

THE FOOD QUALITY PROTECTION ACT: POTENTIAL IMPACTS ON ALFALFA

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ABSTRACT

The Food Quality Protection Act of 1996 (FQPA), requires the re-assessment of pesticide tolerances for thousands of products. The process has become exceedingly complicated by the concept of 'aggregate risk', requiring that assessments take into account a lifetime of exposure to compounds of similar chemical classes. California alfalfa producers rely on a number of important pesticides currently on the Environmental Protection Agency's priority review list, including, but not limited to: Lorsban, Furadan, Cygon and Lannate (chlorpyrifos, carbofuran, dimethoate, and methomyl). On average, alfalfa producers make approximately 1.8 applications per acre of compounds currently on the FQPA priority list. Chlorpyrifos (Lorsban, Dursban) is used on nearly 40% of California's alfalfa acreage and is one of the nations most widely used agricultural and home-use pesticides. As such it is under close investigation by the EPA and all of its uses may not fall within the 'risk cup'.

Key Words: alfalfa, FQPA, Food Quality Protection Act, EPA, Environmental Protection Agency, chlorpyrifos, dimethoate, crop profile, risk assessment.

INTRODUCTION

The Food Quality Protection Act (FQPA) was passed into law by Congress in 1996 to resolve inconsistencies in the two previous Federal statues under which EPA operates: the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug and Cosmetic Act (FFDCA). As envisioned by Congress, the FQPA amended FIFRA to modify pesticide registration and use laws to allow for 1) the faster review of 'reduced risk' and minor use pesticides; 2) change the definition of 'minor use' to use on a crop with less than 300,000 acres or to use on a crop when it is the only or safer alternative, or when it is important to IPM / resistance management. Amendments to the FFDCA focused on food safety and were designed to 1) establish uniform standards for setting residue tolerances for both raw and processed foods and; 2) set 'safe' tolerances of pesticides in food such that the tolerances 'provide a reasonable certainty that no harm will result from aggregate exposure'. In addition, tolerance must also take into consideration infants and children and other sensitive or 'at risk' populations.

Calculations of tolerance and risk used by the EPA include a large margin of safety. For example, tolerances of most pesticides are set at 1/100 (100X safety factor) of the 'No Observable Adverse Effect Level' (NOAEL or NOEL) on the most sensitive test organism studied. In addition, an additional 10X safety factor may be included when children and infants are at risk. Thus, when children might be at risk, tolerances are set at 1/1000 of the NOAEL.

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Pesticide tolerance determinations, however, have been exceedingly complicated by the inclusion of the term 'aggregate' in the FQPA. To explain the new law, EPA has used the concept of the aggregate 'Risk Cup' that is filled with an acceptable exposure to a pesticide. The 'Risk Cup' is 'filled' with the amount of pesticide a person could be exposed to every day for 70 years without significant health risk. In the past, when setting a residue tolerance, the EPA considered each pesticide separately and considered only dietary exposure. Now, all compounds with a similar toxicity mechanism (ie: organophosphates, carbamates) will be included in the SAME risk cup. Furthermore, BOTH dietary and non-dietary (pets, water, home use) exposures will in the SAME risk cup.

Possible impacts of the FQPA revolve around making 'room in the cup' for all pesticides as used today. Some possible impacts include: 1) elimination of certain compounds, such as the organophosphates or carbamates; 2) changes in pesticide labels to reduce the number or rates of applications; and 3) loss of registration of some pesticides for minor or specialty crops.

GOOD NEWS / BAD NEWS

The EPA's priority crops for setting pesticide tolerances is based on the importance of certain foods in the diets of children. These include: apples, oranges, peaches, soybeans, pears, carrots, rice, beef, coconut oil, corn, potatoes, wheat, oats, eggs, chicken and more. The list does not currently include milk or dairy products and does not include alfalfa.

On the other hand, under the FQPA, over 9,000 pesticide tolerances are required to be reviewed over a ten year period for inclusion in the risk cup. Under this schedule the 'worst-first' pesticides - organophosphates, carbamates, and certain carcinogens - are to be reviewed during the first three years of implementation (1997 to 1999). This includes many alfalfa pesticides.

EPA PRIORITY LIST OF PESTICIDES INCLUDES MANY IMPORTANT ALFALFA PESTICIDES

The current EPA priority list of pesticides - those expected to be reviewed first - includes a number of compounds of great importance or widely used in California alfalfa production (Table 1). This list does not include many pesticides used by California alfalfa producers, nor does it include all of the compounds on the current EPA priority review list, nor those to subsequently be reviewed; instead it highlights alfalfa pesticides most likely to be threatened in the near future.

In an economic assessment conducted by the University of Wisconsin and the Pennsylvania State University², the negative impacts of the loss of 12 alfalfa insecticides were estimated on a national basis. The authors determined that the greatest negative impacts to alfalfa production would result from the loss of Furadan (carbofuran), Cygon (dimethoate, and Lannate (methomyl). On a national average, the loss of all important organophosphates could result in a loss of \$44 per acre for hay and over \$360 per acre for alfalfa seed production. Keep in mind that these averages include states where the overall number of cuttings per year and the value of the crop is likely to be less than California.

² Hower, A.A., J.K. Harper and R.G. Harvey. 1998. Biologic and economic assessment of insecticide use in alfalfa in the U.S.. 36th North American Alfalfa Improvement Conference.

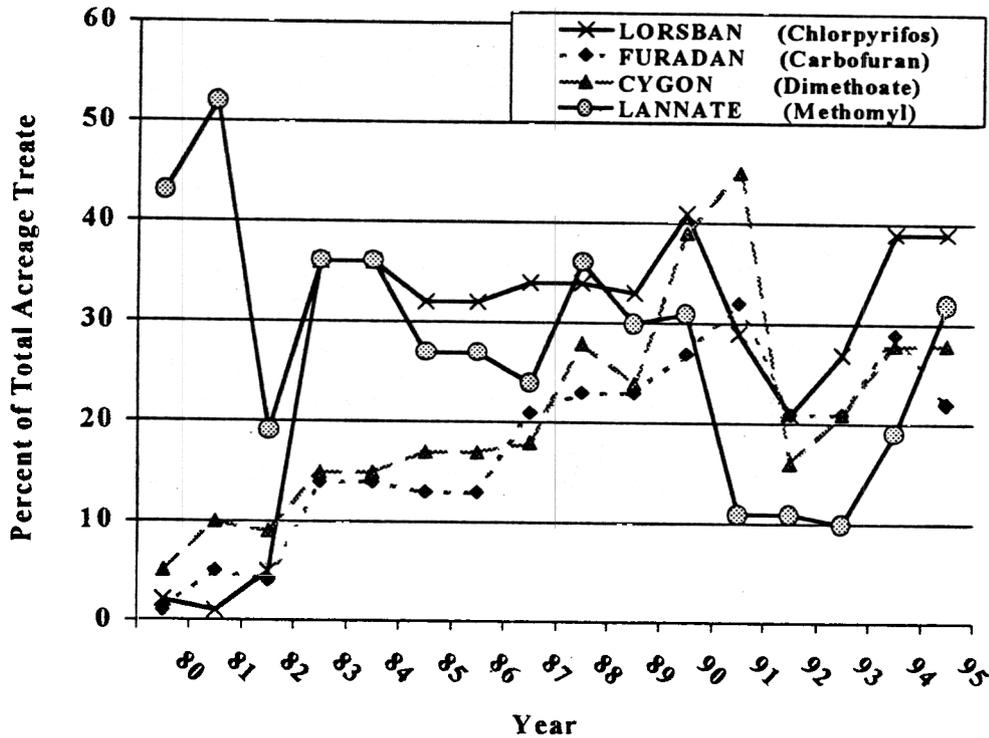


Figure 1, above. Percent of total planted acres treated with the most widely used alfalfa compounds on the FQPA priority review list. For example, nearly 40% of California's alfalfa acreage is treated with Lorsban. CDFA and CDPR Pesticide Use Data, 1980-1995.

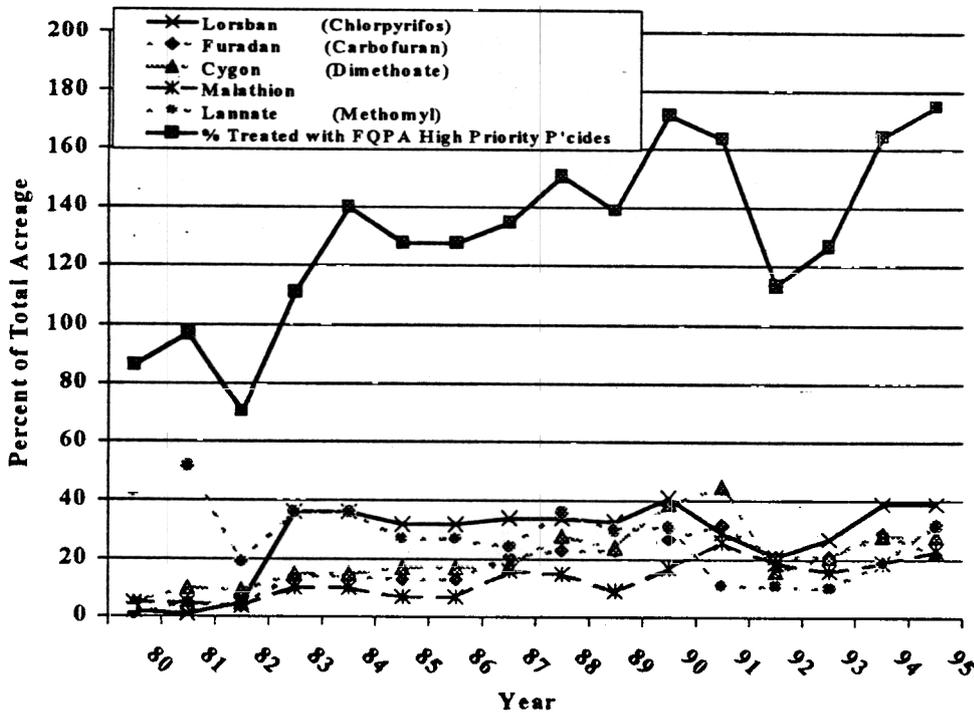


Figure 2, above. Percent of total alfalfa acreage in California treated with compounds on the current EPA /FQPA priority list for review. '% Treated with FQPA High Priority Pesticides' is the sum of 9 compounds currently on the list. This graph shows an estimate of about 1.8 treatments per acre with FQPA priority list compounds, illustrating the importance of these compounds to California alfalfa producers.

Table 1. Alfalfa pesticides on the EPA's current priority list for review of acceptable tolerances

Trade Name	Chemical Name	Class of Compound ³	Approx. % of Acreage Applied in CA
Lorsban	Chlorpyrifos	OP	40
Diazinon	Diazinon	OP	
Cygon-400	Dimethoate	OP	28
Malathion	Malathion	OP	23
Methyl Parathion, Pennacp-M			2
Sevin	Carbaryl	Carbamate	< 1
Furadan		Carbamate	22
Lannate		Carbamate	32
Propargite	Propargite		

Of particular concern is the potential loss or use reduction of chlorpyrifos (Lorsban, Dursban), the most extensively used pesticide in California alfalfa production (Figure 1, Figure 2).

Chlorpyrifos is also one of the nation's most widely used pesticides and, as an organophosphate, is of concern to the EPA because of its potential to inhibit cholinesterase and interfere with nerve functions. Chlorpyrifos, under the trade name Dursban, is also used around the home, potentially competing with farm use in the risk cup. Studies conducted by Dow-AgroSciences suggest that the 1000X safety factor is not justified for Lorsban and if implemented would quickly 'over-flow' the risk cup.

'TRANSPARENCY'

'Transparency' is a term borrowed from the financial industry by the EPA to discuss EPA's implementation of the FQPA. Roughly translated, it means 'All information should be available to all parties, at all times'. Ideally, transparency results in the best decisions. In order to foster transparency, EPA has established a web-site and information docket where it posts preliminary risk assessment information for review by interested registrants and the public. These risk assessments can also be ordered by mail from the EPA.

On August 12, 1998, EPA posted documentation for the re-assessment of nine organophosphate tolerances and added an additional seven organophosphates on September 9, 1998. With the September posting, both the public and registrants were allowed to submit comments to the EPA for the following 60 days.

Of the 16 pesticides under re-assessment at this writing, only Cygon (dimethoate) is of immediate concern to California's alfalfa producers. However, the EPA is under strict deadlines, suggesting that other compounds will be reviewed soon.

³ OP = Organophosphate

IS THIS REASONABLE?

EPA is moving rapidly to implement the FQPA as required by law. In spite of the promised 'transparency' of the re-assessments, the timeline for the implementation of the FQPA seems far too short for accurate determinations. Simply put, for the good of the public and the agricultural industry, re-assessments must be based on sound-science and a reasonable amount of transition time to alternate farming methods must be given to producers to reduce the economic impact of the changes.

WHAT CAN YOU DO?

Alfalfa producers can participate by:

- Staying informed about changes in the FQPA, through all channels available.
- Making their concerns regarding the FQPA available to their Congressman or Senator.
- Following University of California Integrated Pest Management Guidelines for Alfalfa.
- Following all label directions carefully.
- Take commodity, university and government sponsored pesticide-use surveys seriously.
- Research and stay informed about alternate control methods, should the loss of a pesticide occur rapidly.

WHAT CAN WE DO?

The California Farm Bureau Federation, the Western States FQPA Coalition, and many commodity groups, including the California Alfalfa and Forage Association (CAFA), are actively trying to stay on top of the FQPA issue by keeping their members informed of critical changes or options.

Furthermore, the FQPA instructs the USDA and EPA to obtain 'Crop Profiles' for individual crops in an effort to identify pesticides of the greatest importance to that crop. Crop profiles are intended to provide a current and complete production description for each commodity. As mentioned previously, alfalfa production in California is at great risk because of its use of organophosphates and carbamates on a large acreage and the expectation that significant economic losses could occur without treatment.

Accurate 'Crop Profiles' rely on industry input; current profiles available in California have been submitted by commodity groups (walnuts, rice) in cooperation with producers, the University of California and others. Because of California's unique alfalfa producing regions, our sophisticated dam and canal network, use of irrigation water, and our Mediterranean climate, alfalfa 'Crop Profiles' produced in the Mid-Western U.S. cannot accurately describe the needs and impacts here. We urge you, whether or not you are an active CAFA member, to support, participate in the creation of, or review of 'California's Alfalfa Crop Profile' as we develop it.

CURRENT ISSUES

As previously mentioned, Cygon (dimethoate) is currently in the EPA docket for review. This pesticide is used on approximately 30% of California's alfalfa acreage and its loss may

significantly impact the industry. Secondly, the Natural Resource Defense Council (NRDC) has recently called upon the EPA to designate farm children as a 'major identifiable subgroup' under the FQPA, treating them as a population at 'special risk' when setting pesticide tolerances. Little data exists to support this claim.

SUMMARY

On the average, alfalfa producers apply 1.8 treatments per acre of pesticides currently on the FQPA priority list for re-assessment. The safe and effective use of these pesticides has been an integral part of California's alfalfa production regime for decades and loss of registration for these pesticides could easily result in economic losses of \$40-50 per acre for hay and over \$360 per acre for seed. Ultimately, CAFA and many other commodity groups support the principles that FQPA implementation must be based on sound science and allow reasonable time for transition to alternate practices should the need arise.

STAY INFORMED / REFERENCES

With the use of the World Wide Web to create an information link or pesticide 'dockets', and to promote 'transparency', the EPA has set the stage for a new, fast-paced process. In response, many organizations and commodity groups have posted their response to EPA's FQPA implementation plan on their web-sites. Even if you do not have work or home access to the Web, consider using web facilities at your local library or other organizations. Here are a few sites to help you stay informed about important alfalfa issues as well as the EPA's FQPA process:

http://www.epa.gov/	Environmental Protection Agency
http://www.acpa.org/	American Crop Protection Association
http://www.cfbf.com/	California Farm Bureau
http://www.CalHay.org/	California Alfalfa and Forage Association
http://www.agronomy.ucdavis.edu/alfalfa.wg/	UC Davis Alfalfa Workgroup
http://www.ipm.ucdavis.edu/	Integrated Pest Management / UC Davis
http://ace.ace.orst.edu/info/extoxnet/	Extension Pesticide Information Profiles