

Title: Environmental implications of pesticides in rice production

Investigators: J.D. Mattice and B.W. Skulman

2004 Progress Report: For the past five years we have collected and analyzed water from four sites each on the L' Anguille and St. Francis rivers from near Jonesboro in the north to near Marianna in the south. In 2002 we included four sites on Lagrue Bayou from just below Peckerwood lake north of Stuttgart to near the mouth southeast of DeWitt. In 2003, at the request of the rice board, we added four sites on the Cache River from approximately the level of Jonesboro in the north to just south of I-40 in the south.

Since we expect to find trace levels of compounds in the area where they are used when they are applied, we have defined an arbitrary level of 2 ppb in water as the minimum for making comparisons. An abbreviated summary of the past five years results is given below.

Year		2000	2001	2002	2003	2004
Number of rivers		2	2	3	4	4
Detection frequency		9.2%	12.0%	5.1%	6.2%	6.0%
Concentration distribution of pesticides	2-5 ppb	38 (72%)	48 (71%)	38 (78%)	69 (87%)	63 (82%)
	5-10 ppb	7 (13%)	13 (19%)	8 (16%)	9 (11%)	13 (17%)
	10-50 ppb	8 (15%)	7 (10%)	3 (6%)	1 (1%)	1 (1%)
Most frequently found pesticide		molinate (Ordram)	quinclorac (Facet)	quinclorac (Facet)	quinclorac (Facet)	quinclorac (Facet)
Number of quinclorac detections		4	23	27	47	37
% of samples containing pesticides that have 1 or more than 1 compound	1	70%	51%	52%	80%	78%
	More than 1	30%	49%	48%	20%	22%

The number of detections over 10 ppb has decreased over the past two years when compared to the preceding three years. Also the percentage of samples containing more than one compound has decreased.

In 2000 molinate (Ordram) was the most frequently detected compound with clomazone (Command) being second. From 2001 – 2004 quinclorac (Facet) was the most frequently detected compound with clomazone being second. In 2003, those two compounds accounted for 78% of the detections over 2 ppb and in 2004 for 75%.

Although the Cache contains 25% of the sampling sites, it accounted for 46% of the detections in 2003 and 43% in 2004.

A web site with this and other information has been established at <http://www.uark.edu/ua/ricepest/ricewater.html>.