TECHNICAL NOTES

US DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

WATER QUALITY - 9 **Albuquerque, New Mexico**

Revised January 2009

WINDOWS PESTICIDE SCREENING TOOL

- **Purpose and Background:** This technical note will provide the background and basic instructions to use the Windows Pesticide Screening Tool (WIN-PST). WIN-PST is a pesticide environmental risk screening tool that NRCS field office conservationists, extension agents, crop consultants, pesticide dealers and producers can use to evaluate the potential for pesticides to move with water and eroded soil/organic matter and affect non-target organisms. NRCS partners (such as private pest control advisors) now have access to an easy-to-use tool for considering environmental risk when making recommendations that were previously based only on efficacy and economics. WIN-PST goes beyond previous NRCS screening tools to consider the impact of water table depth, irrigation, residue management and pesticide application area, method and rate class (Standard, Low, and Ultralow).

  WIN-PST users can specify pesticides by product name or active ingredient. Long-term human and fish toxicity data and ratings are also included in WIN-PST. These toxicity ratings can be combined with the off-site movement potential ratings to provide an overall rating of the potential risks from pesticide movement below the root zone and past the edge of the field.

  WIN-PST evaluates the potential loss by leaching and surface runoff. It utilizes both soil and pesticide properties. WIN-PST does not provide absolute results or consider the type of crop or range plant.

  The USDA-NRCS National Water and Climate Center developed and supports the WIN-PST. The current NRCS Pest Management Policy and Pest Management Standard (595) requires the use of WIN-PST or other NRCS-approved environmental risk analysis tools to support the pest management component of a conservation plan.

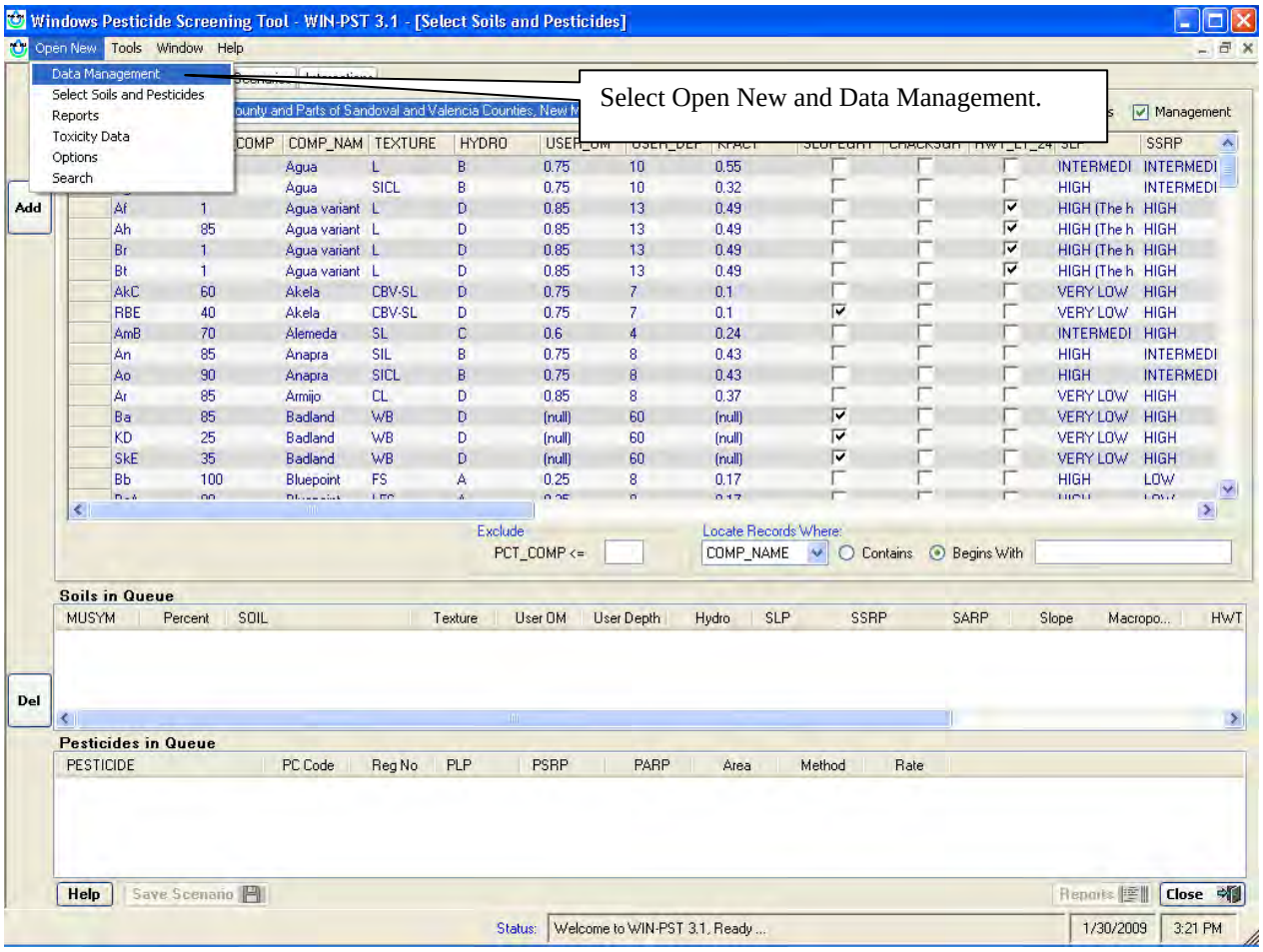
  - **To download,** log in as administrator and go to **http://www.wsi.nrcs.usda.gov/products/W2Q/pest/winpst.html** and follow instructions.

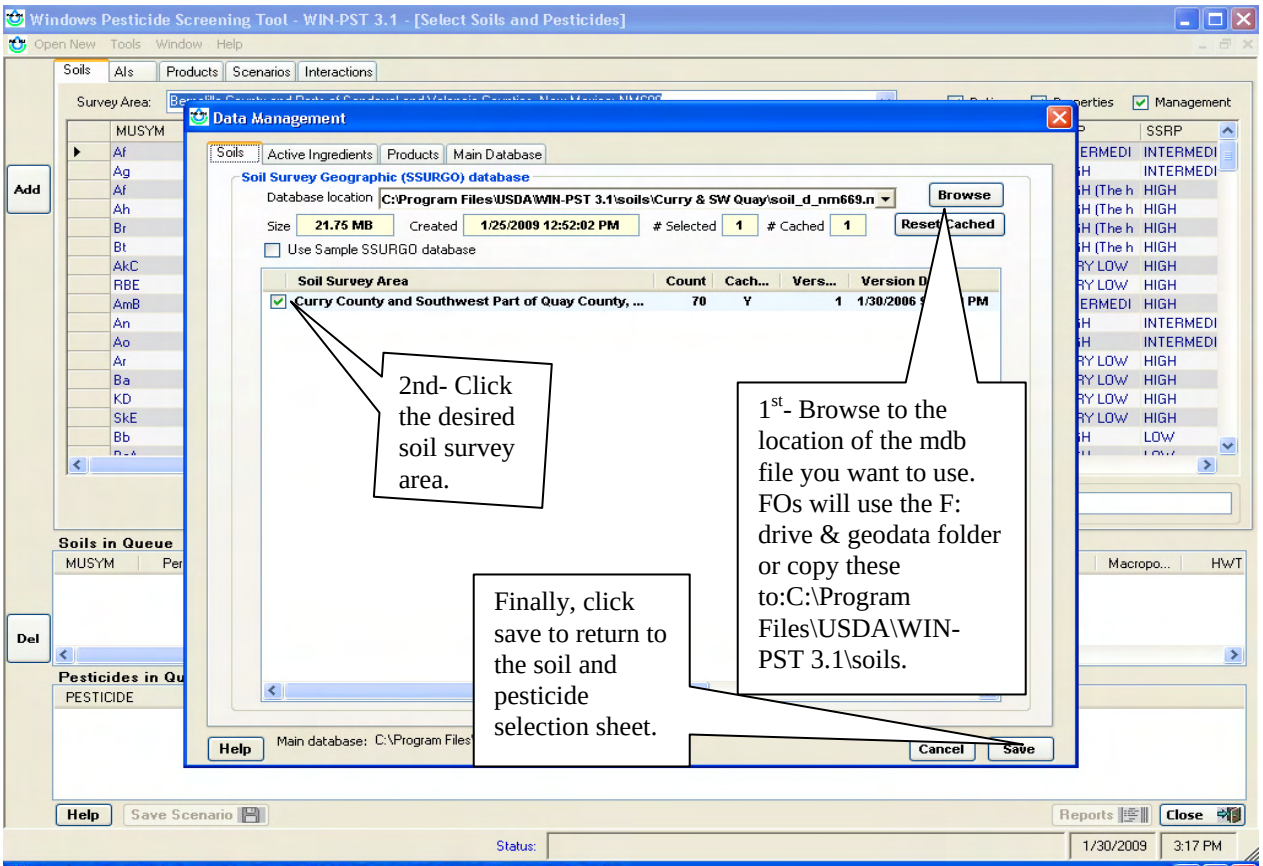
Guidelines for Data Entry

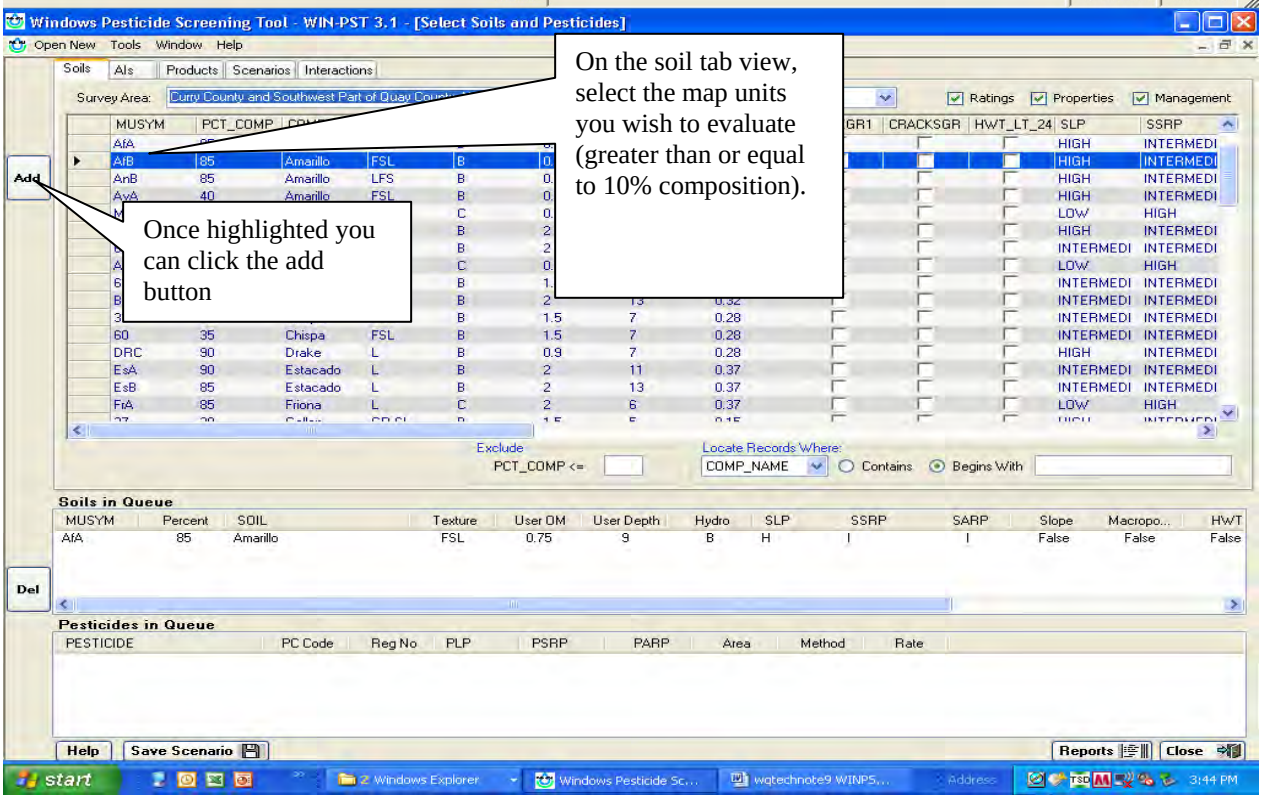
For WIN-PST3.1:

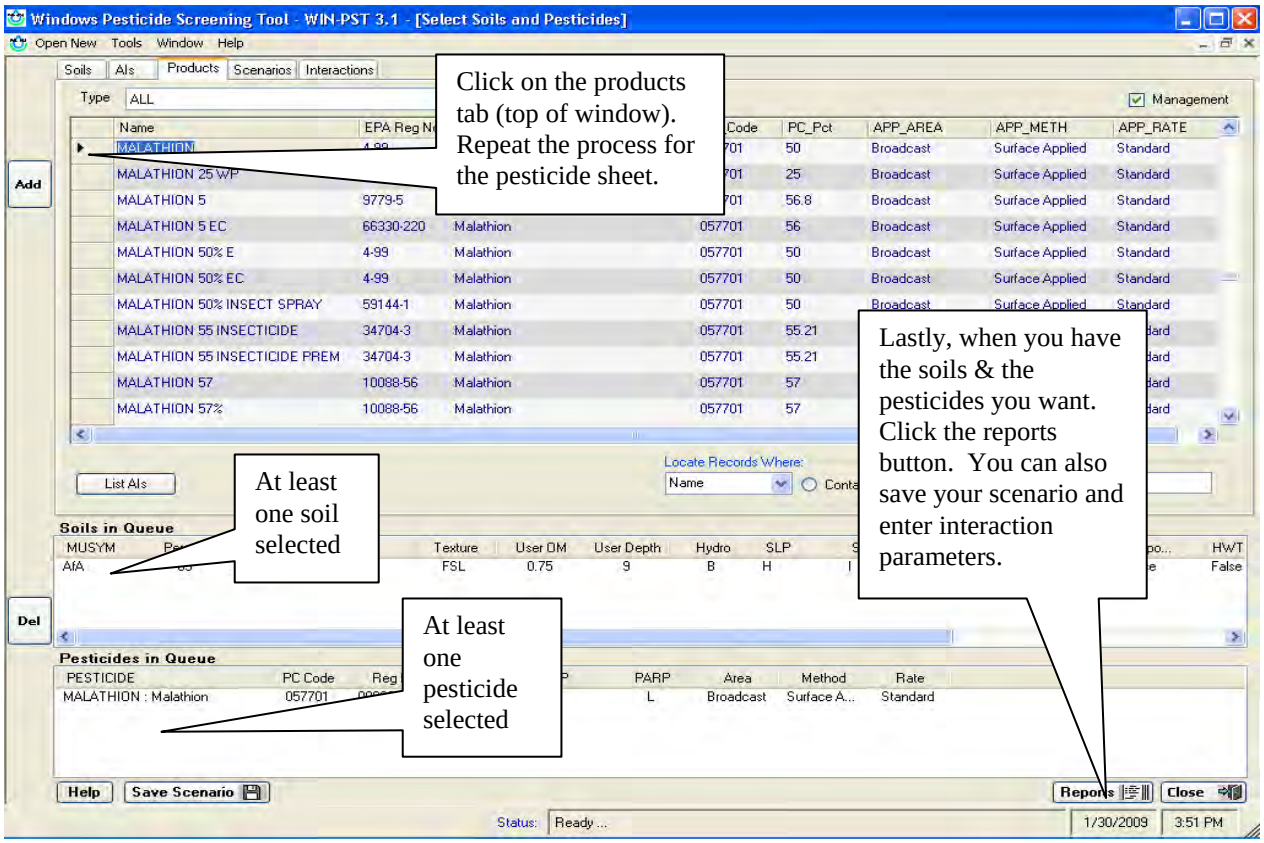
Step 1: Set up WIN-PST 3.1

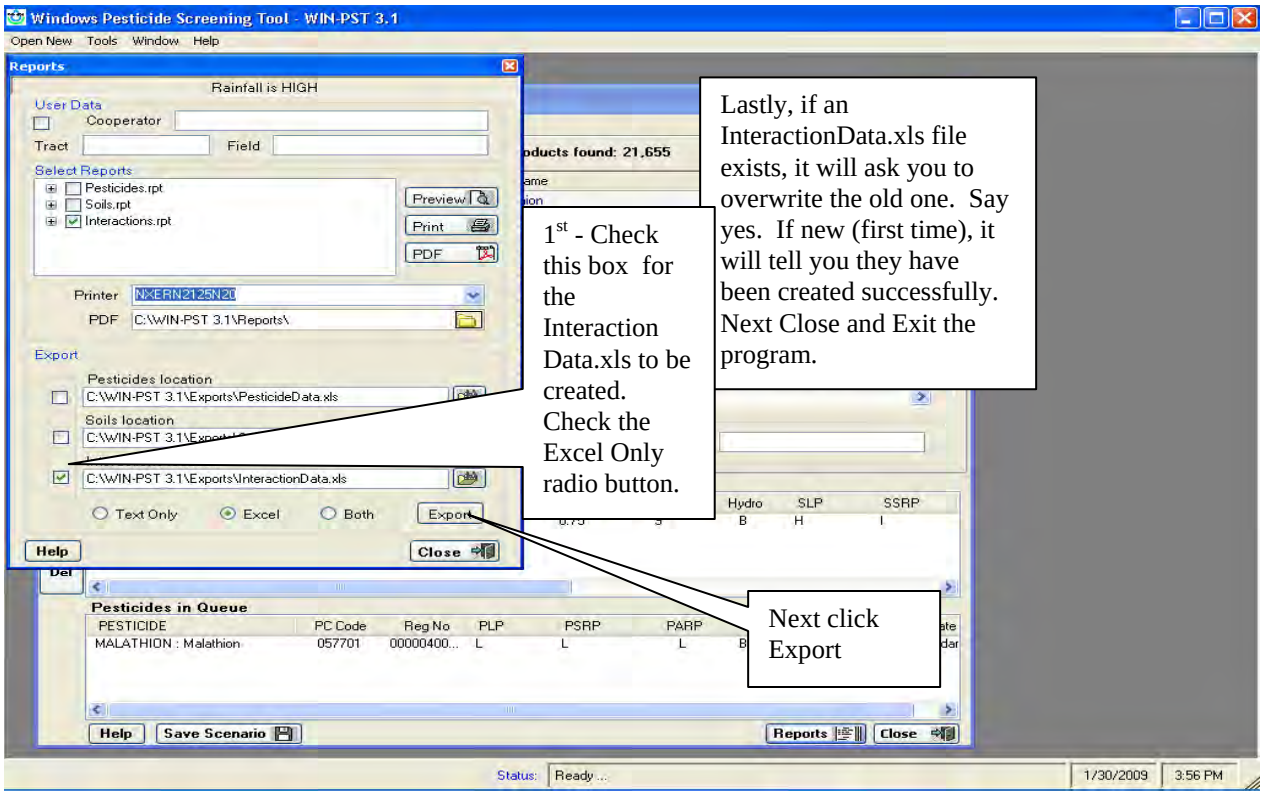
- **A.** Setup and Install (IT required) Win-PST 3.1. FOs will use their ssurgo soils file on the F drive or copy these to C:\Program Files\USDA\WIN-PST 3.1\soils.
- **B.** Run WIN-PST 3 using at least one soil and pesticide. You will need to load soils that are used on the land you are evaluating. See the screen capture for details. Note: Only 12 lines of data can be evaluated on the job sheet. Lines are calculated by multiplying the number of soils times the number of pesticides. Example 2 soils x 6 pesticides would be 12 lines of data.
- **C.** Go to the Reports and the Export section. Click on the Interactive Path\Filename. Click on or leave checked the **excel only** radio button. Then click "Export". This creates the "InteractiveData.xls" file needed to run the 595 jobsheet.xls workbook. If you have run the WIN-PST report before it will ask you to overwrite the old file. Respond Yes to these questions. At this point you have the file to link to in the correct place on the C: drive




Windows Pesticide Screening Tool - WIN-PST 3.1 - [Select Soils and Pesticides]
Data Management
Soil Survey Geographic (SSURGO) database
Database location C:\Program Files\USDA\WIN-PST 3.1\soils\Curry & SW Quay\soil_d_nm669.n
Browse
Reset Cached
Curry County and Southwest Part of Quay County, ...
2nd- Click the desired soil survey area.
1st- Browse to the location of the mdb file you want to use. FOs will use the F: drive & geodata folder or copy these to:C:\Program Files\USDA\WIN-PST 3.1\soils.
Finally, click save to return to the soil and pesticide selection sheet.
Help
Cancel
Save

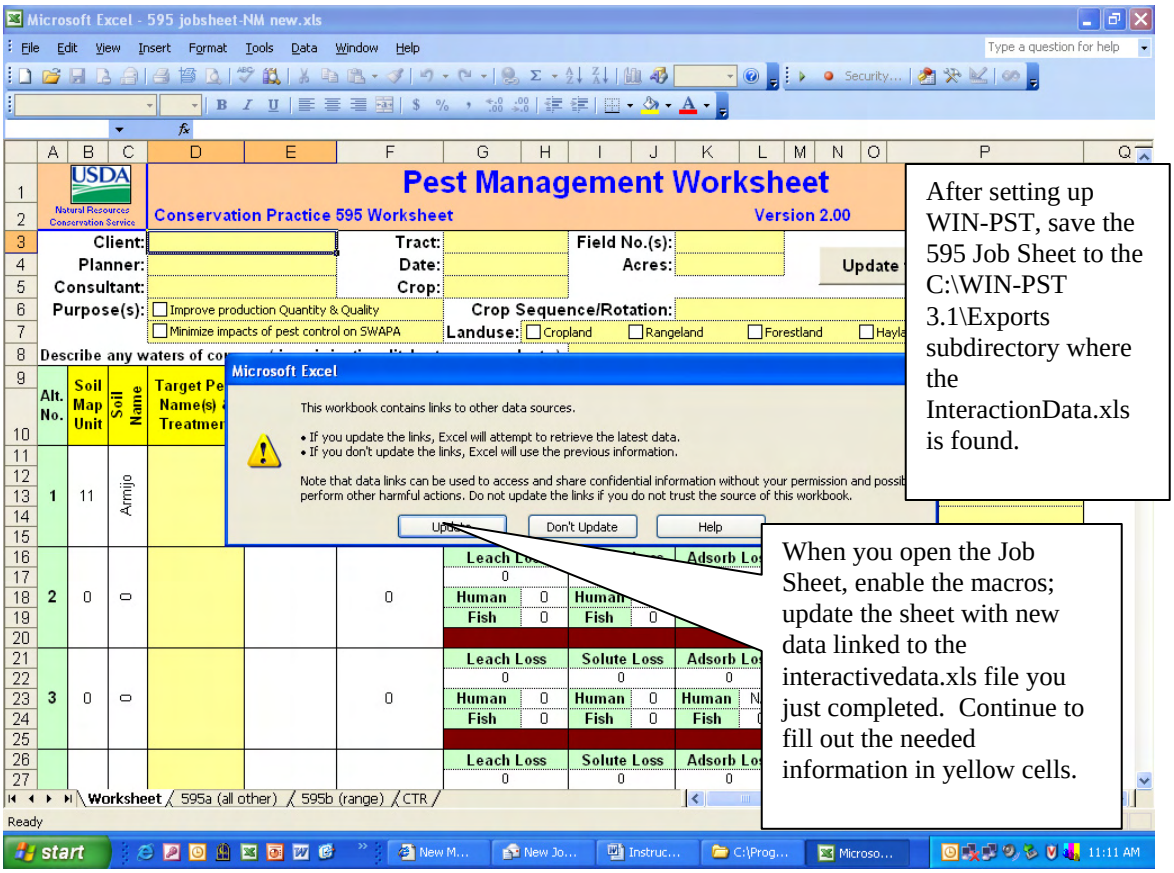

Windows Pesticide Screening Tool - WIN-PST 3.1 - [Select Soils and Pesticides]
On the soil tab view, select the map units you wish to evaluate (greater than or equal to 10% composition).
Once highlighted you can click the add button
Soils in Queue
Pesticides in Queue


Windows Pesticide Screening Tool - WIN-PST 3.1 - [Select Soils and Pesticides]
Click on the products tab (top of window). Repeat the process for the pesticide sheet.
At least one soil selected
At least one pesticide selected
Lastly, when you have the soils & the pesticides you want. Click the reports button. You can also save your scenario and enter interaction parameters.


Windows Pesticide Screening Tool - WIN-PST 3.1
Lastly, if an InteractionData.xls file exists, it will ask you to overwrite the old one. Say yes. If new (first time), it will tell you they have been created successfully. Next Close and Exit the program.
1st - Check this box for the Interaction Data.xls to be created. Check the Excel Only radio button.
Next click Export

Step 2: Download and use the Job sheet

- **A.** Download and save the 595js.xls to **C:\Win-Pst3.1\Exports,** which is where the interaction.xls is located.
- **B.** This will keep the links correct inside the formulas in the worksheet. If you save the open file to any other drive (H, F, or S etc.), the links inside the sheet will be incorrect and the sheet will not work.
- **C.** Open the job sheet. Click on Enable the macros, Click on Update, it will pull new data into the Job sheet.
- **D.** You can then rename the job sheet for your farm/field and save with the plan directory.



The pest management component of a Resource Management System (RMS) is a record of the producer's decisions for managing pest populations. The objective for applying pest management in accordance with the Pest Management Conservation Practice Standard is to manage pest populations to enhance the quantity and quality of commodities while minimizing negative impacts of pest control on soil resources, water resources, air resources, plant resources, animal resources, and/or humans. The following steps and the attached job sheet form will assist the planner and client by recording the options discussed. A narrative can be developed to include in the Resource Management System that explains what is required to be done for the chosen alternative.

When applying pest management, Worksheet/Job Sheet 595 should be used. When applying pest management on other land uses than rangeland, the completed worksheet will automatically

transfer to Job Sheet 595a. If applying pest management on rangeland, the completed worksheet will automatically transfer to Job Sheet 595b.

Steps to complete the Pest Management Worksheet/Job sheet 595:

Step 1 - CLIENT, DATE, AND PLANNER: Complete the spaces provided to identify the client, date, and planner who is providing technical assistance.

Step 2 - NAME OF CONSULTANT: If applicable, enter the name of the consultant(s) providing the producer with pest management recommendations. Indicate where the pesticide information came from.

Step 3 – FARM/RANCH/TRACT/FIELD(S): Identify the farm/ranch, tract and field for which the plan is being developed. More than one tract or field can be included on a single summary sheet if the soils, crop, resource concern(s), target pest and pest management recommendations are the same.

Step 4 - SOILS: Identify the soil(s) for the field(s) that will be used in the environmental risk analysis process (WIN-PST). All soils greater than or equal to 10% of the field or management unit are to be evaluated with WIN-PST. The highest potential loss and hazard ratings for the combination of all soils in a given field are to be used.

Step 5 – LAND USE; CROP SEQUENCE/ ROTATION: Identify the land use. For cropland, identify the crop(s) planned for the field(s). List the crops in the sequence they will be planted, if known. Scheduling the type and sequence of crops can help reduce pest pressures and avoid mistakes such as crop damage from herbicide carryover. Circle the crop(s) for which the summary sheet is being developed.

Step 6 - PURPOSE: Identify the purpose of applying the practice.

Step 7 – WATER RESOURCE OF CONCERN: List any water resource that may be adversely affected by management treatment. Examples are: wetland, well, stream, pond, lake, high runoff area, or other hydrologically sensitive areas within 100 ft. of the edge of the field, and shallow water table.

Step 8 - TARGET PEST: Enter the target pest(s) identified by the producer or their consultant, for which the pest management plan is being developed.

Step 9 - ALTERNATIVE DESCRIPTION: Enter a short description of the pest management benchmark and alternative (provided by the producer or their consultant) which is to be evaluated in the environmental risk analysis process. Use only the detail necessary to identify differences between the alternatives. Include the critical inputs to the environmental risk analysis tool(s) being used. The alternative descriptions may include management method, such as mechanical, cultural, biological, or chemical, and applicable details, such as type of tillage, use of pest resistant varieties, biological predators, or name of the pesticide (the EPA registration number of

the pesticide should be included, if known). Also, include application techniques important to the analysis tool such as incorporated or banded.

Step 10 – WINDOWS PESTICIDE TOOL RATINGS: The environmental risk ratings from the WIN-PST interaction loss potential and hazard rating report are exported to the 595 Job sheet. Use the WIN-PST User Input Form contained in Water Quality Technical Note 10 Appendix, if desired, to obtain data for input to the WIN-PST model.

Step 11 - CONSERVATION TREATMENT TECHNIQUES: Provide information on conservation treatment techniques required to maintain or improve the natural resources or to offset potential negative environmental impacts of applying the pest management practice. Conservation treatment may include conservation practices and management techniques that the landowner must install or put in place on the field such as irrigation water management, residue management, or conservation buffers. Timing, rate and placement technique may be very important. Consider conservation treatment impacts not only to water but also to soil, air, plant, animal, and human resources.

> *Note: Evaluate alternatives using the highest hazard component within a Soil Map Unit and highest risk pesticide active ingredient within a pesticide product.*

Two or more conservation treatment(s) are used when the Leaching, Solution Runoff or the Adsorbed Runoff potential loss or hazard ratings are greater than Low or Very Low. Integrated pest management should be promoted wherever feasible.

Step 12 - JOB SKETCH: Provide a map showing the field location and acres. It can be the conservation plan map. Also, show the boundaries of any sensitive areas such as water bodies, set backs, or highly erodible soils, where restrictions to pest management methods may occur. If the conservation plan map includes these items, you can place a reference in the sketch area to the applicable field(s) on the plan map in lieu of completing a new drawing. Check the appropriate box.

Step 13 – JOBSHEET 595: When the alternative is selected on the worksheet, necessary information will be transferred by the software to the job sheet, either 595a for all land uses other than rangeland, or 595b for rangeland. Other requirements may be added by the planner. Signatures are obtained for the client and conservationist with job approval for pest management.

Step 14 - OPERATION AND MAINTENANCE: A number of items are required to be assessed and performed routinely. These include **calibration of equipment, maintaining a safe working environment, and reviewing and updating the pest management component of the plan**. The plan should be reviewed by the producer to determine if any short-term adjustments are needed for either the current or subsequent crops. Records of implementation shall be kept for 2 years when a restricted use pesticide is used. Monitoring the effectiveness of management practices and the efficacy of the pest management itself is part of the O&M.

The client and the case file receive a copy of the worksheet and job sheet.

Notes on Interpretation of WIN-PST Soil-Pesticide Interaction Report

(Source: Module 5—Part D—Sections 11 and 12
Environmental Risk Analysis—Pest Management: Pesticides, NEDC Nutrient and Pest Management Course)

For the most part, doing a pesticide risk analysis is not much different from typical resource planning. That is, the same steps are valid, including conducting a resource inventory. However, some extra information must be collected, including probable pesticide uses and application details required by the pesticide environmental risk analysis tool that will be used. This information can come from the producer or their crop consultant, but it should include all likely pesticide uses for a particular land unit. Final decisions about specific pesticide uses are often based on field conditions that vary from year to year, but the pest management component of the conservation plan should account for this expected variability whenever possible to avoid the need for continuous updates. Occasionally, unexpected conditions may call for previously unplanned pesticide uses. As soon as practical, new pesticide uses should be included in an updated pest management component of the conservation plan.

Resource inventories should also identify existing mitigation techniques (management techniques and/or conservation practices) that will help reduce pesticide losses. Typical resource inventory data such as distance to surface and/or ground water, soil types (by component or map unit) and field slopes will also be utilized in the pesticide environmental risk analysis process.

Benchmark conditions (what the producer is currently doing) should be evaluated first to determine if there are potential hazards from either runoff or leaching. Alternatives and/or mitigation practices can then be developed for those benchmark practices that pose significant risk (WIN-PST hazard rating of 'Intermediate' or greater) to identified resource concerns.

NRCS is not in the business of making pesticide recommendations, but of analyzing 'recommended pesticides', within the framework of an IPM program, for their potential environmental impacts. Additionally, NRCS can provide environmental risk analysis on alternatives to pesticides such as tillage for weed control. Hazard mitigation practices (e.g., buffer strips, riparian areas, crop rotation), whether dealing with pesticides, tillage, burning etc., can be recommended by NRCS to reduce the potential environmental hazards of benchmark or planned alternatives.

WIN-PST pesticide/ soil combinations that have a 'Low' or 'Very Low' hazard rating, would meet RMS criteria and not need mitigation if the pesticides are used according to the label. In some cases, where alternative IPM methodologies are available, the use of a pesticide with even a ‘Low’ or ‘Very Low’ hazard rating may be inappropriate. Those soil/pesticide combinations with ‘Intermediate’ or 'High' toxicity ratings are prime candidates for mitigation practices. Once pesticide risk screening is done, the next step is to provide mitigation strategies.

Those combinations with toxicity rating 'Extra High' are considered potentially very hazardous. Using pesticides that have an 'Extra High' rating, indicates the potential to do great harm to the identified resource concern, mostly due to their extreme toxicity to non-target organisms. Mitigation practices for these pesticides may not be sufficient to prevent potentially severe damage to the resource. The potential for mitigation failure is high. These pesticides should only be used with extreme caution and as infrequently as possible. Although these chemicals are applied according to the label, reliance on chemicals that receive an 'Extra High' rating may prevent a plan from reaching RMS status, even with mitigation. An effective, economically acceptable pesticide with a lower environmental risk or an alternate method of pest control shall be considered.

Interpreting the WIN-PST hazard ratings

WIN-PST classifies the potential hazards into 5 classes. The classes are:

X—EXTRA HIGH
H—HIGH
I—INTERMEDIATE
L—LOW
V—VERY LOW

Only leaching hazard uses the very low class.

Action (mitigation) should be taken when a hazard for the resource concern is listed ‘EXTRA HIGH', 'HIGH', or 'INTERMEDIATE'. The use of mitigation measures or conservation treatment techniques included in the 595a worksheet/job sheet can be used as guidance for developing a strategy. Hazard ratings of HIGH and INTERMEDIATE for sediment or runoff can usually be made acceptable by implementing appropriate mitigation measures. Hazard ratings of HIGH for leaching is more difficult to mitigate without using a less hazardous pesticide.

In general, HIGH hazard ratings warrant more extensive mitigation than INTERMEDIATE hazard ratings. How extensive mitigation needs to be is also dependent on other factors such as the existing level of impairment of the resource, resource sensitivity, and desired level of resource protection. For soil/pesticide combinations that are rated as an ‘EXTRA HIGH' hazard potential, mitigation may not be effective. For resources that are highly sensitive or for which a high degree of resource protection is desired, substitution of another less hazardous chemical may be the only remedy. In these cases, the conservationist needs to work with the producer, and crop consultants or extension specialist to find efficacious, economically acceptable and lower risk alternatives. For soil/pesticide interactions classified as 'LOW' or 'VERY LOW' hazards, no further action or mitigation is needed. As long as these chemicals are used according to the label, they meet the pesticide quality criteria for RMS planning.

Ground and surface water vulnerability is not measured directly by WIN-PST. Instead, WIN-PST gives risk estimates at the edge of the field or bottom of the root zone. Estimates of ground or surface water vulnerability would require information not easily obtained, such as ground water depth, vadose zone characteristics, travel time between edge of field and surface water, etc.

Significant attenuation of chemical contaminants may occur between the edge-of-field/bottom-of-root-zone and surface or ground water. In fact, many mitigation strategies NRCS utilizes to reduce surface water contamination, attempt to maximize attenuation of sediments and chemicals through lengthening the distance between the contamination source and the surface water resource. Other mitigation strategies attempt to either decrease the speed of runoff water (decreasing erosivity and sediment carrying capacity) or impound the runoff water (increasing infiltration and decreasing sediment carrying capacity). If, through mitigation practices, we can reduce hazardous pesticide losses from the edge-of-field/bottom-of-root-zone, or prevent pesticides from entering surface or ground water, we can protect identified resources of concern.

The WIN-PST hazard classes were developed to determine the potential hazard of an offsite pesticide movement. These ratings are created by combining the WIN-PST interaction ratings with exposure adjusted toxicity ratings. The result is, for any WIN-PST interaction rating and exposure-adjusted toxicity rating, a single hazard (potential hazard) rating for each resource concern (human and fish).

The exposure adjusted toxicity rating is a rating scheme devised by the WIN-PST team to estimate the probability for a pesticide to exceed a concentration in the environment. It is broken down into 5 classes based on the long-term toxicity. This value is not based on the pesticide physical properties used in WIN-PST loss potentials, but instead is based on best guess likelihood of a given pesticide applied at typical application rates
(~ 0.5 kg/ha- 5.0 kg/ha) to exceed its long- term toxicity standard (e.g. EPA's Health Advisory, MCL or MATC). For example, if it’s extremely probable that a pesticide will exceed its toxicity threshold in the environment, it will be rated ‘EXTRA HIGH'. This toxicity adjustment helps to determine the relative hazard of a chemical that moves offsite.

Note: All methods of pest management must be integrated with other components of the conservation plan. Clients must be instructed to pay special attention to all environmental hazards and site-specific application criteria listed on pesticide labels and contained in Extension and Crop Consultant recommendations. Mitigation practices shall be chosen which will not have a negative impact on any resource, including soil, water, air, plant, animal, or human.