

# A Custom Web-based Pesticide Recordkeeping System for UF/IFAS Faculty and Staff

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## Abstract

The UF/IFAS Pesticide Recordkeeping System is a database designed to assist faculty and staff with pesticide-related recordkeeping. The on-line database contains modules for storing pesticide application records; faculty, staff, and student pesticide applicator license information; and WPS training documentation. The purpose of the system is to provide standardized recordkeeping across all departments and research and education centers that complies with state, federal, and UF/IFAS pesticide policies and procedures, and is user-friendly. This article describes the attributes of the UF/IFAS Pesticide Recordkeeping System.

**Keywords:** pesticide recordkeeping, worker protection standard, online database, standardization, management, station, employees

## Introduction

Employees at the University of Florida's Institute of Food, Agriculture and Sciences (UF/IFAS) who handle and/or supervise the use of any type of pesticide must be licensed, must undergo training as appropriate to meet the U.S. Environmental Protection Agency's Worker Protection Standard (WPS) for agricultural pesticides and must keep records for all pesticide applications they conduct for research, demonstration, or maintenance purposes on UF/IFAS and non-UF/IFAS sites, including non-restricted and experimental pesticide applications. The records are patterned on the Florida Department of Agriculture and Consumer Services restricted use pesticide recordkeeping requirements (FDACS, 2011). Until now, there was no uniform recordkeeping template available to faculty and staff who were encouraged, but not required, to keep records by using a form developed by the FDACS (FDACS, 2011).

To standardize and streamline recordkeeping responsibilities, UF/IFAS administration issued a directive to the director of the UF/IFAS Pesticide Information Office (PIO) to develop a single Web-based system for managing records: pesticide applications, employee licensing, and WPS training verification. In 2008, at the time of the directive, there was no commercial software available that met UF/IFAS standards for these three facets of recordkeeping. The administrative directive became a project whose primary goal was to provide a standardized system across all departments and research and education centers that complies with the UF/IFAS pesticide policies and procedures. A secondary goal was to develop a user-friendly system. The name of the system is UF/IFAS Pesticide Recordkeeping System (PRS).

## Project Background

In 2004, UF/IFAS established internal pesticide policies and procedures for faculty, staff, and students to ensure better compliance with state and federal regulations. Following several exposure and compliance issues (Fishel, Dubberly & Hochmuth, 2007), the policies and procedures were extensively revised in 2007 published in handbook form (Fishel, Hochmuth, Dusky, Nesheim & Dean, 2008), and then distributed

to all faculty and staff in 2008. Several key elements of the policies and procedures pertain to recordkeeping issues, specifically:

- recordkeeping of pesticide applications,
- pesticide applicator certification and licensing of employees, and
- verification of worker and handler training as outlined by WPS.

Prior to the revision, state and federal law was the basis for recordkeeping by and licensing of pesticide applicators. Following the revision, UF/IFAS' policies and procedures provide more stringent requirements for recordkeeping, certification and licensing of University employees who apply pesticides. Now, all UF/IFAS employees who handle and/or supervise the use of any type of pesticide must be licensed. The only pesticides exempted from the certification and licensing requirements are pesticides used in laboratory settings, disinfectants, sanitizers, and ready-to-use pesticides sold over the counter at retail. Upon licensing, the employee is required to file a copy of their license with their unit leader at each UF/IFAS department and research and education center.

The WPS mandates that many UF/IFAS employees undergo worker training. At the completion of training, the employee is issued an attendance form documenting the process. Signed copies of the attendance form are submitted to employees' unit leaders at each UF/IFAS department and research and education center, and kept on file.

### **Software Development**

The PIO Director worked closely with UF/IFAS Information Technology to build the needed recordkeeping components (e.g. secure database, auto-populated fields, tabular quick views, easily searchable and able to generate reports) into a Web-based system. For compliance assurance, FDACS consultation was sought throughout project development. The PRS system database was beta-tested in 2010 by faculty and staff at three UF/IFAS research and education centers during 2010 and their suggestions incorporated.

### ***Specific Features***

The PRS is secured by password protection. To access the software, users are required to enter their email addresses followed by a password. Data storage components allow input of pesticide product trade name, common active ingredient names and EPA product registration numbers that will then auto-populate specific fields in the pesticide application records. The database allows users to enter multiple pesticides within a single application, thus facilitating records of tank-mixes. A drop-down list allows quick selection of application units (acres, square feet, etc.). PRS also contains a feature that enables users to copy database records into a Microsoft® Word file for later printing.

### ***PRS Database Navigation***

After a valid email address and password are entered, the user sees a home page, which displays three options:

- Pesticide application module
- License management module
- WPS management module

The user selects modules by using either hyperlinked text or toolbar buttons.

The pesticide application module centralizes and standardizes pesticide application records. When the module opens, the main page displays a table of the most recent applications by the signed-in user, along with the location of the application (Figure 1).

On this page, the user can enter a new application record or search the database for previous applications. If creating a new record, the user enters application details (Figure 2) and then saves the details by selecting the **Add New** button (Figure 3).

The storage feature is a useful element of the pesticide details. During project development, most product names of currently registered and commonly-used agricultural pesticides in Florida were entered into the database. When the user enters a brand name, the product's EPA registration number, active ingredient(s), and WPS restricted-entry interval auto-populate their fields in the user interface. For products that share part of a brand name but are packaged in different formulations, such as Sevin® (e.g. Sevin Bait®, Sevin 80 WSP®, Sevin 4F®) or products with similar brand names but different ingredients, such as Quadris® (e.g. Quadris Top®, Quadris Opti®), a drop-down list opens when the user begins entering the brand name. The additional product data are not auto-populated until the specific brand name is selected. Application rate and method must be manually entered. The page also contains an optional field for special label restrictions. Although users can expect the PIO to annually update product data, highlighted text reminds the user to confirm that brand name data are current.

When data entry is complete for the pesticide, the user selects an **Add** button that saves the data and returns the user to the home page. If a record of a mixture of pesticides is to be entered, the user selects **Add New** and repeats the process until all pesticides in the mixture have been entered. Once complete, the user may select a **Submit** button that opens a pop-up that states the record is complete. At this point, the user is presented with the choice of returning to the home page or entering another application record.

To search the system for previous application records, the user selects **Search Previous Pesticide Applications**. Users are able to search all applications made by all system users. Alternatively, the user can specify fields such as application site, target crop, or product name to restrict the search. Searching the database generates a list of matching applications. For example, if Fusilade® products were recorded and subsequently searched, a list of all such records would be displayed (Figure 4). The search results page enables users to view the details of an application, to export application data to a Word document, or to perform another search.

If data are exported to Microsoft® Word, a page is generated that presents all application and pesticide details for all applications of the chosen product (in this case, Fusilade®) (Figure 5).

Selecting the licensing management module displays a list of recently entered licensing records in reverse chronological order, along with the issue and expiration dates of the employees' licenses (Figure 6). The system displays the name of the person who entered the licensing data; in this example the PRS administrator, Fred Fishel, entered data for four of his licensed employees. By selecting **Add a New License Record** from

the toolbar, the administrator may enter licensing data for additional employees. If this option is selected, the system requires the administrator to enter the following data for each licensed applicator:

- First name
- Last name
- Employee status (i.e. active)
- License number
- Issuing state
- License issue date
- License expiration date
- License status (i.e. active)
- License type/category(-ies).

The toolbar also enables the user to search for existing licensed employees. Licensing data may be edited after using the search feature to recall any licensed employee's data. Records of licensed applicators may be searched and retrieved by entering any of the data fields listed above except for license type/category(-ies) (Figure 7).

Selecting the WPS Management module enables the user to either add a new WPS record or to search existing records using the toolbar. This page also displays a list of recently trained workers. Selecting the **Details** button beside each employee entry opens a page showing the employee's name, home department or research and education center location, the date WPS training was completed, the date the WPS training expires, the type of training material used, and the trainer's name. Data may be selected from a calendar that auto-populates date fields. A drop-down list displays the options for EPA-approved training materials used.

### Summary

The UF/IFAS Pesticide Recordkeeping System serves several vital functions:

- It assists employees in meeting all state and federal requirements in a consistent and standardized manner.
- It assists employees in complying with UF/IFAS policies and procedures which are more stringent in some cases than state and federal requirements.
- By the act of enforced recordkeeping it provides employees with a heightened awareness of pesticide use in UF/IFAS teaching, research, and extension programs.

A searchable database that is secure, convenient and user-friendly is a valuable resource for any institution performing similar work.

### Acknowledgements

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### References

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**Figure 1. Pesticide application module main page.**

IFAS Pesticide Recordkeeping System
University of Florida

Home
Application Recording
Record A New Pesticide Application
Search Previous Pesticide Applications
Logout

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### Record Pesticide Applications

Welcome to the Pesticide Application Recording Module. This tool will assist you in maintaining the proper records for pesticide applications as regulated by Chapter 487, F.S. This tool is designed to record all pertinent pesticide application information in a centralized and standardized system. This data, accumulated from the entries of units across IFAS, can be searched, queried, and used to generate reports.

To begin using the system, select one of the options from the main menu above.

### Your Recently Recorded Pesticide Applications

Date	Site Location	Target Site/Crop	Pesticide Brand Name	
06/07/2011	Entomology & Nematology	Tomato	Movento	<a href="#">View Details</a>
04/06/2011	Agronomy	Peanuts	Fusilade DX	<a href="#">View Details</a>
03/17/2011	Gulf Coast REC (Balm)	Peppers	Radiant	<a href="#">View Details</a>
03/17/2011	Horticultural Sciences	turfgrass	Princep 4L	<a href="#">View Details</a>
03/17/2011	Mid-Florida REC (Apopka)	Tomatoes	Indar 2F	<a href="#">View Details</a>

### Recently Recorded Pesticide Applications at Your Unit

Date	Site Location	Target Site/Crop	Pesticide Brand Name	
03/14/2011	Other	testtime4	Accent	<a href="#">View Details</a>
03/03/2011	Other	Cattle	Co-Ral	<a href="#">View Details</a>
03/03/2011	Other	Turfgrass	Dimethoate 4EC	<a href="#">View Details</a>
02/08/2011	Other	turfgrass	Roundup Original Max	<a href="#">View Details</a>

**Figure 2. Application details page.**

IFAS Pesticide Recordkeeping System

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[Home](#) | [Application Recording](#) | [Record A New Pesticide Application](#) | [Search Previous Pesticide Applications](#) | [Logout](#)

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Record A Pesticide Application

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This form is used to record all required information concerning a single pesticide application.

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Application Details

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Applicator:


Fred Fishel

License Number:

PB8918

Date of Application:

03/19/2011



Start Time:

12

:

00

PM

End Time:

2

:

00


AM

Actual Applicator (If Different):

License Number:

Site Location:

Gulf Coast REC (Balm)



If Other, Please Designate:

Unit Head:


Gallo

Farm Manager:

Jim Taylor

Site Description:

Field




Target Site/Crop:

Peppers



Total Size of Treatment Area:


8



Acres



Chemical Mix:

Pesticide BrandName	Usage	EPA		
Radiant	Non-Restricted Use	62719-545		





**Figure 3. Pesticide details.**

IFAS Pesticide Recordkeeping System				University of Florida	
Home	Application Recording	Record A New Pesticide Application	Search Previous Pesticide Applications	Logout	

**Record Pesticide Used**

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This form is used to record all required information concerning a single pesticide application chemical composition.

**Pesticide Details**

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Because label information changes, be certain that the populated fields contain the correct information for the product you use.

<b>Pesticide Brand Name:</b>	<input type="text" value="Radiant"/>
<b>Usage:</b>	<input type="text" value="Non-Restricted Use"/>
<b>EPA Registration Number:</b>	<input type="text" value="62719-545"/>
<b>Label Rule Restrictions:</b>	<input type="text"/>
<b>Active Ingredients:</b>	<input type="text" value="Spinetoram"/>
<b>Total Amount Applied:</b>	<input type="text" value="22"/> <input type="text" value="Fluid Ounces"/>
<b>Application Method:</b>	<input type="text" value="Broadcast"/>
<b>Restricted Entry Interval(hours):</b>	<input type="text" value="4"/>
<input type="button" value="Add"/> <input type="button" value="Cancel"/>	



**Figure 4. Display of records containing Fusilade® applications.**

IFAS Pesticide Recordkeeping System

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[Home](#) | [Application Recording](#) | [Record A New Pesticide Application](#) | [Search Previous Pesticide Applications](#) | [Logout](#)

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**Search Complete**

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Your search query has been completed. You may view the full details page for any pesticide application listed below by clicking its corresponding "View Details" button. If you're satisfied with the list below, you may **export all available data on these applications into a Word document**. If this list is not what you're looking for, then **perform another search**.

**Search Results**

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Any pesticide applications that meet the criteria you specified are listed below.

Date	Site Location	Target Site/Crop	Pesticide	
04/06/2011	Agronomy	Peanuts	Fusilade DX	<a href="#">View Details</a>
03/14/2011	Citrus REC (Lake Alfred)	Cotton	Fusilade II	<a href="#">View Details</a>
02/09/2011	Agronomy	peanuts	Fusilade DX	<a href="#">View Details</a>

**Figure 5. Word document listing all Fusilade® applications.****IFAS Pesticide Recordkeeping Search Results**

Report Generation Date: 04/06/2011

Date/Time of Application	Recorded By	Date Recorded	Applicator	Applicator License Num.	Actual Applicator	Actual Applicator License Num.	Site Location	Site Description	Unit Head/Farm Owner	Farm Manager	Target Site/Crop	Application Area	Pesticide Brand Name	Usage	EPA Reg. Num.	Label Rule Restrictions	Active Ingredients	Amount Applied	Application Method	Restricted Entry Interval
04/06/2011 (08:00AM - 09:00AM)	Fishel, Fred	04/06/2011	Fred Fishel	PB8918	N/A	N/A	Agronomy	Weed Science Complex Greenhouses	Gallo	Bubba Mac	Peanuts	40 Number of Plants	Fusilade DX	Non-Restricted Use	100-1070		fluazifop	16 Fluid Ounces	Broadcast	12 hours
03/14/2011 (01:00PM - 03:00AM)	Fishel, Fred	03/14/2011	Joe Blow	3939	N/A	N/A	Citrus REC (Lake Alfred)	Field	Gallo	Bubba	Cotton	3 Acres	Fusilade II	Non-Restricted Use	100-1084		fluazifop	44 Fluid Ounces	Broadcast	12 hours
02/09/2011 (08:00AM - 12:00PM)	Fishel, Fred	02/09/2011	Fred Fishel	PB8918	N/A	N/A	Agronomy	field	maria gallo	mark kann	peanuts	3 Acres	Fusilade DX	Non-Restricted Use	100-1070		fluazifop	8 Fluid Ounces	Broadcast	12 hours

**Figure 6. Licensing management module main page.**

IFAS Pesticide Recordkeeping System

University of Florida

[Home](#) | [Licensing Management](#) | [Add A New Licensee Record](#) | [Search/Edit Licensing Records](#) | [Logout](#)

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### Manage Licensing Records

Welcome to the Licensing Management Module. This tool will assist you in maintaining records concerning personnel who have successfully obtained pesticide licenses. This tool is designed to record all pertinent licensing information in a centralized and standardized system. This data, accumulated from the entries of units across IFAS, can be searched, queried, and used to generate reports.

To begin using the system, select one of the options from the main menu above.

### Your Recently Added Licensees

Name	Issue Date	Expiration Date	Pesticide	Date Added	
Fred Fishel	10/18/2011	10/18/2015	RUP	10/18/2011	<a href="#">Details</a>
Bobby Jones	03/16/2011	03/16/2015	RUP	03/17/2011	<a href="#">Details</a>
Bill Whidden	03/03/2011	03/03/2015	RUP	03/03/2011	<a href="#">Details</a>
Penelope Johnson	03/02/2011	03/02/2015	RUP	03/02/2011	<a href="#">Details</a>
John Drew	03/02/2011	03/02/2015	RUP	03/01/2011	<a href="#">Details</a>

**Figure 7. Display of an employee's licensing data.**

IFAS Pesticide Recordkeeping System

University of Florida

[Home](#) | [Licensing Management](#) | [Add A New Licensee Record](#) | [Search/Edit Licensing Records](#) | [Logout](#)

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Add A New Licensee

---

This form is used to record all required information concerning a single licensee.

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Entry Details

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**First Name:**

**Last Name:**

**Active Employee?**


▼

**License Number:**


**Issuing State:**

▼

**License Issue Date:**



**License Expiration Date:**



**Active License?**

▼

**Categories:**

Category	Expiry Date		
No categories added to the license.			

Add Category

**Pesticide(s):**