UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

MEMORANDUM

SUBJECT: BEAD Chemical Profile (BCP) for Registration Review: Ipconazole (125618)

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SUMMARY

Ipconazole fungicide was first registered in the U.S. in 2004 (USEPA, 2004). This fungicide is a seed treatment that belongs to the triazole chemical group of De-Methylation Inhibitors (DMI) fungicides. It belongs to Group 3 of the Fungicide Resistance Action Committee which is based on the mode of action of fungicides. Based on private market usage data from 2010-2013, usage averaged approximately 600 pounds active ingredient (a.i.) applied annually on approximately

450,000 acres treated. The average a.i. rate over this time period was 0.001 pounds a.i. /acre on wheat, soybean and cotton seeds. Ipconazole is labeled for the control of many seed and soil-borne fungal pests (such as *Aspergillus* spp., *Penicillium* Spp., *Fusarium* spp., *Ustilago* spp., *Diaporthe* spp., *Sclerotinia* spp.). There are no reported usage data for non-agricultural use sites from proprietary data and from USDA/NASS.

INTRODUCTION

The Biological and Economic Analysis Division (BEAD) Chemical Profile (BCP) provides an overview of the pest management roles and quantitative usage information for this fungicide. The BCP includes summaries of previous BEAD products and available public and/or private use and usage data for ipconazole to describe its role in pest management. Additional information on use is available in the ipconazole LUIS Label Data Report. Information provided in this BCP may be used by stakeholders (e.g., users and registrants), OPP risk assessors, OPP risk managers, and the general public during the Registration Review process of this fungicide.

USE SITES

Agricultural Use Sites
Ipconazole is registered for seed treatment of barley, beans, buckwheat, wheat, canola, cole crops, conifers, corn, cotton, cucurbits, leafy vegetables, legume vegetables, millet, mustard, oats, peanuts, peas, root and tuber vegetables, rye, sorghum, sunflower and triticale.

Non-Agricultural Use Sites
Ipconazole is registered for seed treatment of ornamental plants and turf.

FORMULATIONS AND APPLICATION METHODS

Ipconazole is formulated as emulsifiable concentrate, flowable concentrate, liquid-ready to use and soluble concentrate. Ipconazole is applied as a seed treatment.

HISTORY OF IPCONAZOLE and BEAD PRODUCTS

Ipconazole is a fungicide that was registered for use as a seed treatment in the U.S. in 2004. Survey data indicate that growers started using Ipconazole on soybean and wheat seed in 2010. There was no reported usage data on cotton seed in 2010. A Screening Level Usage Analysis (SLUA) was prepared by BEAD for ipconazole in 2014 that provides national level poundage applied by active ingredient (a.i.) and percent crop treated (PCT) data for crops for which usage data are available. In terms of average annual pounds applied, the top agricultural use sites that were treated with ipconazole as a seed treatment were soybeans wheat and cotton. Each of these sites had less than 500 lbs. a.i. treated on average for each crop. Based on the data over the 2010 to 2013 time period, in terms of the percent crop treated, all crops had less than one percent of the crop acreage treated.

Only one record of a prior BEAD assessment specifically for this chemical was done in the last 10 years. It was a request by Chemtura for an extension of the 10 year exclusive use period for an additional three years. There were several crops included in the request including carrot,

not registered for use on a particular crop/site. An emergency exemption request may yield information about a particular chemical's importance or value that is not found in other EPA records. However, a lack of Section 18 assessments by BEAD does not specifically indicate the relative importance of the chemical.

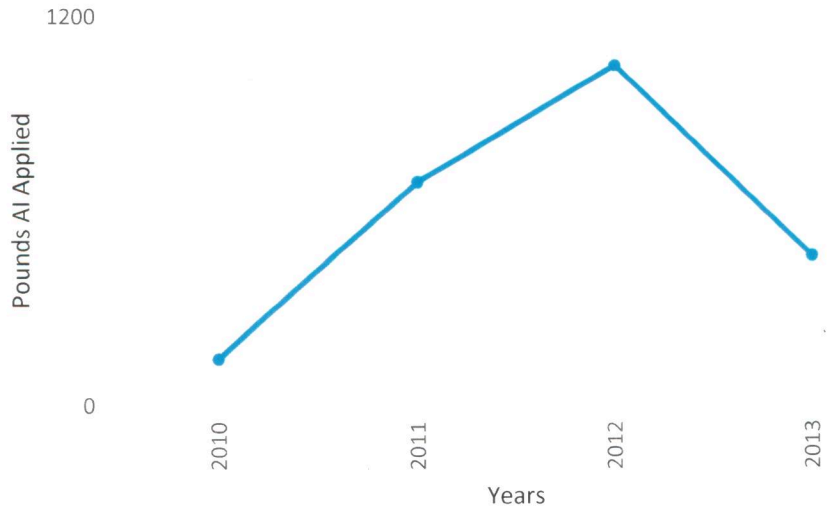
USAGE

Agricultural Usage

Even though ipconazole was first registered in 2004, there was no reported use until 2010. Usage was reported for the years 2010-2013 and averaged approximately 600 pounds active ingredient (a.i.) applied annually on approximately 450,000 acres treated. The average a.i. rate over this time period was 0.001 pounds a.i. /acre. Figure 1 presents ipconazole usage in pounds a.i. over the 2010-2013 timeframe. Figure 2 presents total area treated in acres over the same time period. The data show that the use of ipconazole is increased between 2010 and 2012 and decreased from 2012 to 2013. (Proprietary Data, 2010-2013).

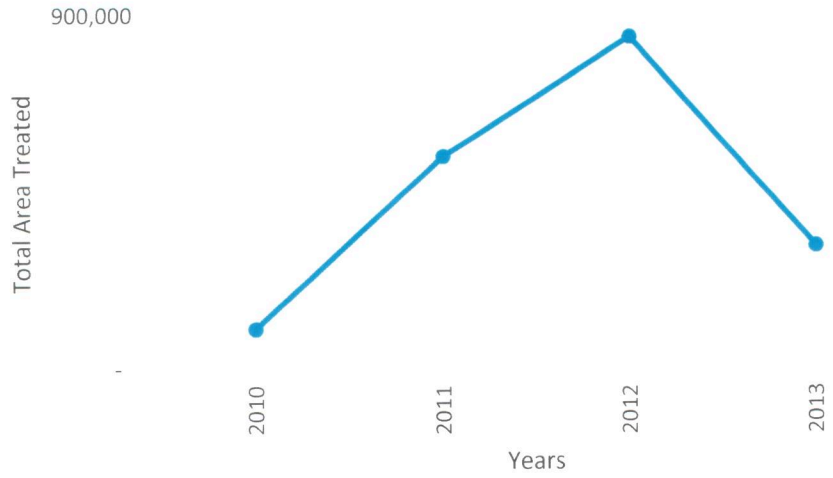
Note that BEAD usage data does not cover seed treatments for every crop. Usage is likely to be underestimated in amount and extent of use. Seed treatment usage for corn and cotton was first reported in 2004, soybeans was first reported in 2006 and peanuts, potatoes, sorghum, sugar beets and wheat were first reported in 2009.

Figure 1. Ipconazole Usage in Pounds Active Ingredient (2010-2013)



Source: Proprietary Data, 2010-2013

Figure 2. Ipconazole Total Area Treated in Acres (2010-2013)



Source: Proprietary Data, 2010-2013

The major agricultural uses of ipconazole are on cotton, soybeans and wheat (Table 1). Use data in terms of pounds applied and acres treated started in 2010 increased over the period from 2010 to 2012 and then declined in 2013 (Figures 1 & 2). Currently, BEAD does not have any information available to explain the drop in usage over the period from 2012 to 2013. It may be due to many factors such as lower disease pressure, grower preferences for other pesticides, pesticide pricing and/or pesticide availability to the growers.

Table 1. Crops (Seeds) with Highest Use of Ipconazole in Terms of Pounds Applied (2010-2013)

Crop	% Lbs
Soybeans	68
Winter Wheat	16
Spring Wheat	13
Cotton	3

Source: Proprietary Data, 2010-2012

Table 2. States with Highest Use of Ipconazole in Terms of Pounds AI (2010-2013)

State	% Lbs
South Dakota	26
Ohio	19
Montana	10
Other*	45

Source: Proprietary Data, 2010-2013

* Other includes North Dakota, Minnesota, Kansas, Idaho, Illinois, Texas, Pennsylvania, Wisconsin, Iowa, Missouri, Oklahoma, New York, Arkansas, Nebraska and Oregon.

Application Rates

The average a.i. rate for the top crops in terms of pounds a.i. applied was highest for spring wheat at 0.0020 lbs. a.i. per acre and lowest for cotton at 0.0004 lbs. a.i. per acre, as shown in Table 3.

Table 3. Ipconazole Use on Top Crops and Average A.I. Rate, 2010-2013

Crop	Average Annual Pounds A.I. Applied	Average Annual Total Area Treated*	A.I. Rate (lbs. A.I./Acres)
Cotton	20	49,000	0.0004
Soybeans	400	270,000	0.0015
Spring Wheat	100	58,000	0.0020
Winter Wheat	100	74,000	0.0014

*Total Acres Treated sums all acres treated for a crop.

Source: Proprietary Data, 2010-2013

Geographic Distribution of Ipconazole Use

Figure 3 provides a very broad geographical view of the average annual amount (in pounds) of Ipconazole applied per 1,000 acres of crop acres grown. The calculated values presented in the map are not equivalent to an application rate (lbs. a.i./a), therefore, the map may show areas of high use intensity that do not necessarily correspond to the states listed in Table 2 since those are the states with the highest use of ipconazole based on pounds active ingredient applied.

As shown in the map, South Dakota and Ohio are the states depicting the highest use intensity of acres treated with ipconazole. Please see Appendix A for a more detailed explanation of the information presented on the map.

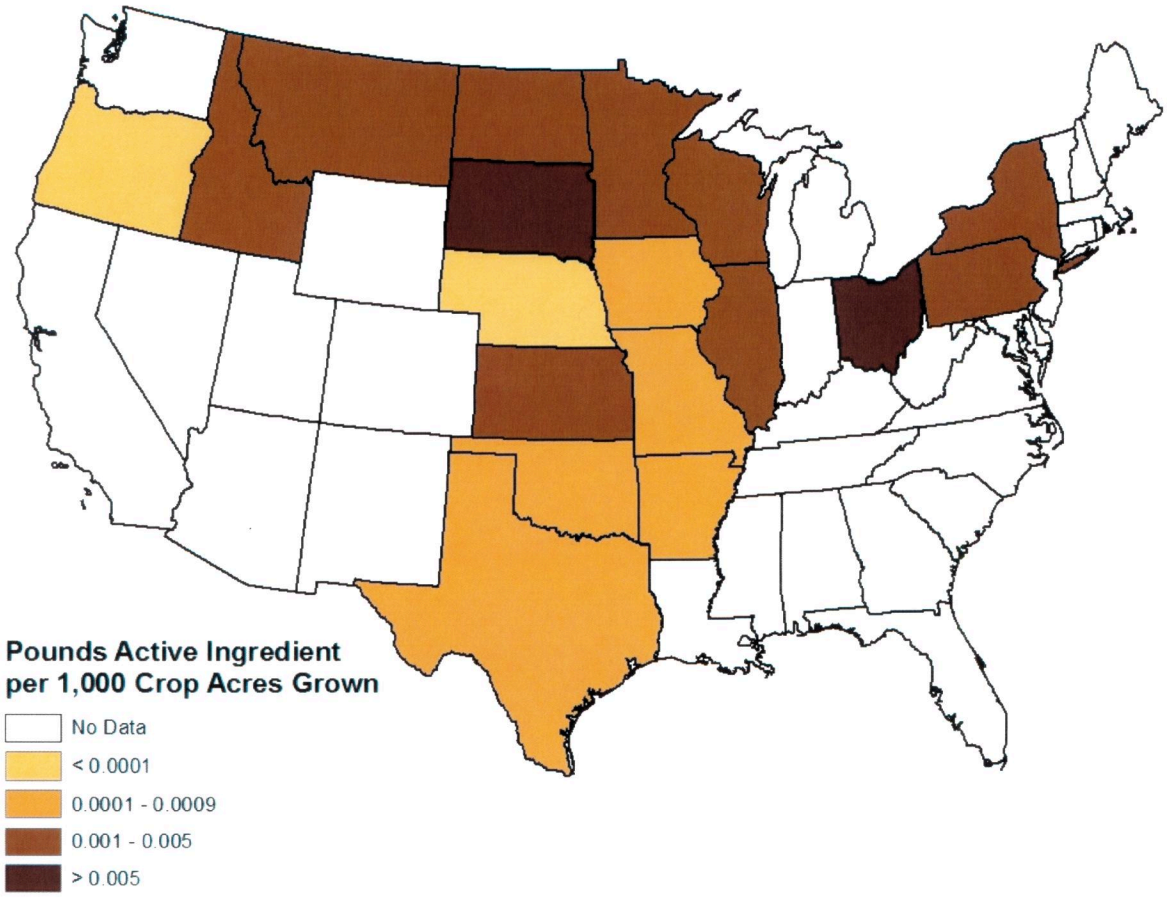


Figure 3. Annual average agricultural use intensity of Ipconazole (2009-2013).

BIOLOGICAL ASPECTS RELEVANT TO IPCONAZOLE

Ipconazole fungicide belongs to the triazole chemical group of De-Methylation Inhibitor (DMI) fungicides. It belongs to group 3 of Fungicide Resistance Action Committee based on mode of action of fungicides (FRAC, 2014). There are differences in the activity spectra of DMI fungicides (FRAC 2014). Resistance in many fungi against DMI fungicides is known and it is generally accepted that cross resistance is present between DMI fungicides active against the same fungus (FRAC, 2014). These fungicides have medium risk of resistance development in fungi (FRAC, 2014) and resistance management is recommended (FRAC, 2014). The incidence of resistance in fungi against a fungicide in seed treatment can be reduced by premixing it with a fungicide having different modes of action or alternating it with a fungicide with different modes of action.

Ipconazole is registered as a seed treatment of various crops (such as sorghum, soybeans, spring wheat, winter wheat, barley, oats, rye and beans) and ornamentals for the control of seed and soil-borne fungal diseases. Ipconazole is labeled for the control of many seed and soil-borne fungal pests (such as *Aspergillus* spp., *Penicillium* Spp., *Fusarium* spp., *Ustilago* spp., *Diaporthe* spp., *Sclerotinia* spp.).

ROLE OF IPCONAZOLE IN PEST MANAGEMENT

Overall, use of ipconazole in the U.S. for the time period since it was registered in 2004 to 2013 was found to be used only as a seed treatment for the years 2010 to 2013. Usage averaged less than 500 lbs pounds per year on soybeans, wheat and cotton as a seed treatment (BEAD, 2014). Ipconazole has antifungal activity against many seed and soil-borne fungi. It is applied alone or in combination with carboxin, metalaxyl, clothianidin + metalaxyl, carboxin + metalaxyl or imidacloprid + metalaxyl to control a wide spectrum of seed and soil borne fungi and insect pests.

DATA NEEDS

The Agency currently does not have information for the non-agricultural use sites of ipconazole. Obtaining information, such as the number of pounds of active ingredient applied annually and the typical application rate for seed treatment on ornamentals may improve future assessments conducted by the Agency related to the use and importance of this fungicide.

APPENDIX A

The map included herein primarily for the use of the risk assessors in the Environmental Fate and Effects Division. The map provides a very broad geographical view of the amount (in pounds) of the active ingredient applied per 1,000 acres of "land in farms". These data are included in the maps because risk assessors are interested in the amount of a pesticide used across farmland. Because of the definition of Land in Farms, as discussed below, the calculated values presented in the map are not equivalent to an application rate (lbs a.i. /A).

The data used to make these maps have many limitations. Any interpretation of the maps should consider the underlying data and the associated limitations carefully.

The smallest areas shown on the maps within each state are Crop Reporting Districts (CRD). CRDs are defined by USDA and each consists of multiple counties that have similar soils, growing conditions, and farming practices. The CRDs within many states have roughly the same area. Because it is not feasible to conduct an agricultural survey that samples every county in the United States, the use of CRDs allow for a sample to be collected that represent a much larger area with relatively homogeneous agricultural characteristics.

The numerator (annual average pounds applied) is based on private market surveys of pesticide use in agriculture averaged over the last five years (Proprietary Data, 2008-2013). These surveys cover about 60 crops and are targeted in states that produce the majority of the crop. Although the surveys capture most of the use of a particular active ingredient in agriculture, there are several limitations to these surveys.

- States with minor production of a surveyed crop are not sampled

- Not all types of pesticides are surveyed in every crop in every year
- Many specialty crops with very small acreages are not included in the survey

The result of these limitations is that CRDs that show no usage may actually have a small amount of the active ingredient being used.

The denominator (1,000 Acres of land in farms) was selected from the Census of Agriculture (USDA, 2007) to represent agricultural acreage that is actively managed and includes most of the areas treated with pesticides. The category "Land in Farms" is defined by the Census of Agriculture as being made up of four components:

- Total cropland
- Permanent pasture
- Total woodland
- Land in farmsteads, buildings, livestock facilities, ponds, roads, wasteland, etc.

This category includes land in the various USDA conservation programs. It should be noted that the Census of Agriculture does not include grazing land rented (on a per-animal basis) from the Bureau of Land Management or Forest Service, thus it is an underestimate of the land being managed for agricultural purposes.

The reader should pay particular attention to the figure legends and realize that a map prepared for a particular ipconazole is not directly comparable to a map prepared for a different ipconazole. Scale and units of measurement do matter and may be different between maps.

REFERENCES

BEAD, 2014. Ipconazole Screening Level Usage Analysis. Biological and Economic Analysis Division, Office of Pesticide Programs, US Environmental Protection Agency. November 12, 2014.

FRAC. 2014. Accessed on February 11, 2014. http://www.frac.info/publication/anhang/FRAC%20Code%20List%202013-final.pdf

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