity codes were in error during 1992 and that DPR made changes to the codes in mid-year. This

probably resulted in an incomplete subsetted data file for NASS, although the extent of the incompleteness could not be determined.

The first two situations listed above (which do not pose a data quality problem) can be identified by (1) securing a valid grower identification number for each sampled unit prior to data collection and then (2) subsetting the use report data file based on the valid grower id numbers. This would:

(1) eliminate the occurrence of a missing grower id number for a sampled unit and (2) identify nonmatches as units with no pesticide use report data rather than units with inactive/invalid grower identification numbers.

MATCHING COMMODITIES AND COMPARING ACREAGE

Once NASS' sampled units were matched to records in DPR's use report data file, the commodities for each grower had to be paired. The California version of the 1992 VCUS did not include the pesticide table shown in Appendix A. However, it did include the acreage and production table that is shown in Appendix D. In this table, NASS recorded such data as crop code, acres planted/harvested, production, yield, a pesticides applied indicator and the beginning and ending dates for the crop year.

The only data in common with the data collected by DPR are the crops planted and their associated planted acres. There were many instances of these data not agreeing between the two sources. For example, for a given grower the DPR data might indicate that pesticides were applied to sweet corn while the NASS data indicates that either no pesticide was applied to the sweet corn, there were fewer acres of sweet corn than reported to DPR or there was no sweet corn planted.

Table 2 presents examples of 1992 data from DPR and NASS for nine growers in Fresno and Yolo Counties. These examples were chosen from the 584 matched sampled units for presentation here because they illustrate the discrepancies that were pervasive throughout the matched records. Pesticide use reports and permit applications for the Fresno and Yolo County sampled units were collected from the Fresno and Yolo County Agricultural Commissioner's (CAC's) Offices in October and November of 1993, allowing a more detailed analysis of data discrepancies for sampled units in these two counties. Reasons for the differences observed are discussed below. The specific reasons associated with these nine examples are then summarized into 5 categories that pertain to the rest of the matched records.

Grower 1: Seven fields of cantaloupe, comprising 712 acres, were listed on the grower's permit application. Five of these fields, totaling 533 acres, were treated with pesticides. Sixty acres of honeydew melons were also registered, but no pesticide use reports were filed for this field or commodity. The presence of honeydew melons was indicated on the crop checklist in NASS' questionnaire, although no entry was made in the acreage and production table. The 44 acres of watermelons were reported as 43 acres under a separate permit number issued to the grower in a neighboring county.

Table 2: Planted acres recorded by NASS and CAL-EPA for nine growers.

Grower	Commodity	CAL-EPA Planted Acres	NASS Planted Acres	NASS Crop Year
1	cantaloupe	-	650.0	4/92-10/92
	melons	533.0	-	-
	watermelons	-	44.0	4/92-8/92
	bell peppers	46.0	46.0	5/92-8/92
	beans	605.0	450.0	6/92-9/92
	sweet corn	110.0	110.0	3/92-7/92
	peas	300.0	300.0	1/92-4/92
	proc tomatoes	221.0	224.0	3/92-8/92
2	head lettuce	5722.0	3356.0	4/92-7/92
3	celery	141.0	-	-
	tomatoes	3587.0	-	-
	proc tomatoes	429.0	1200.0	6/92-9/92
4	sweet corn	227.0	-	-
	tomatoes	939.0	-	-
	proc tomatoes	-	400.0	3/92-9/92
5	sweet corn	77.0	-	-
	tomatoes	1723.0	-	-
	proc tomatoes	779.0	1060.0	3/92-10/92
6	dry onions	175.0	175.0	10/91-8/92
	proc tomatoes	80.0	430.0	10/91-7/92
7	head lettuce	181.0	112.0	2/92-8/92
	proc tomatoes	518.0	345.0	12/91-7/92
8	tomatoes	155.0	-	-
	proc tomatoes	155.0	-	-
9	head lettuce	160.0	-	-
	proc tomatoes	257.0	106.0	10/91-8/92

It is concluded that for this grower:
(1) NASS recorded too few planted acres of cantaloupe;
(2) CAL-EPA use reports provided NASS with the correct treated acreage, but too few planted acres of cantaloupe which were reported as "melons";
(3) neither VCUS nor CAL-EPA use reports provided the 60 planted (though untreated) acres of honeydew melons;
(4) CAL-EPA data from two grower id numbers would have had to be combined to include the 43 treated acres of watermelons;
(5) VCUS missed 155 acres of beans;
(6) the two collection procedures matched well for 4 crops.

Grower 2: The 5722 planted acres of lettuce listed under CAL-EPA include a spring and fall crop. The crop year dates reported to NASS include the spring crop only. The CAL-EPA acreage receiving treatment between these two dates includes 3814 acres. This example indicates that VCUS missed 458 acres of the spring crop and the entire fall crop. This is a major problem, especially if the fall crop is of interest. It also demonstrates the need to subset the DPR data by crop year dates recorded by NASS in VCUS.

Grower 3: A review of the CAL-EPA registration application and the pesticide use reports by field for this grower indicates that the data from CAL-EPA is correct. The respondent for the NASS survey was the business manager rather than the operator.

Grower 4: The permit application indicates that acreage recorded as sweet corn on pesticide use reports should have been corn for grain. There were only 842 planted acres of tomatoes that received pesticide treatments between the dates indicated as the crop year in the NASS survey. Many of these fields appeared to be the same acreage. For example, there existed fields 18 and A18 with the same acreage. This numbering strategy was to be used when a field was double cropped. If all of these 842 acres were double cropped then the acreage for one crop closely matches that reported to NASS for a single crop. Either NASS missed a second rotation or the field numbering changed arbitrarily causing double counting of some acreage. It also cannot be concluded whether the crop was fresh or for processing.

Grower 5: The NASS survey missed one 77 acre field of sweet corn. Based on a review of the pesticide use reports, there were 2048 planted acres of tomatoes combining both fresh and processing. The CAL-EPA data covers this acreage, but double counts 454 acres. It cannot be determined how many of the 2048 acres were fresh and how many were for processing.

Grower 6: Although the sampled unit for the NASS survey was, say, "Smith Farm #1", 350 acres of tomatoes for processing belonging to Smith Farm #2 were recorded.

Grower 7: A review of the permit application and the pesticide use reports indicates that there were 181 acres of lettuce planted. However, all of this acreage was for lettuce seed, which was not a targeted crop of the NASS survey. Although this crop was not of interest in the NASS survey, VCUS recorded 69 fewer acres than were actually planted. A

153 acre field was included in the CAL-EPA planted acres total for processing tomatoes that did not receive treatment until December of 1992. This is outside the crop year dates and indicates that the treatment was for the 1993 crop. The planted acreage of tomatoes for processing should have been 365.

Grower 8: The 155 acres under CAL-EPA for tomatoes was actually planted to cotton.

Grower 9: NASS' VCUS did not record 160 acres planted to head lettuce. The correct acreage for tomatoes for processing was 105. A 152 acre field planted to cotton was recorded on a pesticide use report as processing tomatoes.

The problems illustrated by the above examples are summarized into 5 categories. These five categories, relative to NASS' VCUS Program, are discussed below.

1. Grower identification numbers (ids) must be unique. Grower 1 illustrates this occurrence. As long as the grower reports all ids that are used to report pesticide use, this need not be a problem. That is, if a grower uses more than one id, the data for those ids can be merged for that grower as long as none of the ids are used for another operation. If one id is used to report for more than one operation, then data for that id cannot be utilized by NASS.

2. CAL-EPA's specification of commodities is not consistent with NASS'. This problem is exemplified by grower 1's melons and cantaloupe. DPR requires only that the pesticide applied have the commodity listed on the label. So, if a pesticide is permitted for melons, then the grower need only report melons, whether it be honeydew melons, musk melons, cantaloupe, etc. NASS requires specific commodity information. Therefore, a grower may report differently for NASS.

This is also a problem for vegetables that can be for either fresh or processing use - such as tomatoes. This is exemplified by growers 3, 4, 5 and 8. Growers 3, 5 and 8 further illustrate that the same acreage can be listed differently even to DPR. Because the applicators complete the use reports and different applicators are common for one grower, one applicator may use the general term "tomatoes" and the next use the specific term "processing tomatoes". This problem also occurs with cucumbers, onions, beans and corn.

3. CAL-EPA field numbering varies. Two general strategies for numbering fields are used by the CAC Offices. These numbers, referred to as site ids, are issued by the CAC to the grower. In some cases, a site id is assigned to a specific plot of ground regardless of the crop grown there. These ids can be carried over from year to year. In other cases, a new site id is assigned for each crop rotation. For example, field 18 may become field 18A when a second crop is planted. Or field 18 may become 18N and 18S if it is split east to west for the second crop. This first strategy creates a problem when a field is planted more than once within a crop year. If NASS sums acreage by site id, then a field is counted only once, regardless of the number of plantings.

4. NASS data collection missed crops and acreage. Data collection for NASS' 1992 VCUS began in October of 1992 and ended in December 1992. Crop years for some of the targeted crops began in the fall of 1991. NASS is therefore asking respondents to recall information or produce records for activities that occurred over the past 14 months. While this is not a problem for some respondents, for others it is difficult. Growers 1, 2, 3 and 5 exemplify this point. It is a tall order indeed for a grower to recall, or an enumerator to transcribe, (the documented) thousands of applications that some Fresno County growers have made to their crops. This information can often be intentionally or unintentionally abbreviated or lost.

5. Crop year dates are necessary. Subsetting the DPR data by the crop year dates recorded by NASS would have helped rectify differences found in growers 2, 4 and 7. It would be necessary to obtain data from two consecutive years to ensure inclusion of all the necessary use reports.

LIMITATIONS OF THE ANALYSIS

Given the preceding two sections and before stating the recommendations, it is important to explain the limitations of this analysis; that is, those issues it does not address and the analyses not presented.

The findings presented in this paper are qualitative. No counts of the types of problems encountered have been offered, acreage differences have not been summed, tests for significant differences have not been conducted. The simple discussions concerning the nine examples imply that such analyses for all of the sampled units would be very time consuming. The author sees little that can be gained from such an endeavor at this time. The conditions under which the survey was conducted in 1992 and, more importantly, the conditions under which the pesticide use reports were collected no longer exist. Many changes have been implemented, or can be implemented in 1994 that would make such analyses on the 1992 data obsolete before completion. Time would be better spent by conducting an analysis of the 1993 Fruit Chemical Use Survey. This will be discussed more fully under "Recommendations".

Once NASS survey administrators merged CAL-EPA pesticide use data with the rest of the VCUS data, many errors were encountered in editing the rates of application. Much time and effort was expended attempting to rectify these errors, which was difficult since the original use reports were unavailable. It was unknown whether an error resulted from a data entry mistake, the wrong unit (e.g. gallon vs. quart) being recorded or the amount applied (e.g. 60 vs. 6.0) being misrecorded. Because the 1992 VCUS did not collect this information, no comparison was possible between NASS data and DPR data at the application level. For this reason, the analysis was limited to matching grower identification numbers, comparing commodities planted and planted acreage.

RECOMMENDATIONS

The author recommends a full analysis of the 1993 Fruit Chemical Use Survey (FCUS) data. Because the 1993 FCUS collected pesticide use data, a complete comparison with DPR's fruit pesticide use

data can be made. NASS should summarize the data for California state estimates using each data source and compare the state level estimates. These analyses will test the changes that DPR has instituted in the past year to improve their program. These changes are mentioned below but can be found in DPR's Pesticide Use Reporting: An Overview, which is available from the California DPR. This analysis can determine if NASS is recording all of the applications that are reported to DPR for each grower, and if so, whether the grower is reporting from memory or from records.

Because fruit and vegetable cropping practices differ, analyses of the same magnitude recommended for fruit are also recommended for vegetables. This entails NASS collecting pesticide use data through the 1994 VCUS as well as obtaining the data from DPR. However, the following presurvey and survey activities are recommended to help make the DPR data more compatible with NASS' VCUS program. Changes that have already been implemented by DPR are also discussed.

● **For nonmatching grower identification numbers.**

What has been done: DPR continues to educate the CAC personnel and the growers about the grower's need for only one permit number, regardless of the number of counties in which the grower operates. The permit number is to be five digits long which when concatenated with the two digit county of permit issuance, gives the grower a number that is unique statewide.

What can be done: NASS should match each sampled unit's grower id maintained on CASS' list frame with the CAL-EPA grower ids prior to conducting the survey. Differences that arise concerning apparent multiple ids for an operation, multiple farms, operations without an id, etc. can then be rectified prior to data collection. The idea here is to secure a valid id for each operator in the sample that is in business before data collection begins.

NASS should also modify the VCUS questionnaire so that there is no doubt that 11 digits are required for the grower id. As shown in Appendix C, the 1992 questionnaire did not specify the length of the grower id to be collected. The blocks in which the ids are to be entered should be divided into 11 spaces and specify the purpose for the digits, as discussed in the first section of this report.

● **For nonmatching commodities and acreage.**

What has been done: DPR has standardized the data entry programs that the counties use for permit application and reporting pesticide usage, integrating all the information collected for a grower. This will alert a data entry clerk to discrepancies. That is, pesticide use on one crop in a given field cannot be entered if the field was registered with a different crop. Acreage must also match for a field between the permit application and actual usage report.

What can be done: NASS should obtain the permit registration form (either hard or soft copies) and the farm maps for each sampled unit with target crops. This information can be used before and during the interview to determine which

commodities the grower has and what acreage has been registered. Changes to the permits do occur. However, the permit and maps will provide an excellent guideline to data collection and will aid in collecting field numbers (site ids) when determining commodity use. During the interview an enumerator can verify the commodities and acreage, and collect commodity use and field number data. The field numbers will be necessary to correctly separate the different uses of a crop; for example, fresh and processing tomatoes.

The beginning and ending crop year dates that NASS collects in the VCUS must be used when subsetting the DPR data files. This will require subsetting two consecutive years of use report data.

LONG TERM GOALS

The author is confident that NASS can incorporate CAL-EPA pesticide use data into its CUS Program. The past and recommended data analyses discussed in this report are directed toward this end. It would be a loss for NASS and its respondents if this source of data remained untapped. However, the problems uncovered in this first phase of analysis and the problems yet unknown at the application level need to be addressed before NASS relies solely on CAL-EPA data for its California pesticide use estimates.

The past and recommended data analyses have/will detect the differences in the two sets of data. Future analyses may even indicate that one is of higher quality. What is more likely, however, is that the analyses will indicate that each source has unique strengths and weaknesses. For example, the time of data collection is a strength of the CAL-EPA process and a weakness of the CUS. The data edit process is a strength of the CUS Program and a weakness of CAL-EPA's process. With this in mind, the following long term goals are offered as guidelines for increasing the compatibility of the CAL-EPA data with NASS' CUS Program.

- Accept CAL-EPA's offer to work jointly with NASS on analyzing the accuracy of DPR's data entry system. CAL-EPA's management expressed a desire to compare the data on the original use reports with the corresponding data on their data tape.

- Over the next two years, NASS CUS administrators, in cooperation with CASS, should develop presurvey and survey activities that allow for accurate matching of NASS sample units and DPR reporting units.

- NASS Statistical Methods staff should work with DPR programmers to implement an edit system for DPR pesticide application data that duplicates the system that NASS uses on its survey data.

- NASS should lobby CAL-EPA to adjust their reporting requirements of commodities to match the estimation requirements of NASS.

The long term goal towards which all of these are directed is, of course, that NASS uses CAL-EPA data for its pesticide use estimates.

A nationwide pesticide use reporting

system is appearing on the horizon. NASS may be required to use these data in the future for all states. The program NASS develops with the CAL-EPA data may serve as a prototype for future programs. It would be prudent to take the time and make the effort to develop a reliable program now.

F pesticide and chemical applications---continued

T-TYPE	TABLE
3	004

7. For each of the vegetable crops you grew, I need to get complete information on all of the pesticides and chemicals you applied during the 1992 crop year. Let's start with the first application to your [*crop*]. [*Complete the table for all pesticide and chemical applications to the target vegetable crops. Exclude post harvest applications to production. Use supplemental tables if necessary.*]

LINE	1 CROP	2 CROP CODE	3 What pesticides were applied to the [*crop*]? [*Enter product code.*]	4 [*Enter tank mix code*]	5 OR 6 How much was applied per acre per application?	What was the total amount applied per application?	7 [*Enter unit code*] 1 POUNDS 12 GALLONS 13 QUARTS 14 PINTS 15 OUNCES	8 How many times was it applied?	9 How man acres wer treated wi this produ ACRES
01		211	212	213	214 . __	215	216	217	218 .
02		211	212	213	214 . __	215	216	217	218 .
03		211	212	213	214 . __	215	216	217	218 .
04		211	212	213	214 . __	215	216	217	218 .
05		211	212	213	214 . __	215	216	217	218 .
06		211	212	213	214 . __	215	216	217	218 .
07		211	212	213	214 . __	215	216	217	218 .
08		211	212	213	214 . __	215	216	217	218 .
09		211	212	213	214 . __	215	216	217	218 .
10		211	212	213	214 . __	215	216	217	218 .
11		211	212	213	214 . __	215	216	217	218 .
12		211	212	213	214 . __	215	216	217	218 .
13		211	212	213	214 . __	215	216	217	218 .
14		211	212	213	214 . __	215	216	217	218 .
15		211	212	213	214 . __	215	216	217	218 .
16		211	212	213	214 . __	215	216	217	218 .
17		211	212	213	214 . __	215	216	217	218 .
18		211	212	213	214 . __	215	216	217	218 .
19		211	212	213	214 . __	215	216	217	218 .
20		211	212	213	214 . __	215	216	217	218 .

STATE OF CALIFORNIA
DEPARTMENT OF FOOD AND AGRICULTURE

PESTICIDE USE REPORT

☐ NURSERY

COUNTY NO.	SECTION	TOWNSHIP	RANGE	BASE & MERIDIAN S H M	APP. METHOD	PERMITTEE/PROPERTY OPERATOR	APPLICATOR NAME AND ADDRESS
57	26	20n	2e	M	Air 6	7	

OPERATOR ID/PERMIT NO.	SITE IDENTIFICATION NUMBER	TOTAL PLANTED ACRES/UNITS
57-92-570013A	9 B2	10 70.00

LOCATION	BLOCK ID (IF APPLICABLE)	
1 Cooper	12	13

TIME APPLIED	ACRES/UNITS TREATED	COMMODITY/SITE TREATED
14 6/16/92 1020	15 60.00	16 Tomatoes/proc

CHEM NO. 17	MANUFACTURER/NAME OF PRODUCT APPLIED 18	EPA/CALIF. REG. NO. FROM LABEL 19	TOTAL PRODUCT USED 20	RATE 21	DILUTION 22
	MONITOR/MOBAY	03125-00280-AA-00000	120.00 Pts	2.00 Pts	10 gal
	UNIFLO SULFUR/UNIROYAL	10182-00151-AA-01148	60.00 Gal	1.00 Gal	10 gal
	NUFILM P/MILLER	00072-50003-AA-00000	360.00 Foz	6.00 Foz	10 gal
	SPRAY AID/MILLER	00072-50006-AA-00000	48.00 Foz	.80 Foz	10 gal

92 JUL -6 P3:07

RECEIVED

DAYS REENTRY	DAYS PREHARVEST	APPLIED/SUPERVISED BY
24	25	26 LARRY

Submit to AGRICULTURAL COMMISSIONER within 7 days of application

33-025 (REV. 3/90) 90 89243

CAL-EPA PESTICIDE REPORTING ID SCREENING

1. In order to analyze chemical use data correctly, I need to get the California Environmental Protection Agency pesticide reporting ID for this operation? .....

STATE PESTICIDE REPORTING ID

C1 _____

2. Is this ID used to report pesticide use for any operation(s) other than [*operation named on face page*]?

☐ **YES** - [*Continue*] ☐ **NO** - [*Go to item 3.*]

a. What other operation(s) use this ID for pesticide reporting?

Name _____	Name _____
Address _____	Address _____
_____	_____
Phone (___) _____ - _____	Phone (___) _____ - _____

3. Are any other IDs used for reporting pesticide use on [*operation named on face page*] ?

STATE PESTICIDE REPORTING ID

_____

_____

_____

_____

☐ **YES** - [*Continue*] ☐ **NO** - [*Go to Section A, page 7.*]

a. What are these additional ID numbers? .. ....

b. Is this (are any of these) ID (s) used to report pesticide use for any operation(s) other than [*operation named on face page*]? ..

☐ **YES** - [*Continue*] ☐ **NO** - [*Go to Section A, page 7.*]

(1) What other operation(s) use this ID for pesticide reporting? [*Identify operation and ID.*]

Name _____	Name _____
Pesticide Reporting ID _____	Pesticide Reporting ID _____
Address _____	Address _____
_____	_____
Phone (___) _____ - _____	Phone (___) _____ - _____

B vegetable acreage and productior

T:TYPE	TABLE
1	001

1 What vegetable **crops** were planted and/or harvested on these [*Section A, item 1e*] acres during the 1992 crop year? (*Exclude plantings of crops not intended for harvest in 1992 and other non-bearing acres. Include crops planted in the fall of 1991 if they were part of your 1992 crop. Include double cropping. EXCLUDE all crops grown in greenhouses, hothouses and home gardens.*)

LINE	1 CROP	2 CROP CODE	3 How many acres were PLANTED during the 1992 crop year? (*Include acres planted during other years which were harvested in 1992.*) ACRES	4 How many acres were HARVESTED during the 1992 crop year? ACRES	5 OR 6 What was the total 1992 production?	What was the average 1992 yield per acre?	7 (*Record the unit in which production or yield was reported.*)	8 How much did the (*unit in column 7*) weigh? (*If reported unit was pounds, enter 1.*) POUNDS
01		070	071 .	072 .	073	074		075
02		070	071 .	072 .	073	074		075
03		070	071 .	072 .	073	074		075
04		070	071 .	072 .	073	074		075
05		070	071 .	072 .	073	074		075
06		070	071 .	072 .	073	074		075
07		070	071 .	072 .	073	074		075
08		070	071 .	072 .	073	074		075
09		070	071 .	072 .	073	074		075
10		070	071 .	072 .	073	074		075
11		070	071 .	072 .	073	074		075
12		070	071 .	072 .	073	074		075
13		070	071 .	072 .	073	074		075
14		070	071 .	072 .	073	074		075
15		070	071 .	072 .	073	074		075

LINE	9 Were any commercial fertilizers applied to this crop? (*Commercial fertilizers are mixtures containing Nitrogen, Phosphate and/or Potash. Include foliar sprays.*) (*YES = 1*)	10 Were any herbicides, insecticides, fungicides, etc. applied to this crop? (*YES = 1*)	11 On what date did you first begin activities for your 1992 crop (*crop*)? MMDDYY	12 On what date did you complete harvest of your 1992 crop (*crop*)? MMDDYY
01	076	077	078	079
02	076	077	078	079
03	076	077	078	079
04	076	077	078	079
05	076	077	078	079
06	076	077	078	079
07	076	077	078	079
08	076	077	078	079
09	076	077	078	079
10	076	077	078	079
11	076	077	078	079
12	076	077	078	079
13	076	077	078	079
14	076	077	078	079
15	076	077	078	079