1995 OKLAHOMA FURADAN 4F MONITORING PROGRAM ON COTTON FIELDS FOR ADVERSE FINDINGS ON NON-TARGET SPECIES

Ronald Buckmaster,
Oklahoma Department of Agriculture
George Graves,
United States Department of Agriculture
Animal Damage Control
Miles Karner, Oklahoma State University
Cooperative Extension Service
Sandra Wells,
Oklahoma Department of Agriculture

Abstract

Eight application sites were monitored for wildlife mortality before and after treatment. Post-application monitoring revealed no wildlife/avian mortality as a result of Furadan 4F applications made in accordance with the terms and conditions of this 1995 FIFRA Section 18 specific exemption program in Oklahoma. The following is a summary of the monitoring program.

Introduction

In 1995 the Environmental Protection Agency (EPA) approved a "Specific Exemption" under Section 18 of amended Federal Insecticide Fungicide and Rodenticide Act (FIFRA) for the emergency use of Furadan 4F to control cotton aphids in Oklahoma. The Specific Exemption required that 8 application sites be monitored for wildlife mortality before and after treatment. Monitoring was to be conducted under the supervision of wildlife professionals.

Coordination of Monitoring Program

The Oklahoma Department of Agriculture (ODA) worked with the Unites States Department of Agriculture - Animal Damage Control (USDA-ADC) and the Denver Wildlife Research Center to ensure that appropriate precau-tions were taken to protect migratory and non-migratory birds, mammals and threatened and endangered species, and to ensure that monitoring for wildlife mortality was carried out by wildlife professionals.

I. Trainee Workshop

Classroom session

A training session was required for the monitors prior to any actual field survey work. Training was provided by USDA-ADC, Oklahoma State University - Cooperative Extension Service, Oklahoma Department of Agriculture, and the pesticide product registrant, FMC Corporation. Training included classroom and field exercises. The classroom training consisted of instruction and procedures for observing wildlife distributions and biology, identification of bird, mammal and reptilian species, including threatened and endangered species, pesticide safety, personal protective equipment (PPE), data collection and recording procedures, and safety and administrative matters related to the program. Safety training included identifying and handling symptoms of pesticide poisoning, heat stroke, heat stress, and emergency treatment of poisonous snake bites.

Field Session

The second part of the training program was conducted outdoors in a cotton field representative of the sites to be monitored. Monitor trainees were provided with instruction on how to conduct bird and mammal observations, carcass searching procedures, carcass collection and preservation techniques, and instructions on how to perform carcass searches. Descriptions of carcasses and feather/fur spots were explained to distinguish the difference between preexisting wildlife mortality and wildlife mortality caused by the application of Furadan 4F.

Efficacy Trial Data

Efficacy trials of perimeter carcass searches and cotton field carcass searches were conducted by the trainees after receiving general instructions. Perimeter carcass searches consisted of trainees walking preestablished transect lines near the perimeter of the cotton field. Small blocks of wood measuring 2 in. X 2 in. X 4 in. in size were spray painted black and gray, and brown and gray to simulate bird and mammal carcasses respectively. Twenty-two blocks of wood were randomly placed in the search area of the efficacy trial. After locating a block of wood, trainees would record the find as a single carcass and continue the search. Wood blocks were distributed from their original placement throughout the trials. Perimeter carcass searches were conducted three times and the results are provided in Table 1.

Cotton field carcass searches were conducted very similar to perimeter searches with the exception that trials were conducted in an irrigated field of growing cotton. The carcass searches were divided into two sections. Thirteen wood blocks were randomly placed in section #1 of the field and 9 in section #2 of the field. Trainees walked down rows of cotton in each section area and recorded located blocks of wood as a single carcass. A total of 4 trials were conducted (2 in section #1 and 2 in section #2). The results are provided in Table 2.

Reprinted from the *Proceedings of the Beltwide Cotton Conference*
Volume 2:697-700 (1996)
National Cotton Council, Memphis TN

II. In-Season Field Monitoring Program

How Fields Were Selected

All applicators were required to contact the leader of the field monitoring program prior to performing any Furadan 4F applications on cotton. Fields were then selected at random to survey. The field leader was responsible for knowing what fields were to be sprayed, when spraying would be completed, and contacting other monitors to conduct the pre-application and post-application monitoring surveys.

Protective Equipment

Because of the RESTRICTED ENTRY INTERVAL (REI) of 48 hours (as indicated for foliar applications on corn, sunflowers, or sorghum) on the federally registered label for FURADAN 4F, survey personnel were instructed to enter the treated area only after the REI. Due to difficulty in determining the actual time of application and knowing when the 48 hour REI was reached, all post-application surveyors wore PPE to minimize pesticide exposure during each survey. Required PPE is coveralls, waterproof gloves, and shoes plus socks. Respirators were provided for surveyors.

Surveillance

To ensure that cotton growing areas treated with Furadan 4F were adequately surveyed for mortality, specific guidelines were implemented. All surveys were supervised by personnel from USDA-ADC. Survey parties ranged from 3 - 6 individuals. Surveyors from both USDA-ADC and ODA were at each of the survey sites.

Wildlife Observations

Observations were performed 20 - 30 minutes before entering the cotton fields to record birds and mammals entering and leaving the field. Observation of the fields included at least 2 locations at field ends (i.e. opposite corners). The same information was also recorded for the edge habitat on each side of the field. All sides of the field were observed during the observation period. Weather data was recorded before starting each observation period and surrounding habitat of the cotton fields was identified during the first observation period.

Carcass Searches

Two searches, one day before the application and the second day following application were performed. A minimum edge search was half on a 50 foot wide perimeter established outside the field edge. Three 8 foot wide transacts were conducted within the 50 foot perimeter. The length was determined by the size of the field. The first transect line in each field perimeter was estab-lished randomly with two additional transacts at 8 foot intervals thereafter.

Cotton Field Searches

Monitors searched at least 10% of the field in a transect width that is governed by row width and visibility. This would normally be at least one row on either side of the row that is being walked. The first transect line was established randomly from one edge, with additional transect lines at regular intervals thereafter.

During the pre-application search, surveyors identified and removed any carcasses and feather/fur spots that were found. The post-application searches were made on the same transect lines.

Carcass Handling

If whole or partial carcasses had been found, they were to be placed in plastic bags in a cooler with ice and frozen within 24 hours prior to transporting to the Laboratory for carbofuran analysis.

III. Results of Monitoring Program

Four hundred and sixty-three acres were scouted in seven counties of Oklahoma. Pre-application monitoring revealed light (less than 25) sightings in two counties, moderate (25 - 50) sightings in four counties, and heavy (more than 50) sightings in one county. These sightings consisted of avian wildlife. The results are provided in Table 3.

Conclusions

Post-application monitoring revealed no wildlife/avian mortality as a result of Furadan 4F applications made in accordance with the terms and conditions of this 1995 FIFRA Section 18 specific exemption program in Oklahoma.

Acknowledgments

Special thanks go to the following individuals for their invaluable expertise and assistance. Dr. Jim T. Criswell, Oklahoma State University - Coopera-tive Extension Service, Kevin Holley, Oklahoma Department of Agriculture, Bruce Leland, USDA-ADC, South Carolina, USDA-ADC Field Monitors: Randy Bercegeay, Dennis Creel, Larry Lundgren, Phil Robinson, and James Watson, ODA Field Monitors: Ronald Buckmaster (Field Leader), Jeff Coats, Doug Dear, Mike Fuller, Steve Morris, and David Raper.

Table 1. Results of the Perimeter Carcass Search, Training Session.

Search Trial	Number of Carcasses Located	Recovery Rate
1	20	91%
2	20	91%
3	14	64%

Table 2. Results of the Cotton Field Carcass Search, Training Session.

Search Trial	Number of Carcasses Located	Recovery Rate
Section #1		
Trial 1	9	69%
Trial 2	8	62%
Section #2		
Trial 1	7	78%
Trial 2	6	66%

Table 3. Specific wildlife/avian activity pre-application and post application observations for cotton fields treated with Furadan 4F in Oklahoma, Summer 1995.

County	Date	Field Size Acres	Field Observations	Avian species	Number in 30 minutes
McClain	8/4/95	68	Flyover	Sparrow	6
				Turtledove	3
				Cardinal	1
				Barn swallow	18
				White egret	1
				Mockingbird	4
			Walking		
			Perimeter		0
			Field search		0
	8/8/95[1]		**Walking**		
			Perimeter		**0**
			Field search		**0**
Harmon	8/11/95	30	Flyover	Sparrow	7
				Turtledove	3
				Quail	2
				Eastern bluebird	1
				Song swallow	1
				Western meadowlark	4
				House sparrow	4
				Mississippi kite	3
				Scissor-tail flycatcher	1
				Mourning dove	1
				Turkey vulture	1
			Walking		
			Perimeter		0
			Field search		0
	8/14/95[1]		**Walking**		
			Perimeter		**0**
			Field		**0**
Kiowa	8/11/95	68	Flyover	Sparrow	3
				Mourning dove	5
				Turkey vulture	1
				Barn swallow	2
				Swallow	6
				Kite hawk	2
				Mississippi kite	5
				Crow	6
			Walking		
			Perimeter		0
			Field search		0
	8/14/95[1]		**Walking**		
			Perimeter		**0**
			Field		**0**

[1] Post-application search results.

Table 3. (Cont.) Specific wildlife/avian activity pre-application and post application observations for cotton fields treated with Furadan 4F in Oklahoma, Summer 1995.

County	Date	Field Size Acres	Field Observations	Avian species	Number in 30 Minutes
Harmon	8/11/95	92	Flyover	Sparrow	7
				Turtledove	7
				Crow	3
				Killdeer	10
				Mourning dove	5
				Brown-head cowbird	9
				Pileate woodpecker	1
			Walking		
			Perimeter		0
			Field search		0
	8/14/95[1]		**Walking**		
			Perimeter		**0**
			Field		**0**
Greer					
	8/15/95	54	Flyover	Sparrow	6
				Mourning dove (1 blacktail Jackrabbit)[2]	9
				Quail	2
				Western meadowlark	3
				Blackbird	4
			Walking		
			Perimeter		0
			Field search		0
	8/18/95[1]		**Walking**		
			Perimeter		**0**
			Field		**0**
Jackson	8/15/95	45.5	Flyover	Sparrow	9
				Red-winged Blckbird	3
				Mourning dove	7
			Walking		
			Perimeter		0
			Field search		0
	8/18/95[1]		**Walking**		
			Perimeter		**0**
			Field		**0**

[1] Post-application search results.
[2] Mammals observed during flyover observation

Table 3. (Cont.) Specific wildlife/avian activity pre-application and post application observations for cotton fields treated with Furadan 4F in Oklahoma, Summer 1995.

County	Date	Field Size Acres	Field Observations	Avian species	Number in 30Minutes
Caddo	8/22/95	55	Flyover	Sparrow	11
				Cowbird	16
				Barn swallow	4
				Mourning dove	8
				Crow	1
				Red-tailed hawk	1
			Walking		
			Perimeter		0
			Field search		0
	8/25/95[1]		**Walking**		
			Perimeter		**0**
			Field		**0**
Tillman	8/22/95	63	Flyover	Sparrow	3
				Red-Wing blackbird	49
				Blackbird	22
				Barn swallow	8
			Walking		
			Perimeter		0
			Field search		0
	8/28/95[1]		**Walking**		
			Perimeter		**0**
			Field		**0**

[1] Post-application search results.