

New York's Food and Life Sciences Bulletin

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Pesticide Use Patterns in New York Agriculture 1986-88

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INTRODUCTION

Policymakers and programs attempting to address the issues surrounding the use of chemical pesticides have a critical need to obtain information on the use of these materials in the crop production systems in New York. In too many systems the lack of information often leads to misguided efforts wherein the growers and society both suffer.

Little is known about actual pesticide use on many commodities in most states.¹ In today's setting this lack has created numerous misunderstandings associated with consumer concerns over food safety and health effects of pesticides. One only needs to view the recent National Academy of Science study on Regulating Pesticides in Food "The Delaney Paradox"² to find that the study used "worst" case assumptions in the development of its report, because pesticide use patterns were essentially unknown. In addition, public policy decisions, corporate manufacturing decisions and other decisions which impact on agricultural programs and productivity are often misguided due to a lack of this type of information.

The information provided in this bulletin is only part of an on-going collection of data and information which is essential for the development of a sound Integrated Pest Management (IPM) Program and a Pesticide Impact Assessment (PIA) Program for New York. However, there are numerous other places where this information will prove invaluable. We believe this information will assist the IPM research and extension efforts at Cornell University, and the programs of the state agencies with whom they cooperate. The information should aid in dealing with changes to Federal Insecticide Fungicide and Rodenticide Act (FIFRA) and in dealing with changes in pesticide registrations and cancellations of pesticides for minor crops. The information will assist in pesticide resistance management effort as guidelines are developed. Furthermore, the data will allow state and local agencies to properly develop a groundwater protection strategy. It is also expected that the data will help deal

with problems that may arise as we strive to protect endangered species, and also provide vital information on pesticides that come under special review.

This information already serves to guide the development of the IPM Program by providing a basis for measuring the impact of the IPM strategies. It is also used to develop new strategies, which take into account groundwater concerns, concerns about pest resistance, and concerns related to other environmental or health issues. In addition, the information supports the efforts of the Pesticide Impact Assessment Program (PIA) at Cornell. This effort is charged in part with documenting pesticide use in New York State, and documenting the impact of pesticide registration cancellations.

Pesticides and their importance in crop protection

While intense pressure from environmental and consumer groups to reduce or eliminate pesticide use continues, there is no easy transition from one type of agricultural practice to another without endangering the entire food and fiber supply of the state or nation. The IPM Program is dedicated to assisting growers make the transition, but it appears that pesticides will continue to play a major role in reducing crop losses and providing an abundant and inexpensive food supply.

Preparation of Information

The information in this bulletin was prepared to help document the current state of crop protection, as it especially relates to pesticide use, in New York State. It is part of an effort to provide an overview of crop protection and production factors at a glance.

Information in this bulletin has come from several sources. Some has been gathered from pilot projects sponsored by the IPM Program, which require growers to provide pest and pesticide records in order to tailor IPM strategies for their pest

problems. The field and forage crops data come from the PIA Program. In addition, private crop protection consultants and fieldmen, who provide IPM services to growers, have shared some of their information. Also, pesticide use records have been collected from growers who do not participate in formal IPM pilot projects. Still other sources have been fruit and vegetable processing companies who require records of pesticide use from their growers. Thus, the data in this report have come from many different sources and has been pooled to obtain the best picture of grower practices in the state.

Data Quality

Specific pesticides and their application rates have been documented by analyzing grower spray records. The average number of applications, the average rate per application, and the per cent area treated—be it field, greenhouse, or block of fruit—are considered. The total quantity of each chemical applied is calculated and an estimated statewide use figure is extrapolated from those data.

In preparing the information, attempts were made to provide a consistent format and method for drawing accurate inferences about pesticide use patterns across commodities. However, there were various limitations in each of the available information sources. For example, pesticide information in some commodities is based upon a very small sample of grower operations. The size of each sample is listed in various graphs and tables. Also, because priorities differ among different information providers, some types of records are not collected. In many crops, herbicides are often left out of the records. Then too, in some commodities, the records are from growers enrolled in IPM pilot programs. In these situations, the data tend to reflect the use of pesticides by growers practicing IPM and not general grower practices. *The authors recognize the limitations of the information and encourage the reader to bear them in mind when examining and using the data.*

Methodology for Calculating Pesticide Use

- The % Fields is the per cent of fields, greenhouses, or blocks reporting use of a particular chemical. The number of fields reporting use is divided by the total number of fields in the sample to arrive at the per cent fields sprayed.
- The methodology used for the summary tables and graphs for Field Crops (Figs. 1-5) is slightly modified from the other commodity groups. The raw data have been provided from a pesticide impact assessment survey.³ The survey data were interpreted in the same way as an individual spray record and were used in the same manner as the other commodities.

Pesticide Use Patterns

The use patterns for many different crops are depicted in Figures 1-24. Some graphs show the use of only one or two types of pesticides while others show all types. The different types of pesticides (herbicides, insecticides, fungicides) are not distinguished in the graphs. Common or trade names are used to correspond to grower records. The rates applied are in pounds of formulated product per acre.

Alfalfa	Figures 1 and 2
Corn	Figures 3 and 4
Corn/No-till	Figure 5
Apple	Figures 6,7 and 8
Grapes	Figures 9 and 10
Strawberries	Figures 11 and 12
Potatoes/Muckland	Figures 13 and 14
Potatoes/Upland	Figures 15 and 16
Onions	Figures 17 and 18
Cabbage/Fresh Mkt	Figure 19
Snap Beans	Figure 20
Lettuce	Figure 21
Sweet Corn	Figure 22
Cucurbits	Figure 23
Poinsettias	Figure 24

*A special note is made relative to the data in Figure 24. This information comes from IPM projects in greenhouses in upstate New York and on Long Island, and has been combined to present an overall picture. The reader should not be misled into thinking that the pesticide "TEMIK" has been used in both areas. This material is not registered for use on Long Island and was not used by IPM growers on Long Island.

SUMMARY

Pesticide use information has been extremely valuable to both the IPM Program and the Pesticide Impact Assessment Program. It should also be of benefit to policy-makers who study groundwater and non-point source pollution problems. Authorities dealing with drinking water and public health, and fish and wildlife issues may also find this information of value.

Figure 1. Herbicide Use on Alfalfa 1986

(273 farms; approx. 32,000 acres)

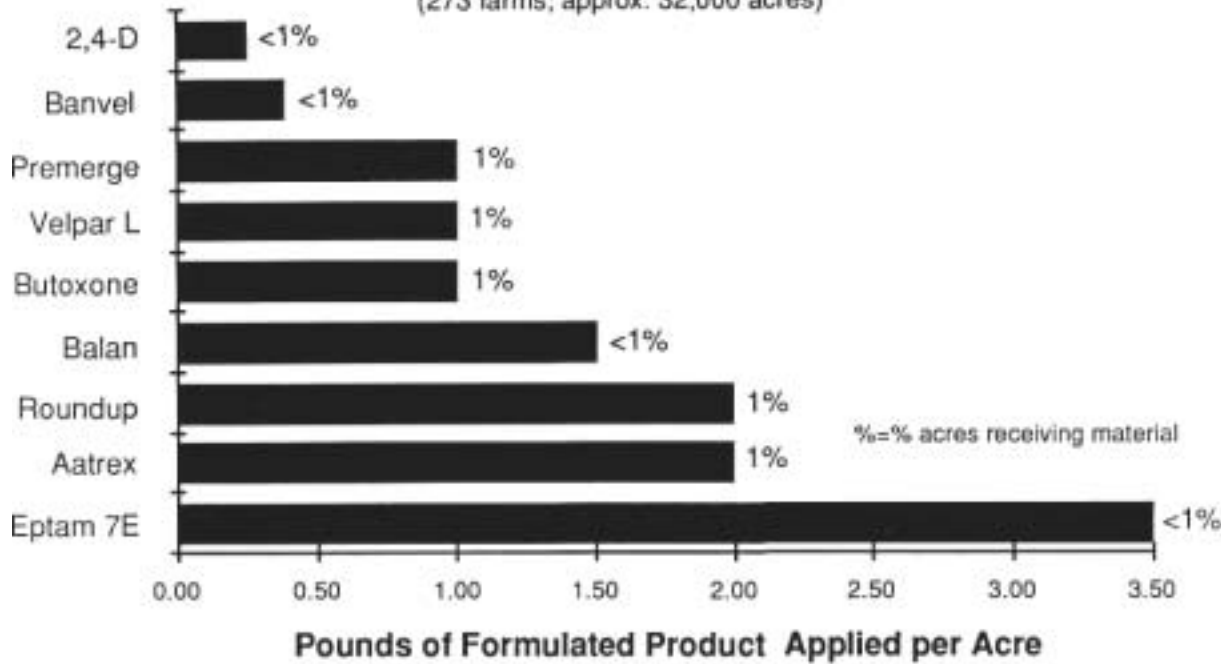


Figure 2. Insecticide Use on Alfalfa 1986

(273 farms, approx. 32,000 acres)

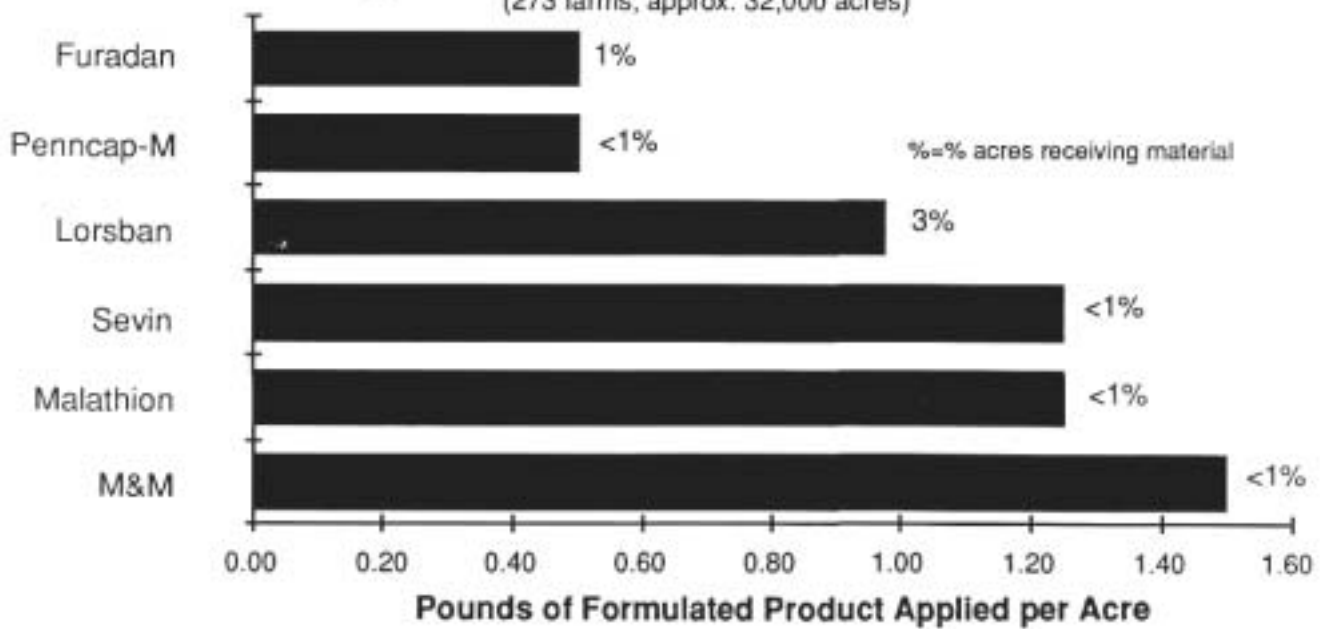


Figure 3. Herbicide Use on Conventional Corn 1986
(273 farms, approx. 16,800 acres)

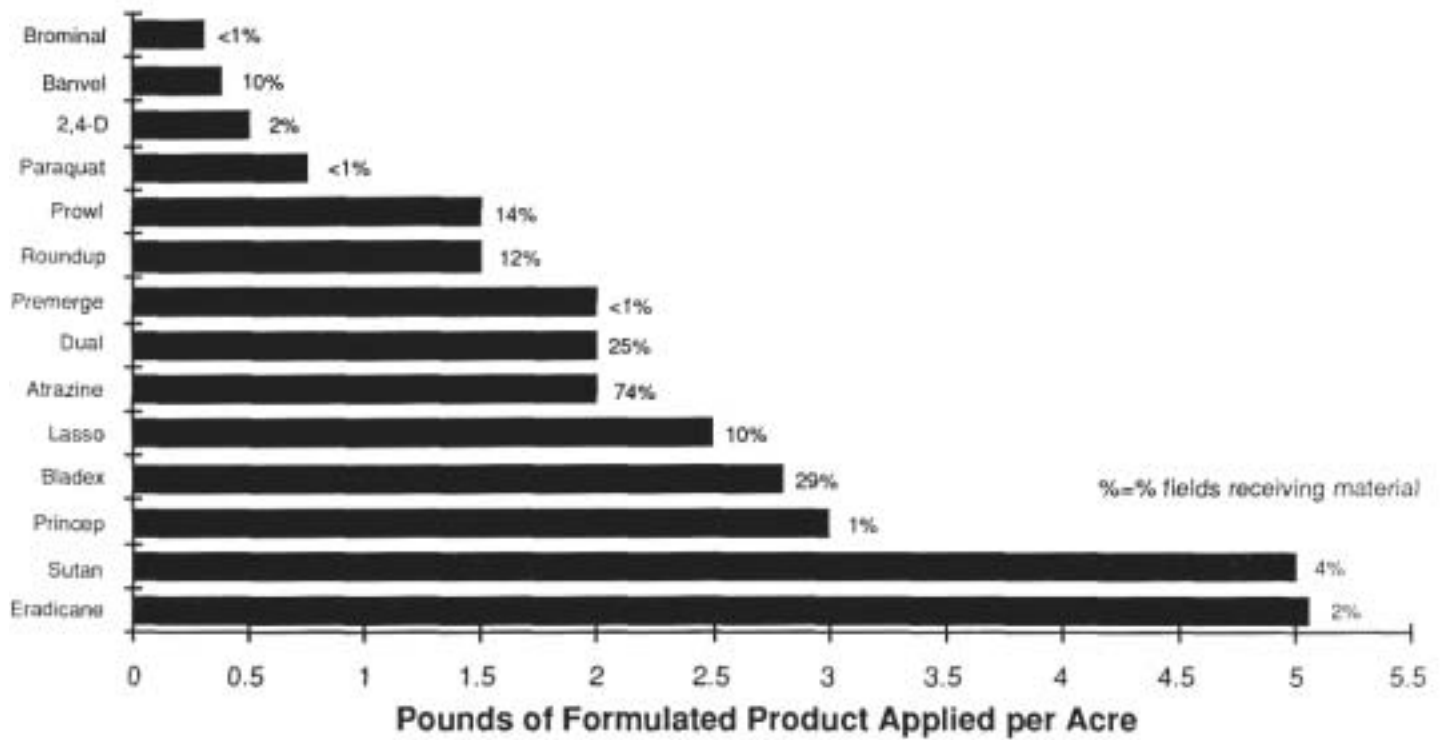


Figure 4. Insecticide Use on Conventional Corn 1986
(273 farms, approx. 16,800 acres)

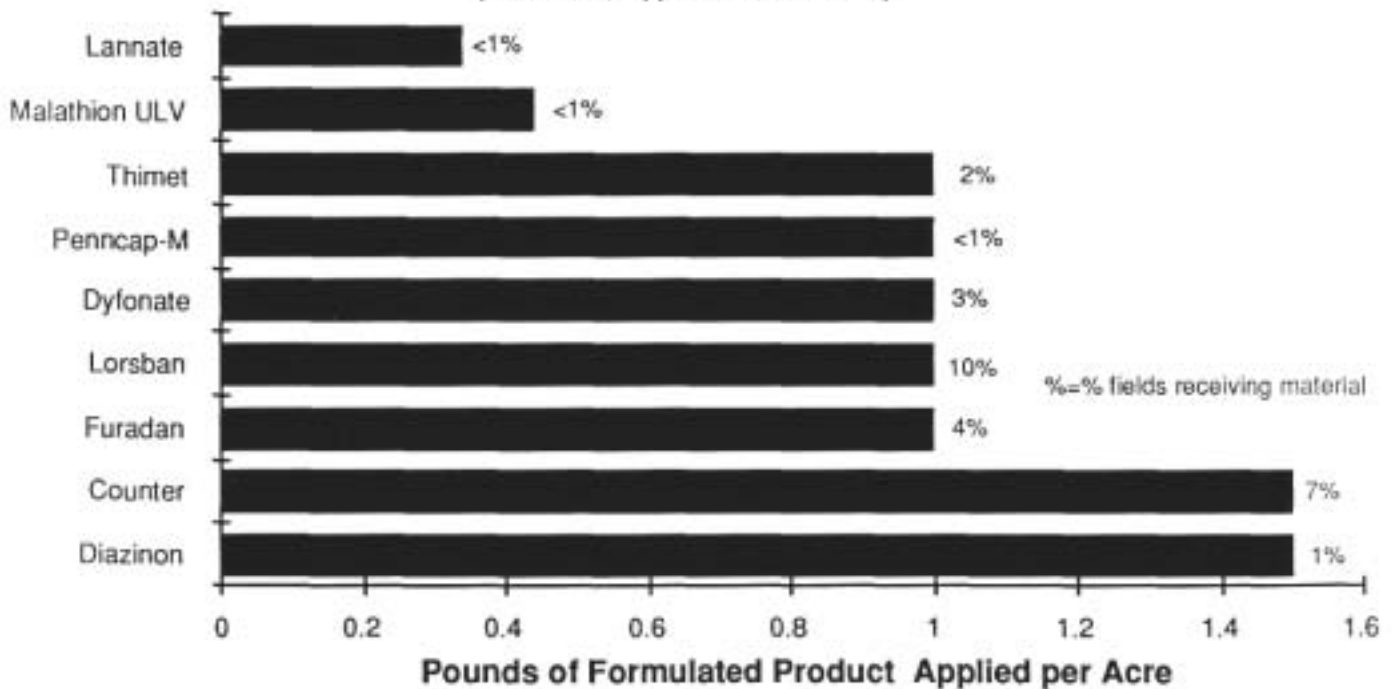


Figure 5. Pesticide Use Reduced/No Till Corn 1986
(273 farms, approx. 3400 acres)

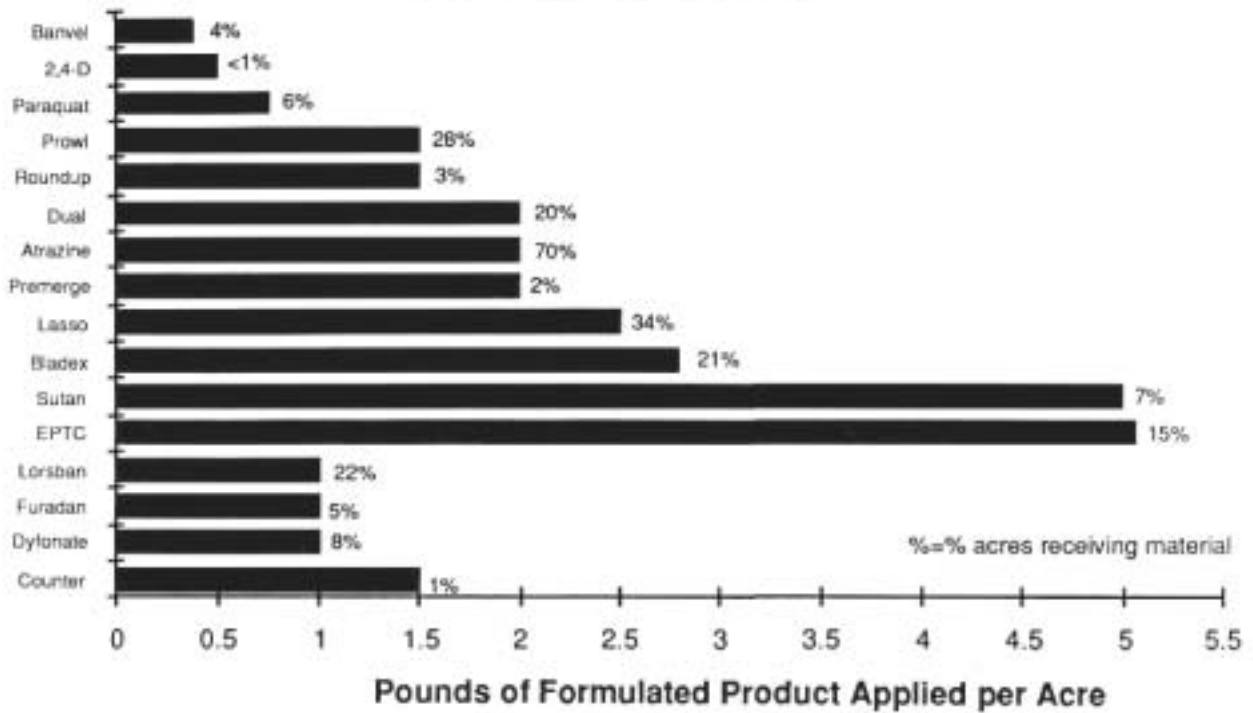


Figure 6. Miticide Use on Apples 1988
(91 farms, approx. 2600 acres, Western NY & Hudson Valley)

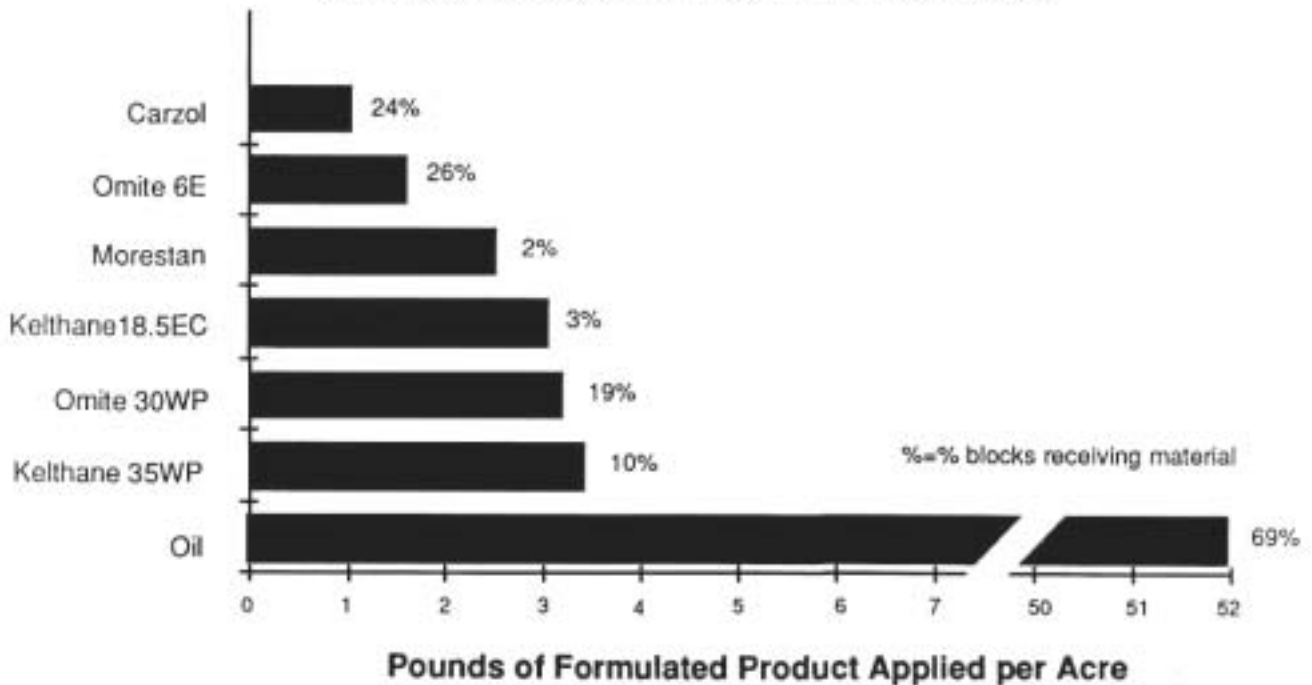


Figure 7. Fungicide Use on Apples 1988

(61 farms, approx. 2600 acres, Western NY & Hudson Valley)

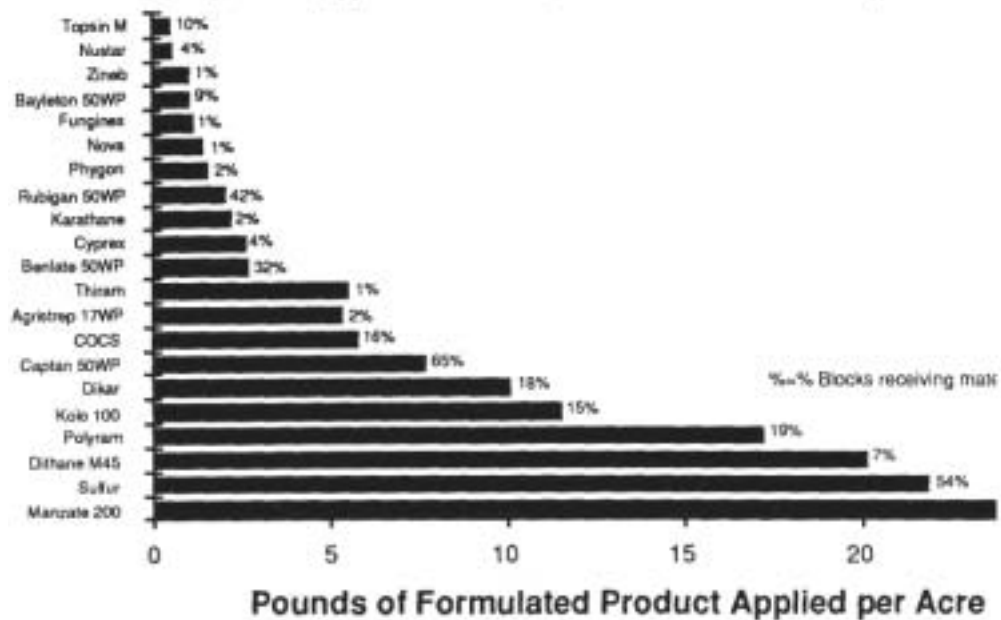


Figure 8. Insecticide Use on Apples 1988

(91 farms, approx. 2600 acres, Western NY & Hudson Valley)

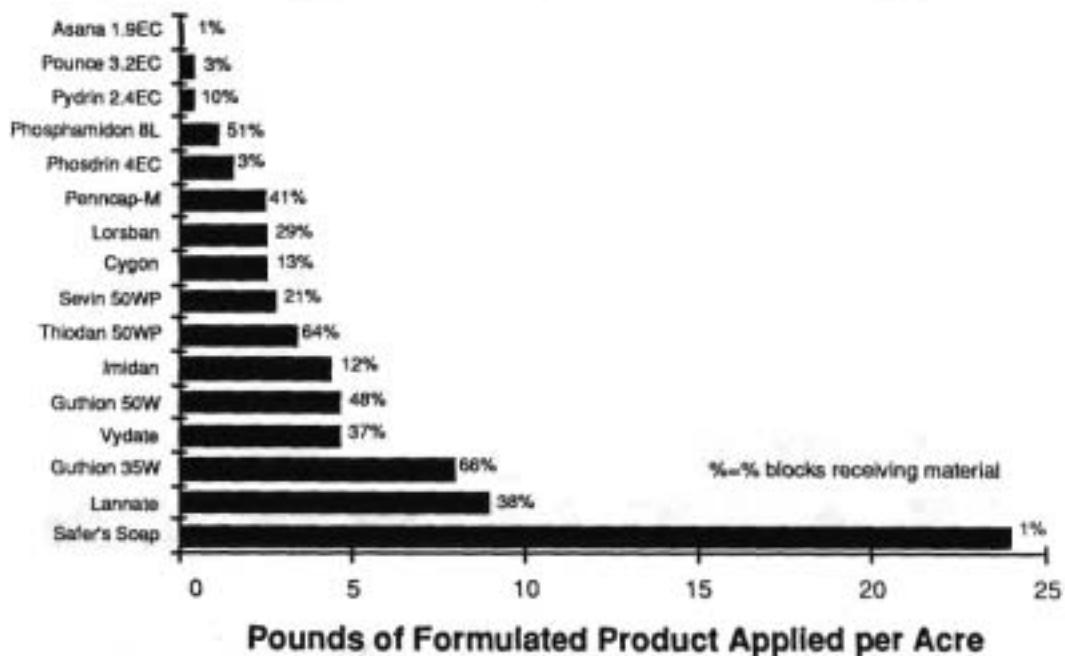


Figure 9. Insecticide and Herbicide Use on Grapes for Processing, 1988
(50 farms, Concord grapes)

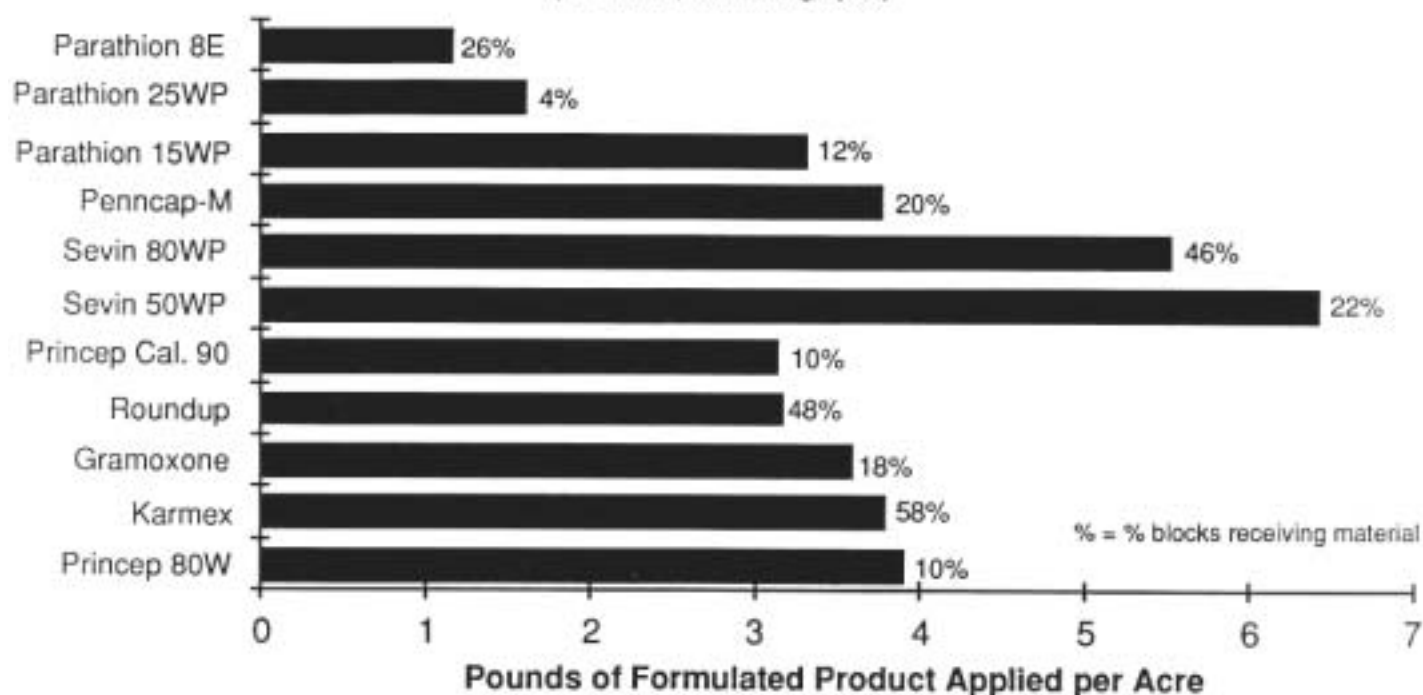


Figure 10. Fungicide Use on Grapes for Processing, 1988
(50 farms, Concord grapes)

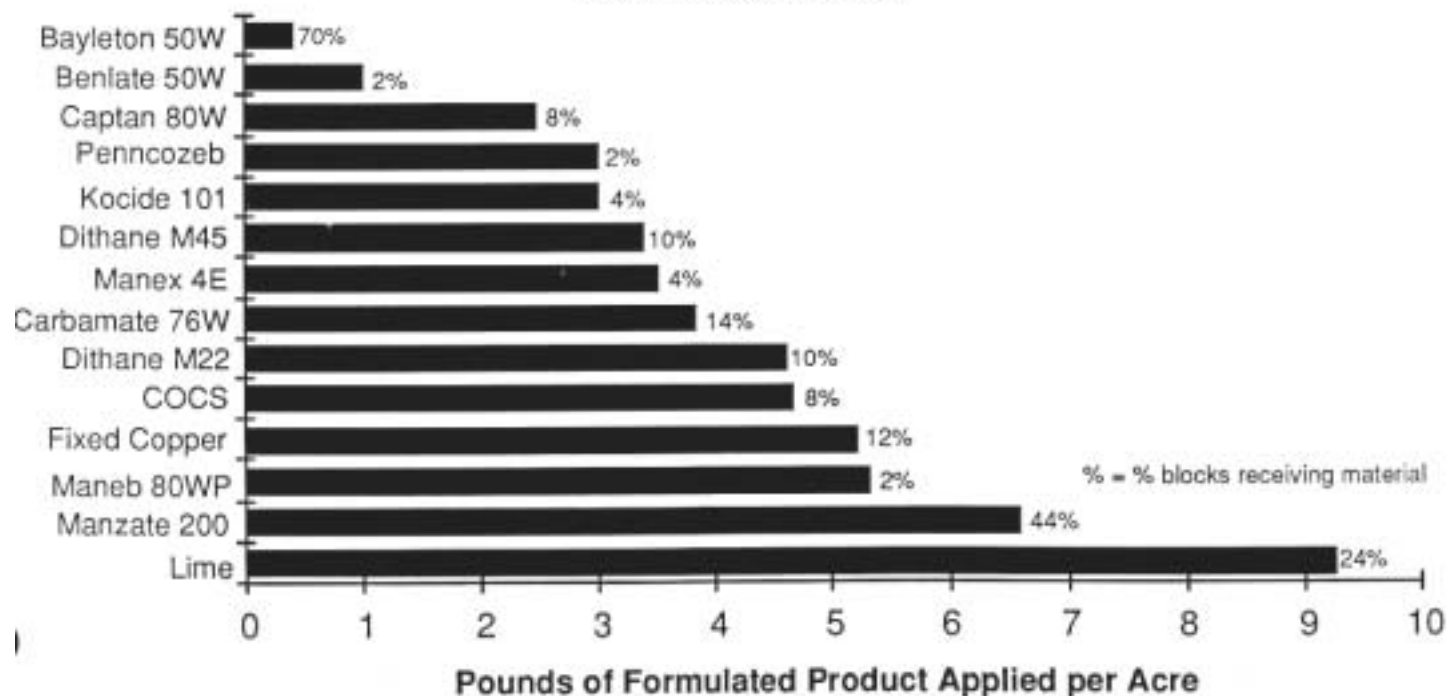


Figure 11. Fungicide & Herbicide Use on Strawberries 1988
(40 farms, approx. 400 acres)

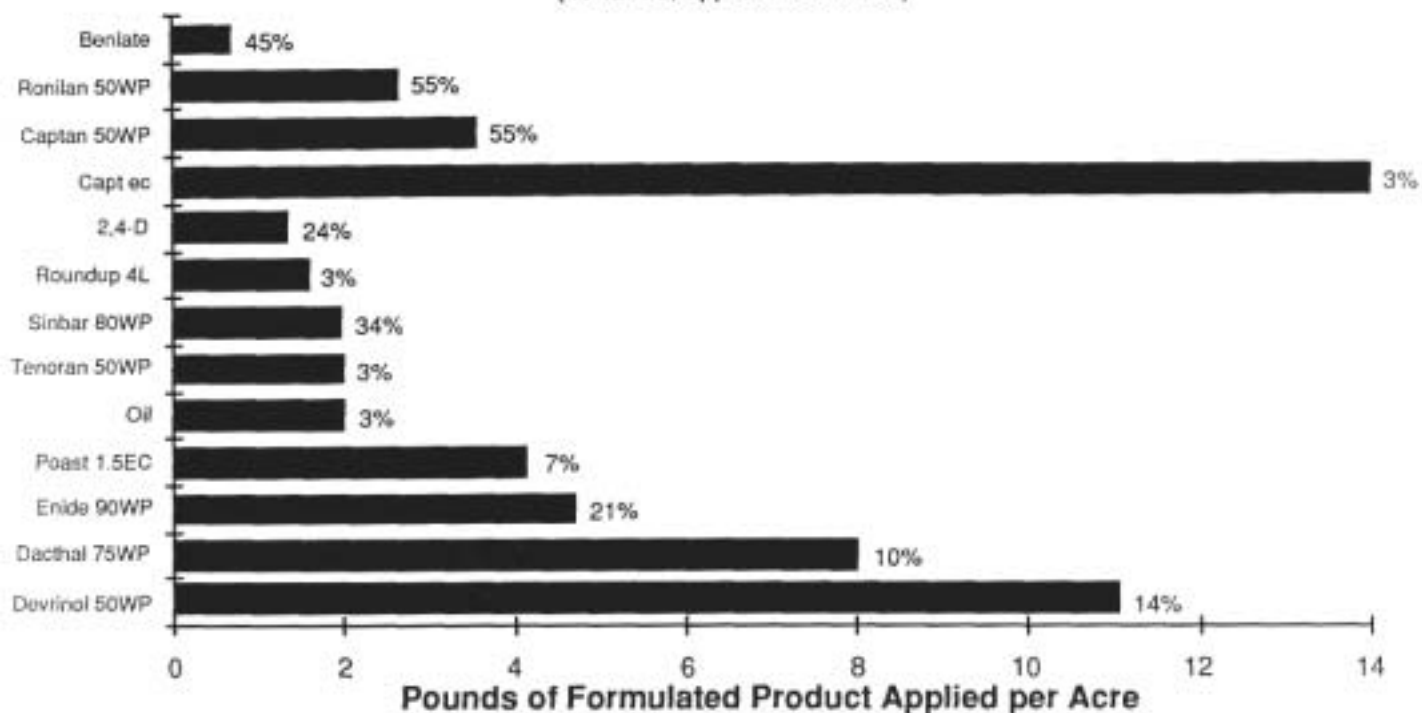


Figure 12. Insecticide Use on Strawberries 1988
(40 farms, approx. 400 acres)

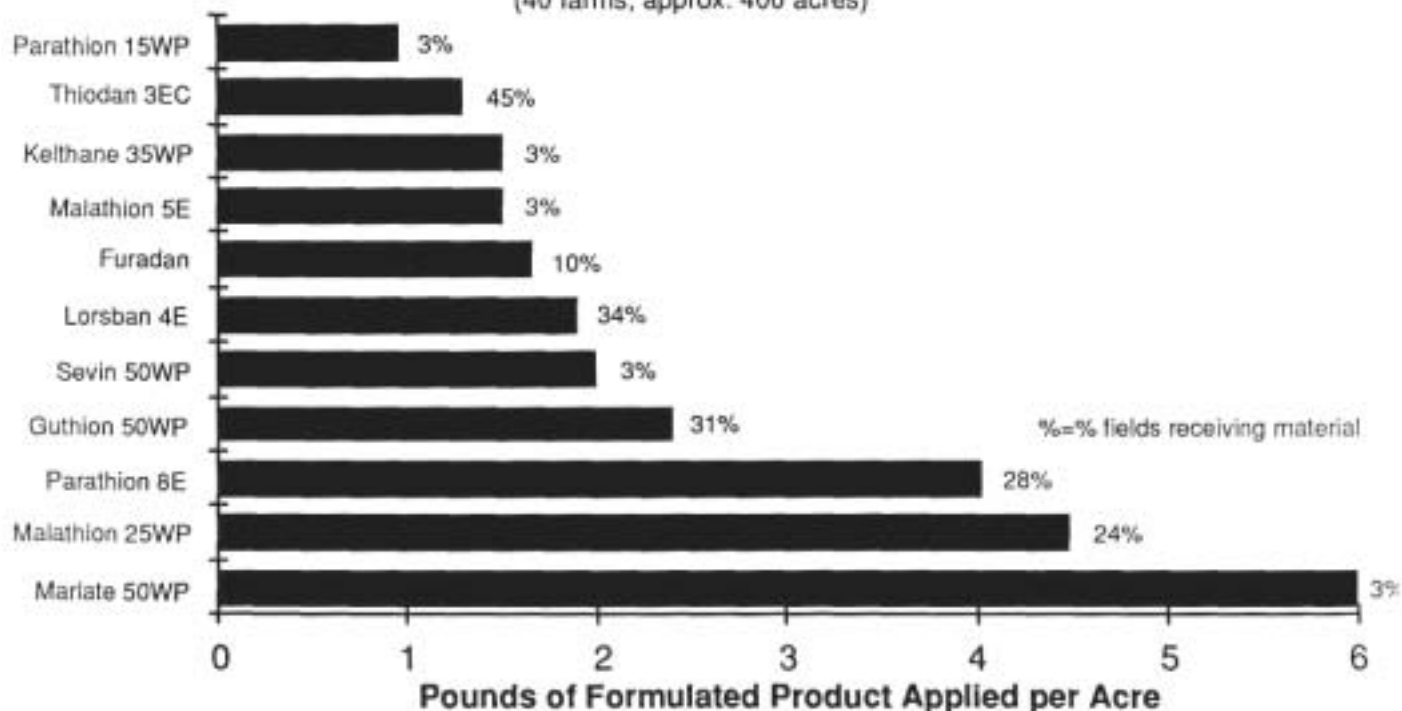


Figure 13. Herbicide and Fungicide Use on Muckland Potatoes 1988

(7 farms, approx. 750 acres)

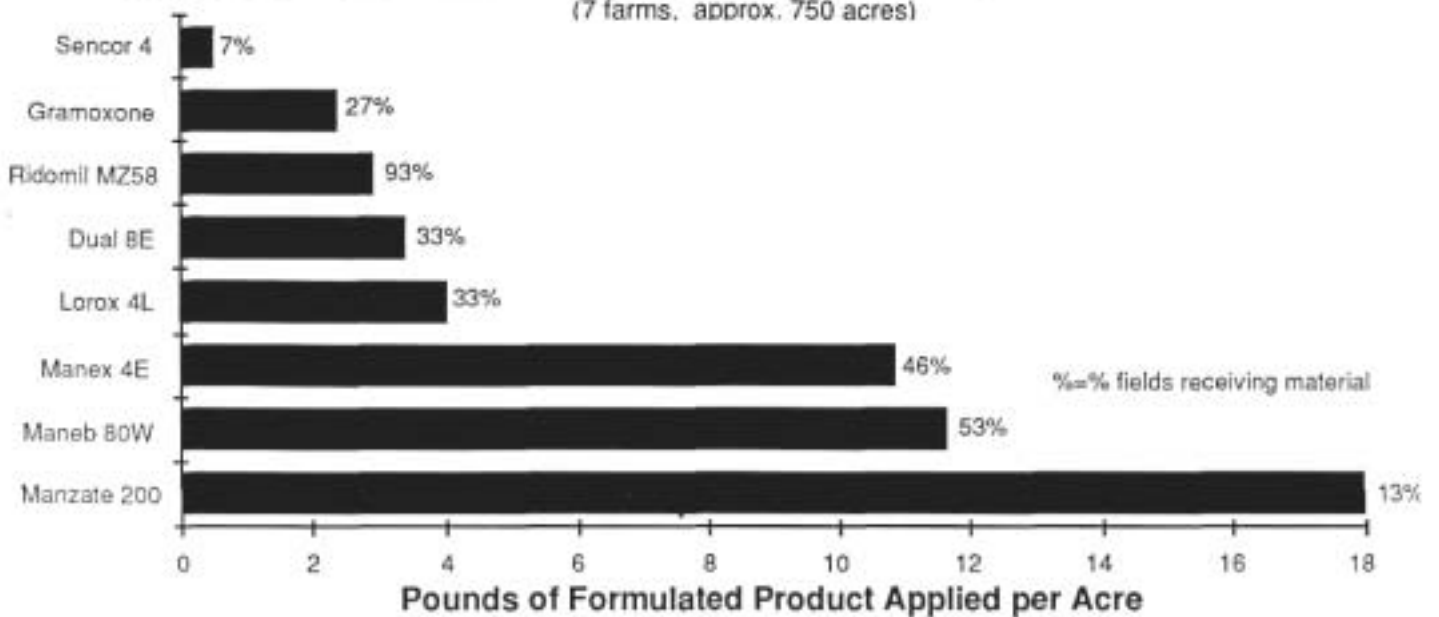


Figure 14. Insecticide Use on Muckland Potatoes 1988

(7 farms, approx. 750 acres)

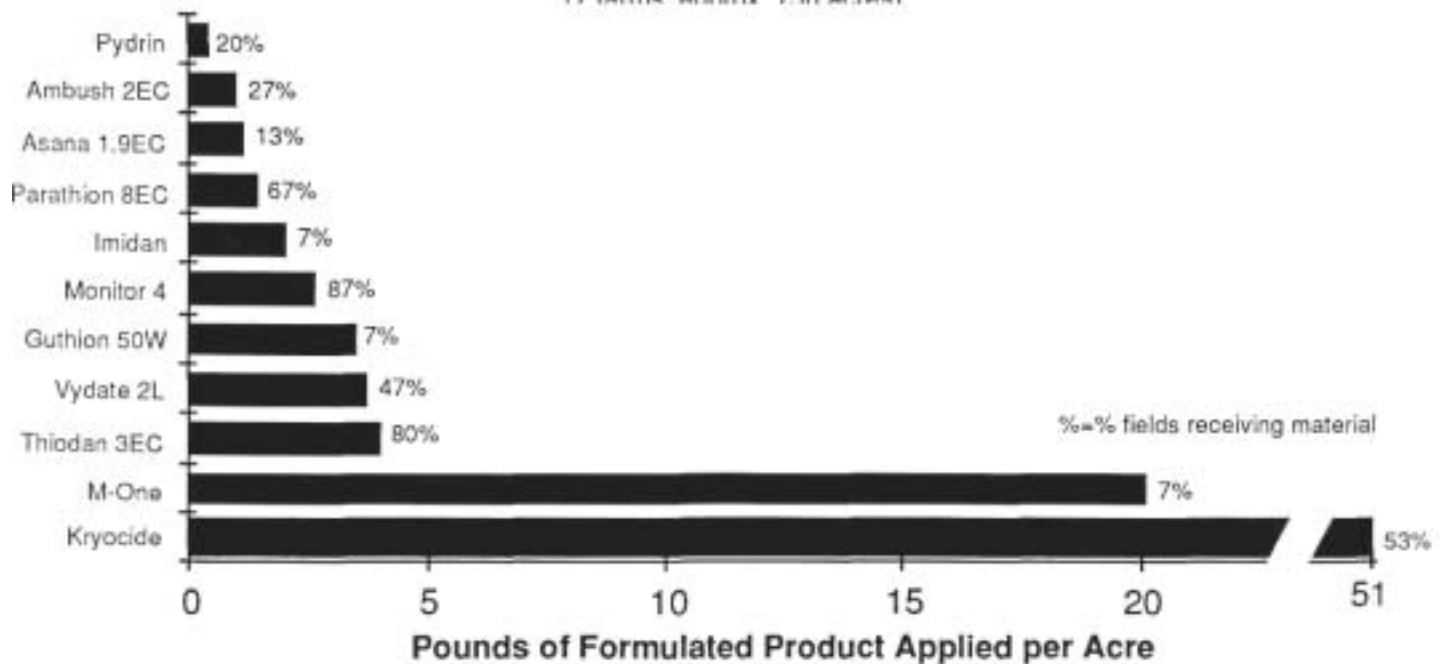


Figure 15. Herbicide and Fungicide Use on Upland Potatoes 1988

(11 farms, approx. 450 acres)

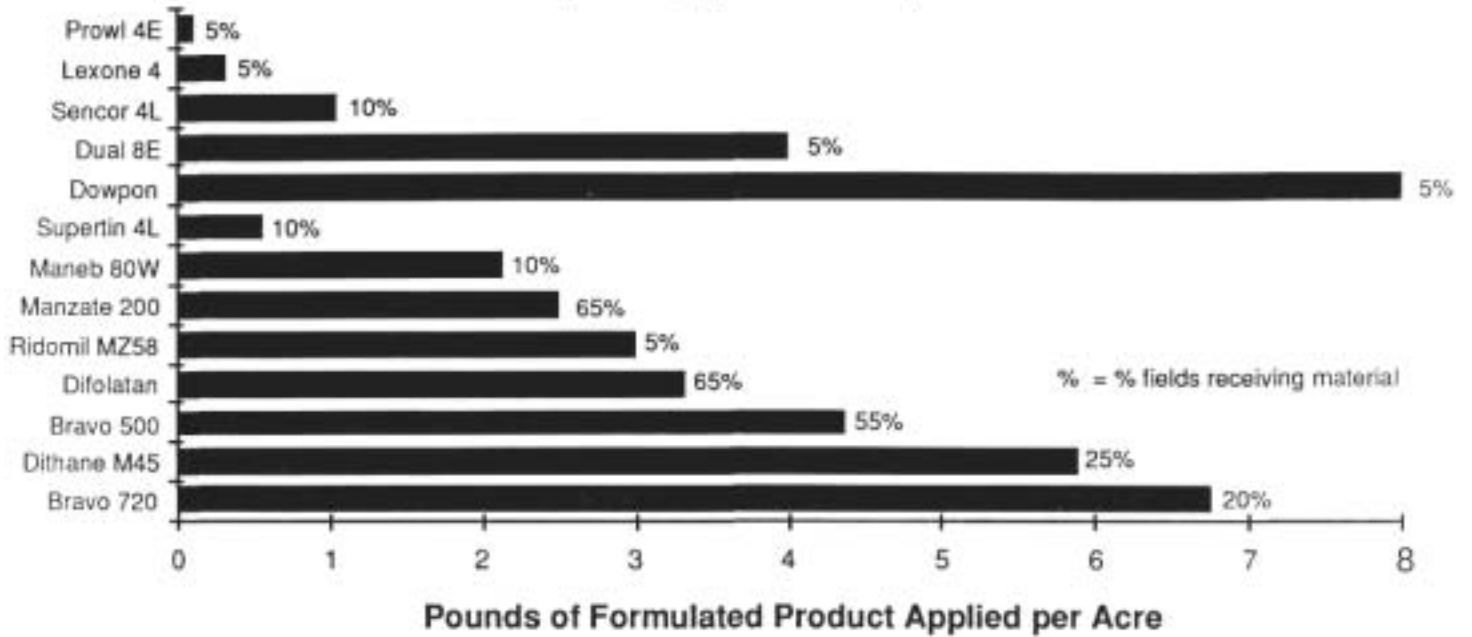


Figure 16. Insecticide Use on Upland Potatoes 1988

(11 farms, approx. 450 acres)

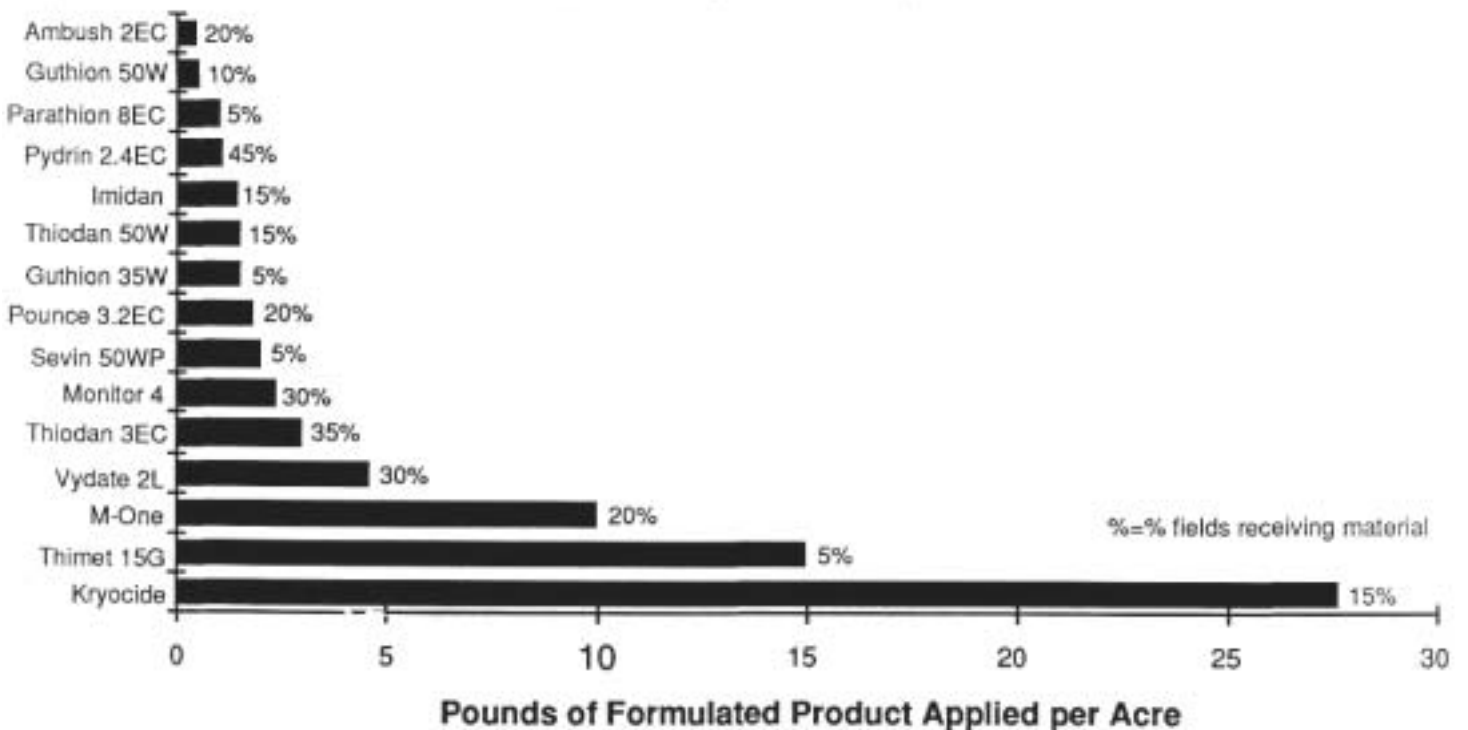


Figure 17. Fungicide Use on Muckland Onions 1988

(30 farms, approx. 140 acres)

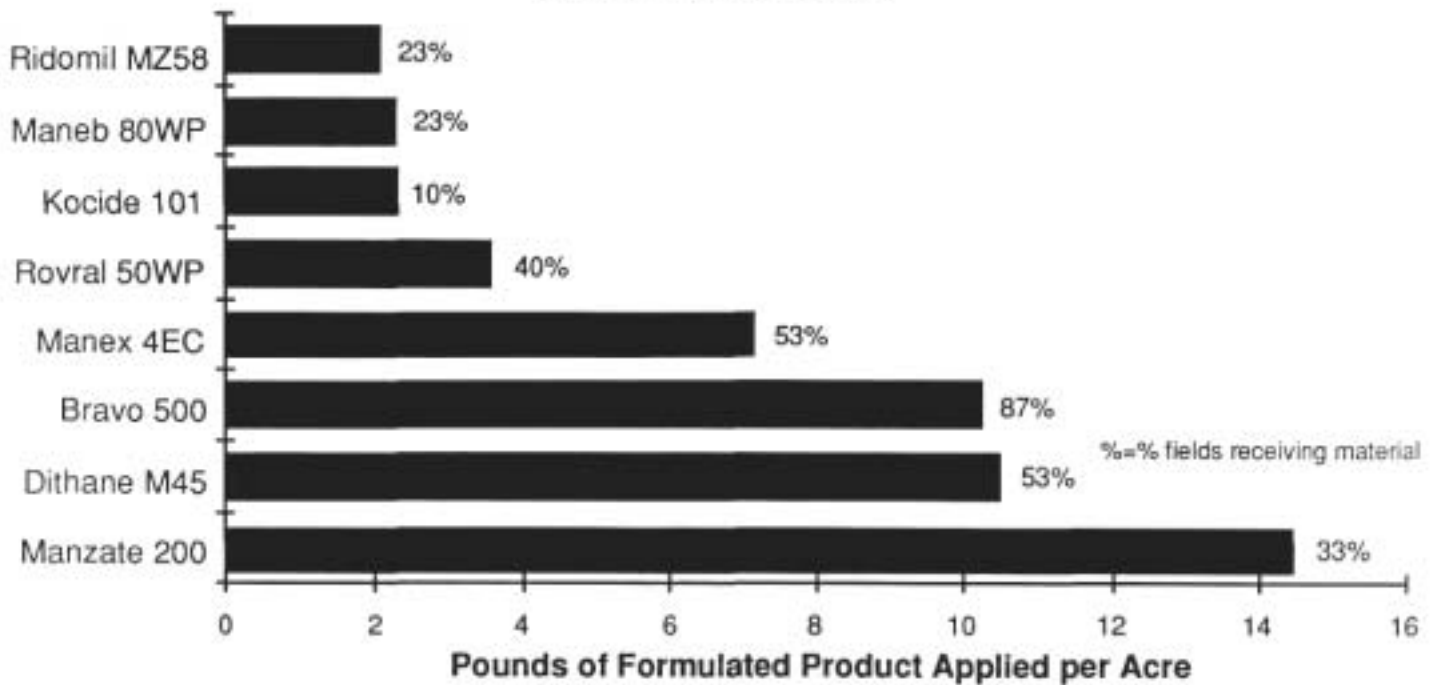


Figure 18. Insecticide and Herbicide Use on Onions 1988

(30 farms, approx. 140 acres)

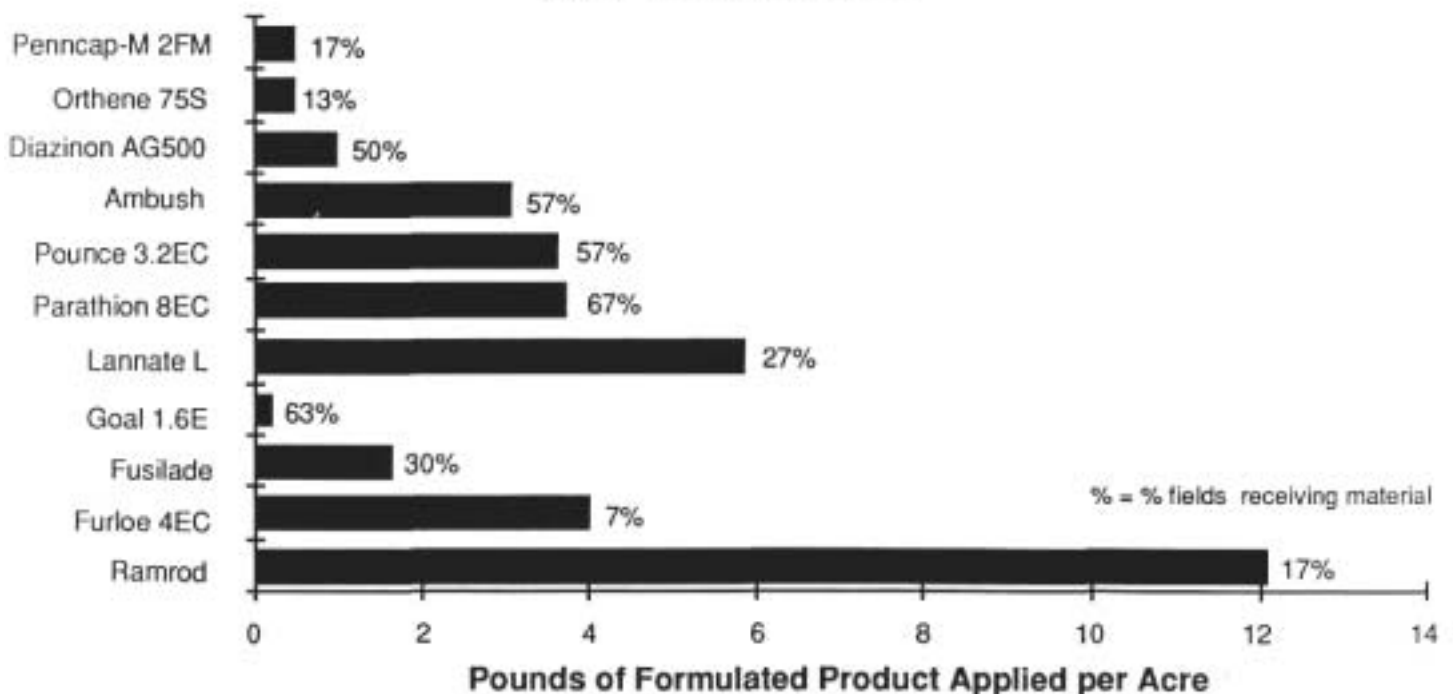


Figure 19. Pesticide Use on Fresh Market Cabbage 1988
(25 farms, approx. 100 acres)

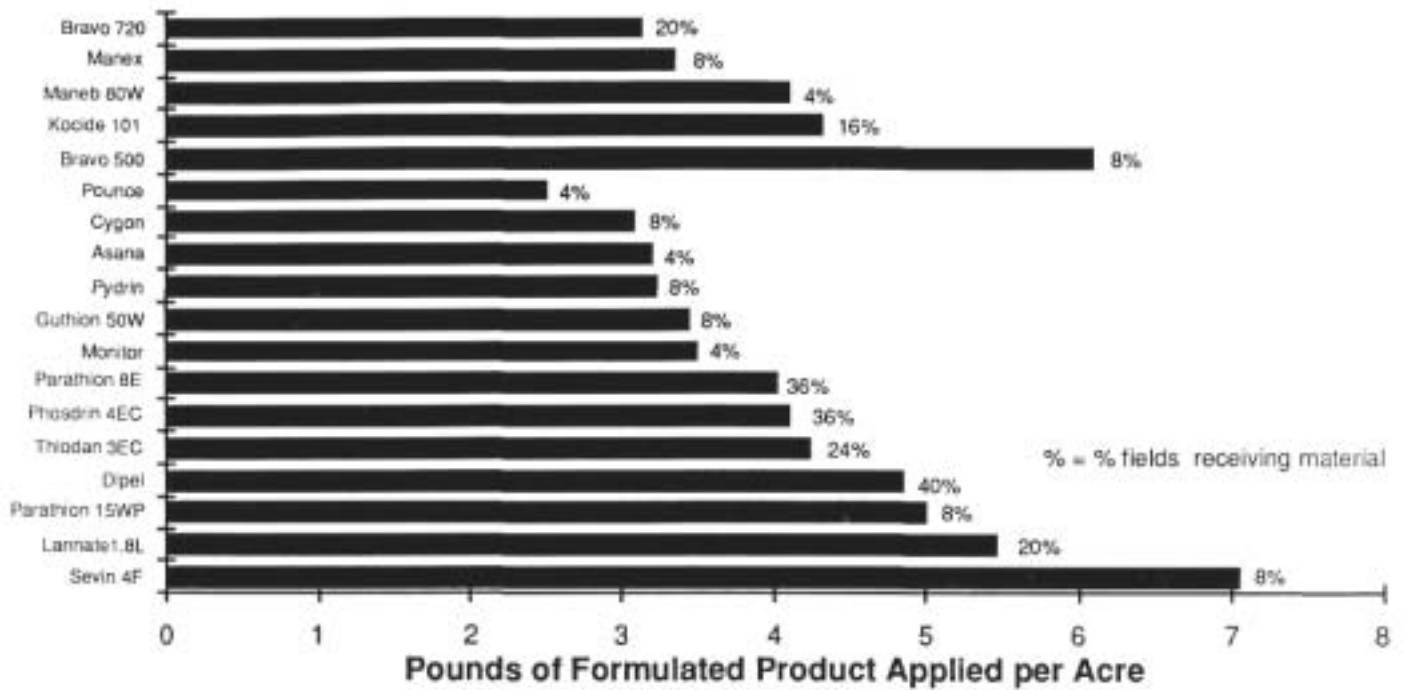


Figure 20. Pesticide Use on Snap Beans 1986
(53 farms, approx. 1300 acres)

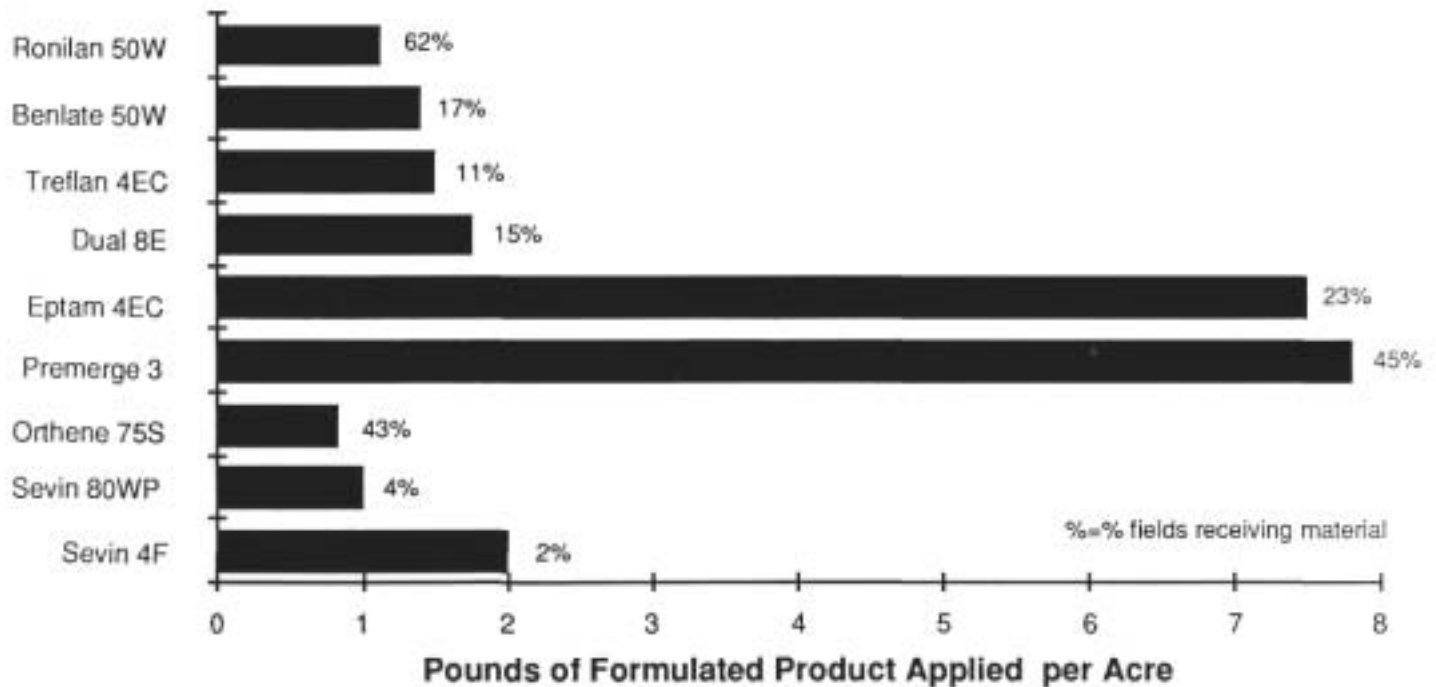


Figure 21. Pesticide Use on Lettuce 1987

(15 farms, approx. 200 acres)

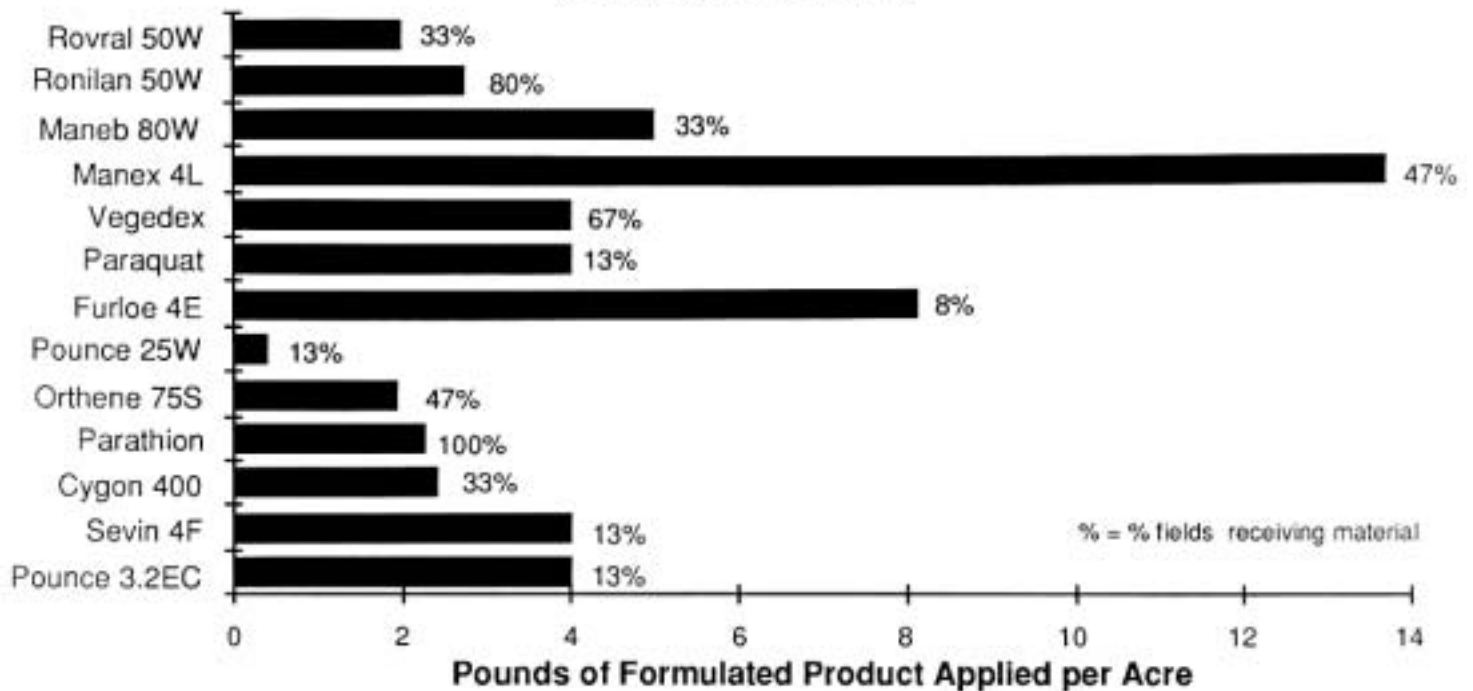


Figure 22. Pesticide Use on Fresh Market Sweet Corn 1988

(27 farms, approx. 140 acres)

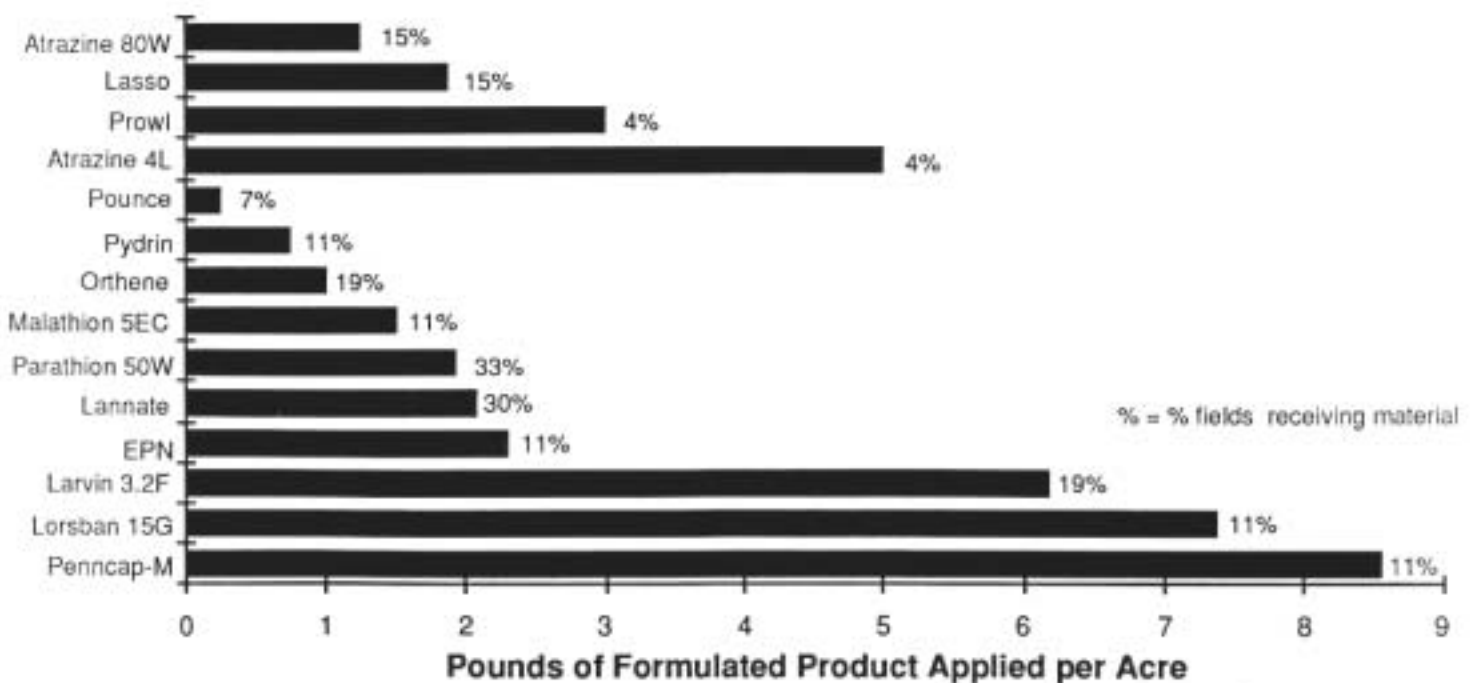


Figure 23. Pesticide Use on Fresh Market Cucurbits 1988
(25 farms, approx. 100 acres)

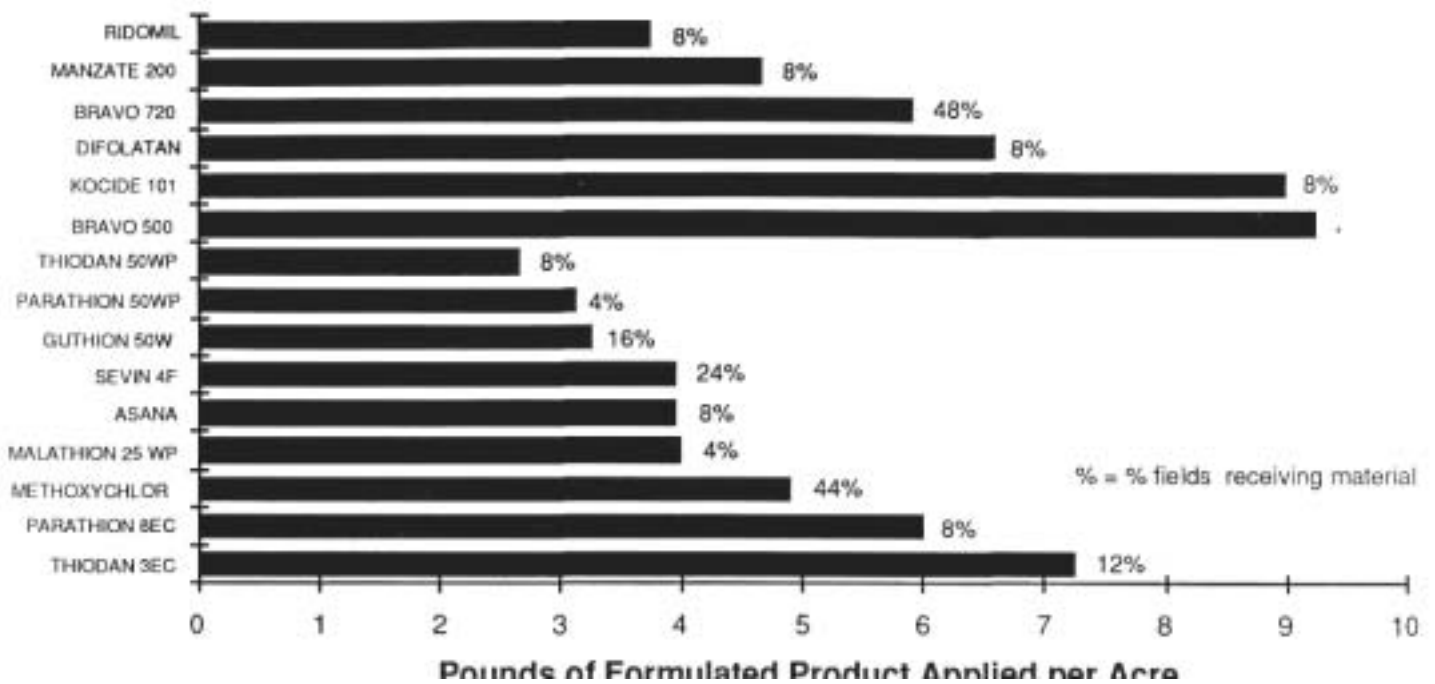
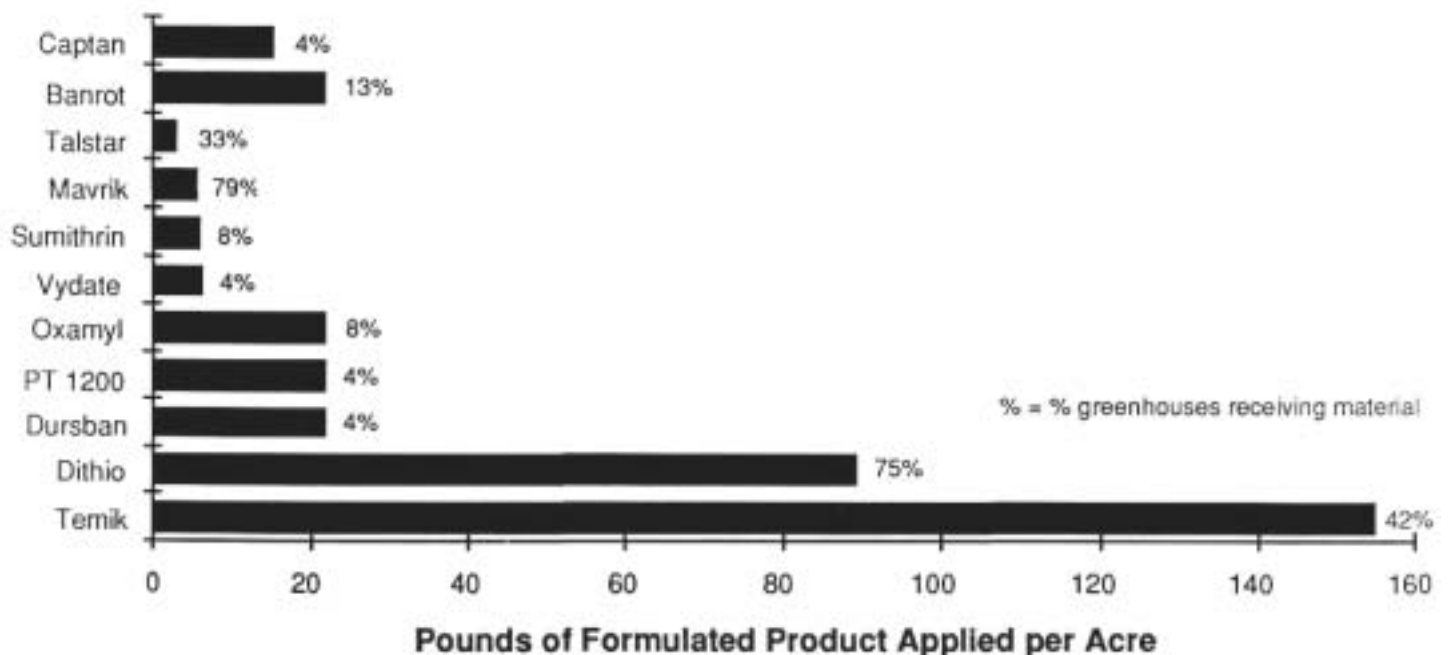


Figure 24. Pesticide Use on Finished Crop Poinsettias 1988
(24 greenhouses, IPM development program)



ACKNOWLEDGEMENTS

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