Policy Development for Sustainable Agriculture

California is the nation's leading user of agricultural chemicals. As measured by their own direct reporting of actual annual production expenses, the state's farmers spent $544.8 million on agricultural chemicals, an amount 60% larger than that reported for the second ranking state (Illinois).

California is also a state in which agricultural chemical use has become more widespread in recent years despite the recent emergence of a small, but highly visible, organic food industry. The surprising extent of California agriculture's expanded reliance on pesticides is best illustrated by reference to the only direct determination of the state's agricultural practices. The Census of Agriculture, now conducted every five years by the U.S. Department of Commerce, has found that the number of California farms which are evidently using pesticides in agricultural production has increased by 50% over the past twenty years. According to this comprehensive survey of farmers, the number of the farms in the state reporting production expenditures for agricultural chemicals (excluding fertilizers) increased from 34,290 in 1969 to 52,614 in 1987 (see Table 1).

Table 1

Number of Calif Farms Reporting Ag Chemical Expense

Year	No. of Farms
1969	34,290
1974	33,221
1978	46,449
1982	43,142
1987	52,614

Source: Census of Agriculture. California, U.S. Department of Commerce.

This expanded use of chemicals is also reflected in the Census reports on types of agricultural chemicals which are used by farmers (see Table 2).

Table 2

Number of Calif Farms Reporting Types of Ag Chemicals

Type of Chemical	1978	1982	1987
Insecticide	24,706	30,460	32,959
Nematicide	3,325	3,526	3,603
Control of Plant Disease	17,563	15,280	17,446
Herbicide	22,385	28,192	35,003

Source: Census of Agriculture. California, U.S. Department of Commerce.

As clearly demonstrated by the data in the Table 2, the number of California farms on which herbicides are being used has grown by 60% since 1978, the number reporting insecticide use has increased by 35%, but the number of farms using either nematicides or chemicals to control plant diseases has remained constant.

This data clearly shows a recent pattern of expanded pesticide use in California agriculture. It is evident that current policies and the well-intended efforts hasve not led to a reduction in the use of farm chemicals.

There are several implications of this finding: first, we need to monitor actual agricultural chemical practices and determine which are potentially subject to seeking non-toxic alternatives; second, we need to more fully develop a policy-oriented approach that sets a realistic agenda aimed at pesticide use reduction.

Measuring Progress Toward Reduced Agricultural Chemical Use

The Census of Agriculture reports cited above do not indicate the amount of chemical applied, as measured in pounds or other physical measure. However, objective measures of the physical volume of agricultural pesticide use in California are possible through the state regulatory system (California Department of Pesticide Regulation).

California is, at present, the only state which seeks to regulate the use of these chemicals by requiring applicators, both commercial and "private" (farmers), to obtain an annual **Permit** subject to clearly stated conditions and regulatory review. The Permit not only identifies the farm operator but also specifies, in detail, the chemicals that will be applied, the sites (locations) where they will be applied and the commodities that will be treated. Subsequent to application, the user, or the user's professional applicator, must file a summary **Use Report** in a timely manner.

Taken together the Permit and the Use Report comprise a remarkably complete and detailed record of pesticide use. This system of regulating chemical use reporting presents an absolutely unique opportunity to monitor changes in agricultural practices throughout the state's entire agricultural industry, and, as well, determine the effect of policy on these practices. It is also the only instance of toxic chemical usage in which it is possible to quantitatively assess potentially risky patterns of use.

At present, a number of agencies rely on Use Report data for policy purposes: California Department of Pesticide Regulation (DPR), California Department of Food and Agriculture (CDFA), United States Department of Agriculture (USDA) and United States Environmental Protection Agency (USEPA). In addition, private organizations such as National Resources Defense Council, Pesticide Action Network, Community Alliance with Family Farmers and the Environmental Health Policy Program of the School of Public Health (UC Berkeley) also rely on Use Report data to inform their plans and activities. In the case of NRDC and PAN, their proposed state policy initiative directing a 50% reduction in pesticide use could

only be monitored with the Use Report data.

CIRS has discovered that none of these public or private agencies utlize the more extensive Permit data at all. In addition, CIRS has discovered that the aforementioned public agencies have encountered serious limitations in their efforts to analyze and interpret the state's use report data. USDA, for example, has found that crop acreage figures in pesticide use reports are wildly inconsistent with direct determinations of actual crop acreage. In the case of strawberries, the total treated acreage derived from 1990 pesticide use reports is more than three times larger than the correct figure based on comprehensive crop production reports from farmers. It is suspected by some that statewide summary pesticide use data reported by DPR may be in serious error.

Equally important, these agencies have been unable to interpret pesticide use data to answer simple, important questions. For example, neither DPR nor any other agency can answer such basic questions as:

- How many farmers are presently using a particular chemical or, how many are using a particular chemical for treating a specific crop? For example, how many farmers are using methyl bromide? Or, how many strawberry growers are using methyl bromide?

- How does use of a specific chemical vary with farm size or other important economic variables? Are small farmers more or less intensive users of a specific chemical?

- How does chemical use in a particular crop vary with geography, such as county or crop region? What can be learned from the patterns of use?

- How do geographic patterns of illness or injury data compare with the corresponding geographic patterns of pesticide use?

- How does chemical use vary with the time of the year? Is there a temporal pattern of chemical use which may be of importance in interpreting observed patterns of illness or injury?

CIRS has found that the main reason that use report data appear to yield unreliable summary information is that the compilation of original Use Report data contain a significant number of data errors which DPR is presently not able to correct. There is also no significant effort underway to correct suspected errors. DPR has also been unable to make any significant progress toward extending its analysis of existing data to address the above questions, in part because of the known unreliability of the raw data.

CIRS has discovered that most of the important data errors in many of the pesticide use reports can be corrected using publicly available information. But none of the four public agencies with the greatest interest in the accuracy of this information are

presently even collecting the basic data which would enable them to make needed corrections.

The key to solving the data error problem can be found in California's pesticide permit and use reporting system. All potential users of chemicals which are registered for agricultural use in California are required to obtain an annual permit from the county Agricultural Commissioner in the county where the chemical is to be applied. The permit must identify the permit holder by name, address and telephone number. The permit holder is assigned an ID number and must also describe which chemicals are being contemplated for use, the specific commodities to which the chemicals may be applied and all commodity locations, including, for each commodity, acreage, section, township, range and other unique geographic details. A detailed map of each such commodity location is also required to be submitted with the permit.

When chemicals are applied, a brief use report must be filed in a timely manner with the Agricultural Commissioner which discloses the ID number of the permit holder, the amount and type of material which has been applied as well as the commodity and location. At present, only the use reports are collected by DPR on a statewide basis from each of the fifty-eight county Agricultural Commissioners.

No effort is being made by any of the above described public agencies to utilize the permit and the much more detailed data disclosed in this document. CIRS has discovered that both the USDA and USEPA program directors responsible for the analysis of the California pesticide use reports were not even aware that permits exist and was the first to inform them of this important fact. CIRS is, at present, the only organization which has made any substantial effort to utilize county permit data and to compare it with use report data. This comparison demonstrates that it is possible to remedy many, if not most, of the errors in the DPR use report files. In addition, the permit data enables one to identify, through the ID numbers on the use report and the corresponding ID number assigned to the permit holder by the county Agricultural Commissioner, the name, address and telephone number of each pesticide user. No other agency has access to this information because they have neglected to collect it or have been unaware that it is available.

The California Director of the California Agricultural Statistics Service (a USDA/CDFA joint agency), who has supervisory responsibility for the Federal agricultural pesticide use survey, recently learned of this CIRS capability and has requested that CIRS cooperate with his agency to access this vital information.

CIRS proposes to carry out a thorough data collection effort and analysis combining both the permit and use report data. This work will:

1. Make it possible to develop accurate and reliable pesticide use data. CIRS will serve in an oversight capacity for both DPR and USDA pesticide use reporting and is the only agency with the capacity to do so at this time.

2. Provide answers for meaningful questions about agricultural chemical use in California suggested above which no public agency is able to address at the present time.

3. Make it possible to identify, by name, address and telephone number, all farm operators using specific materials. This identification will facilitate outreach to farm operators who are affected by policy decisions regarding specific chemicals. A good example of this latter point is the use of targetted information on methyl bromide use to enable outreach to promote sustainable alternatives.