



Spirotetramat Use In Arizona
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We are faced with the following set of facts.

1) Spirotetramat sale and distribution could become unlawful, despite its current legal presence and use within desert vegetable systems. All quoted text from EPA documents.

"In the absence of any action by EPA, all sale and distribution of formerly-registered spirotetramat products will be unlawful under FIFRA once the vacatur goes into effect."

"Without action by EPA, the termination of the registrations could thus make illegal not just any sale, but any further movement of material currently in the hands of distributors or retailers (FIFRA section 12(a)(1)(A) (7 U.S.C. §136(j)(a)(1)(A)) makes it a violation of FIFRA for any person to sell or distribute an unregistered pesticide), and subject any seller/distributor to potential civil or criminal penalties under FIFRA section 14 (7 U.S.C. §136l)."

2) This change in status could leave the user community with ambiguous market and regulatory signals, and may lead to use patterns that do not conform to currently in force label requirements.

"Thus, in the absence of EPA action, users of unregistered pesticides are not obligated to follow the labeling (which, for registered pesticides, prescribes enforceable conditions for using the particular pesticide, among other things) accompanying the product. Therefore, once the registrations are terminated, unless EPA takes action, persons holding stocks of spirotetramat will not be legally precluded from using those stocks without following label directions, including the restrictions on timing of applications that EPA required in order to protect bees."

3) EPA has the authority to develop guidelines for sale and use of existing stocks that could allow the safe and effective use of spirotetramat currently in marketing channels and in users hands.

"The Administrator may permit the continued sale and use of existing stocks of a pesticide whose registration is suspended or canceled under [sections 3, 4 or 6 of FIFRA] to such extent, under such conditions, and for such uses as the Administrator determines that such sale or use is not inconsistent with the purposes of [FIFRA]."

4) While the procedural anomaly that led to this court decision is unique, the EPA has ample guidance from previously established policy for handling cancelled pesticides.

"Regarding cancelled pesticides, the existing stocks policy identifies particular considerations relevant to five different cancellation scenarios: 1) cancellations where the Agency has identified particular risk concerns; 2) cancellations where a registrant has failed to comply with an obligation of registration; 3) cancellation of products while subject to data call-in notices under section 3(c)(2)(B) of FIFRA; 4) cancellation of registrations subject to reregistration requirements and label improvement programs; and 5) other voluntary cancellations."

“Thus, EPA identified in the policy statement six criteria it might consider in making such risk benefit decisions, including: 1) the quantity of existing stocks at each level of the channels of trade; 2) the risks resulting from the use of the existing stocks; 3) the benefits resulting from the use of such stocks; 4) the financial expenditures users and others have already spent on existing stocks; 5) the risks and costs of disposal or alternative disposition of the stocks; and 6) the practicality of implementing restrictions on distribution, sale, or use of the existing stocks.”

Our goal in commenting on spirotetramat end of stocks use in Arizona is to prevent unacceptable economic, environmental and public safety risks consistent with EPA guidelines in the registration of any pesticide.

“That determination, like the initial decision to register a pesticide, will focus on the social, economic, and environmental risks and benefits associated with such sale and use.”

Spirotetramat is recently registered and available for use in desert vegetables grown in Arizona. Despite its recent appearance in the marketplace, researchers have been examining this active ingredient in Arizona production systems for more than four years. As a reduced-risk, selective insecticide, spirotetramat affords users a novel chemistry for controlling aphid and whitefly pest species without disrupting natural controls of other species and creating better safety for the user and consumer. All quoted text that follows is from a recently published scientific paper by Drs. John Palumbo and Steve Castle in *Pest Management Science* (2009).

“Many of the modes of action for these new chemistries exploit alternative nerve receptor sites, novel physiological processes and other key biochemical functions specific to insects.³² This has not only made them safer for the user and consumer, but in many cases more efficacious than the neurotoxins used in the past.”

However, the fully systemic action of this foliar pesticide is virtually unique among pesticides registered for use against this pest complex.

*“Another systemic insecticide, spirotetramat (ketoenol), was recently registered for use on desert produce crops. Although it has no practical soil activity, following foliar application and uptake, the insecticide is translocated acropetally and basipetally within the entire vascular system.³⁶ Research to date has shown excellent residual activity against aphid species such as *Nasonovia ribisnigri* Mosely and *Aulacorthum solani* Kaltenbach in lettuce that typically require repeated applications for economic control.³⁷ Again owing to its foliar systemic activity, spray coverage with spirotetramat is not as critical as with many older, conventional compounds.”*

The opportunities for efficient control and therefore lower exposure of users and the environment to a suite of broad-spectrum neurotoxic chemistries is very important in our production system and consistent with our local efforts to transition growers to safer, more selective IPM systems.

“...the changeover of IPM to safer and more effective insecticides from highly toxic, broad-spectrum insecticides of previous decades has been a welcome development. In addition to the positive attributes already described, many of the newer compounds are used at greatly reduced rates in lettuce and leafy vegetables that result in lower pesticide loads in the environment.”

The transition in our desert vegetable industry to lower risk, selective chemistries is key to the reduction of broadly toxic insecticides in our system, more efficient and economical control of target pests, and creating more safety for users, consumers, and the environment.

“Overall, the use of newer, selective compounds over the past decade in desert produce crops has certainly reduced the risk of exposure to toxic insecticide residues for consumers and farm workers....Perhaps the most telling sign has been the overall reduction in the number of foliar spray

applications made to desert lettuce crops over the years, [where] in the 1980s, an average of 12 – 15 sprays were applied to lettuce annually.... in 1996, growers applied an average of nine foliar insecticide applications to lettuce. Most recently, ... a range of 4 – 7 foliar sprays were applied to lettuce crops in 2007.”

“These data suggest that overall usage of the broadly toxic chemistries on head lettuce has declined steadily over the past 5 years, but, more importantly, since 1996 the usage of organophosphates and carbamates on desert head lettuce alone has declined significantly. In contrast, the use of the selective insecticides on lettuce has increased almost twofold over this same 14 year period.

In addition, our most recent history (2009) shows a major shift in insecticide use patterns in desert head lettuce. Our most broad spectrum chemistries (endosulfan, acephate, diazinon, and dimethoate) have decreased by over 50%. In fact without exception, all active ingredients declined precipitously in 2009 once spirotetramat (and two other selective active ingredients) was introduced to the marketplace (see Table 1 from Palumbo & Castle, 2009). Spirotetramat was used on nearly 3/4ths of the lettuce acreage last year.

“Results from the 2009 University of Arizona pest management workshop estimated that, for the first time, these broadly toxic compounds were actually applied to fewer acres of desert head lettuce than the selective insecticides (Palumbo JC, unpublished data).”

Our current work to examine non-target effects of spirotetramat in cotton is beginning to show the selective advantages of having such chemistry in our desert systems. While data analyses are ongoing, spirotetramat appears to be as selective as its related chemistry spiromesifen in our system. We determined in prior work that spiromesifen is “fully selective” in our cotton system affording users a new option for conserving the significant natural controls and pollination services present in cotton (Ellsworth & Naranjo, unpubl. data).

In short, spirotetramat is not only a safe and efficient insecticide in our desert vegetable systems, it is helping the entire industry transition to a more completely selective and therefore superior IPM system for these fresh market commodities. **We urge EPA to preserve the legal use of spirotetramat through the end of stocks period. All indications are that there are no new risks associated with this important product. On the contrary, the data are compelling that we are creating an environment where more reduced-risk chemistries are used than the broadly toxic conventional compounds. EPA, by acting now to insure the organized and legal use of this active ingredient, will be protecting the public and environment from the risks of increased usage of broadly toxic insecticides that will otherwise have to be used in place of spirotetramat in our fresh market vegetable systems.** This would be a large step backward for our industry and represent a major economic hardship as well. Furthermore, we support EPA in taking swift action to restore all previously approved Section 3 uses of spirotetramat. We also look forward to new labels for this critical active ingredient coming forth quickly in 2010 (e.g., in cotton and other agricultural crops).

References

Palumbo J.C. & Castle S.J. 2009. IPM for fresh-market lettuce production in the desert southwest: the produce paradox. *Pest Management Science* 65: 1311-1320. Available online: <http://www3.interscience.wiley.com/cgi-bin/fulltext/122653066/HTMLSTART>.

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Table 1. Estimated usage of broadly toxic (organophosphates, carbamates, cyclodienes and pyrethroids) and selective (reduced- and low-risk) insecticide chemistries on head lettuce in Arizona, based on NASS and PCA surveys^{18,25}

Insecticides	Estimated number of head lettuce acres treated (<i>total acres in production</i>)					
	1996 (55 000)	2005 (50 000)	2006 (48 000)	2007 (45 500)	2008 (46 000)	2009 (46 000)
Broadly toxic chemistries						
Pyrethroids	256 960	182 030	169 894	148 376	150 739	147 726
Methomyl	207 900	45 150	48 114	30 986	22 523	16 555
Thiodicarb	23 595	0	0	0	0	0
Endosulfan	36 630	17 760	17 566	20 020	16 480	8 118
Acephate	27 720	9 433	6 376	11 386	14 128	9 396
Diazinon	10 285	15 800	21 758	9 646	12 150	5 075
Dimethoate	56 760	14 656	8 050	3 829	3 487	0
<i>Total usage</i>	<i>619 850</i>	<i>284 829</i>	<i>271 758</i>	<i>224 243</i>	<i>219 507</i>	<i>186 870</i>
Selective chemistries						
<i>Bacillus thuringiensis</i>	74 250	1 125	288	0	0	0
Abamectin	11 495	0	0	0	0	0
Imidacloprid	11 550	36 443	40 488	22 818	29 973	19 890
Emamectin benzoate	–	4 483	11 928	16 124	10 670	6 989
Methoxyfenozide	–	32 728	33 926	28 494	27 141	16 740
Spinosad/spinoteram	–	114 438	103 144	82 257	98 382	85 590
Indoxacarb	–	6 363	10 609	8 395	9 994	2 475
Pymetrozine	–	7 508	3 755	1 081	432	0
Acetamiprid	–	–	10 654	19 963	9 118	1 238
Spiromesifen	–	–	1 272	1 145	2 800	585
Flonicamid	–	–	–	10 385	17 738	3 420
Spirotetramat	–	–	–	–	–	33 953
Chlorantraniliprole	–	–	–	–	–	16 509
Flubendiamide	–	–	–	–	–	4 500
<i>Total usage</i>	<i>97 295</i>	<i>203 088</i>	<i>216 064</i>	<i>190 662</i>	<i>206 248</i>	<i>191 889</i>