North Carolina
Nutrient Management Planning Software

User Manual

Getting Started

**For questions regarding the software send an email to SWC_Tech_Assistance@ncagr.gov*

The N.C. Nutrient Management Software

Developed as a cooperative effort:

* Use of this software program is not mandatory.

The N.C. Nutrient Management Software was developed on the below guidance, standards, regulations and rules.

- USDA-NRCS 590 Nutrient Management Standard.
- NCDA “Crop Fertilization Based on N.C. Soil Tests”.
- USDA-NRCS N.C. Irrigation Guide
- NC General Statutes
- SB1217 Guidance Document
- NCAC 15A 02T
- Soil Survey
- North Carolina Nutrient Management Workgroup. 2003. Realistic yields and nitrogen application factors for North Carolina crops. http://nutrients.soil.ncsu.edu/yields/

What makes this Software better than the previous NC Nutrient Management Software?

- Software is no longer installed in C:\\Program Files
- Nutrient Management & NCANAT integrated into one software tool
- Some redundancy in data entry has been eliminated
- Features and functions more intuitive by design
- All 4 plan types now have same basic design
- Soil properties based on MUSYM instead of soil series
- Soil survey updates incorporated regularly (upon availability)
- Program will check for updates at each start-up
- Plan reports have been updated and improved
- Plan reports exportable as Word and/or pdf files
- Program will be hosted by and supported by NCDA&CS

Support, reference and training resources:

Nutrient Management In N.C.
http://nutrients.soil.ncsu.edu/

SB1217 Guidance Document for Technical Specialists
http://www.ncagr.gov/SWC/tech/guidancedocuments.html

NCDA&CS Agronomic Division publications
http://www.ncagr.gov/agronomi/pubs.htm

NCSU CES Field Crop Bulletins
http://www.ces.ncsu.edu/publications-on-field-crops/

USDA-NRCS Field Office Technical Guide
http://efotg.sc.egov.usda.gov/
http://efotg.sc.egov.usda.gov/references/public/NC/590NutrientMgmtDec14UpdateReleaseVersion.pdf

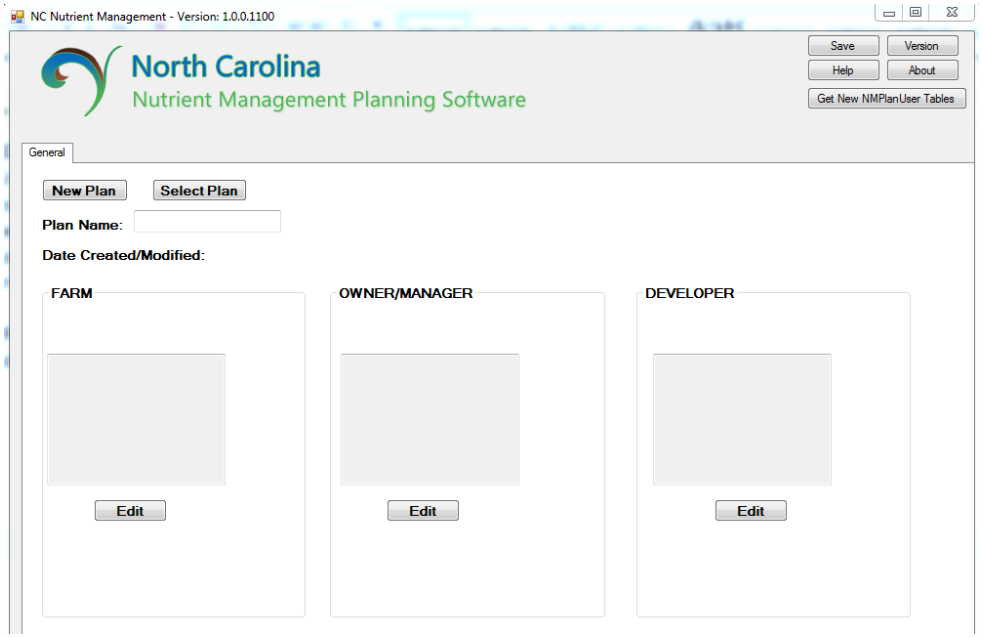
NCDA&CS DSWC Cost Share Programs
http://www.ncagr.gov/SWC/costshareprograms/ACSP/BMPs.html

Get Started

The install package will put a Nutrient Management icon on the Desktop. Double-click the **Icon** to launch the application.

Download the Nutrient Management application:
Software instructions and link will be at:
http://nutrients.soil.ncsu.edu/software/

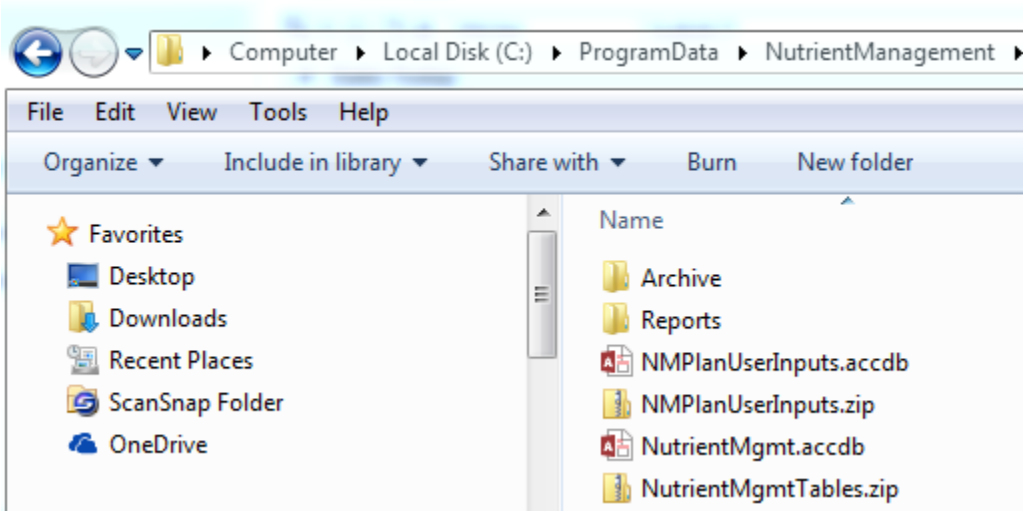
Information, links and updates will always be at this site!



Get Started

The software databases will be stored at the following location on your computer:

Local Disk(c:) > ProgramData > NutrientManagement



We have experienced some issues with the NutrientManagement folder not being created due to individual computer permissions.

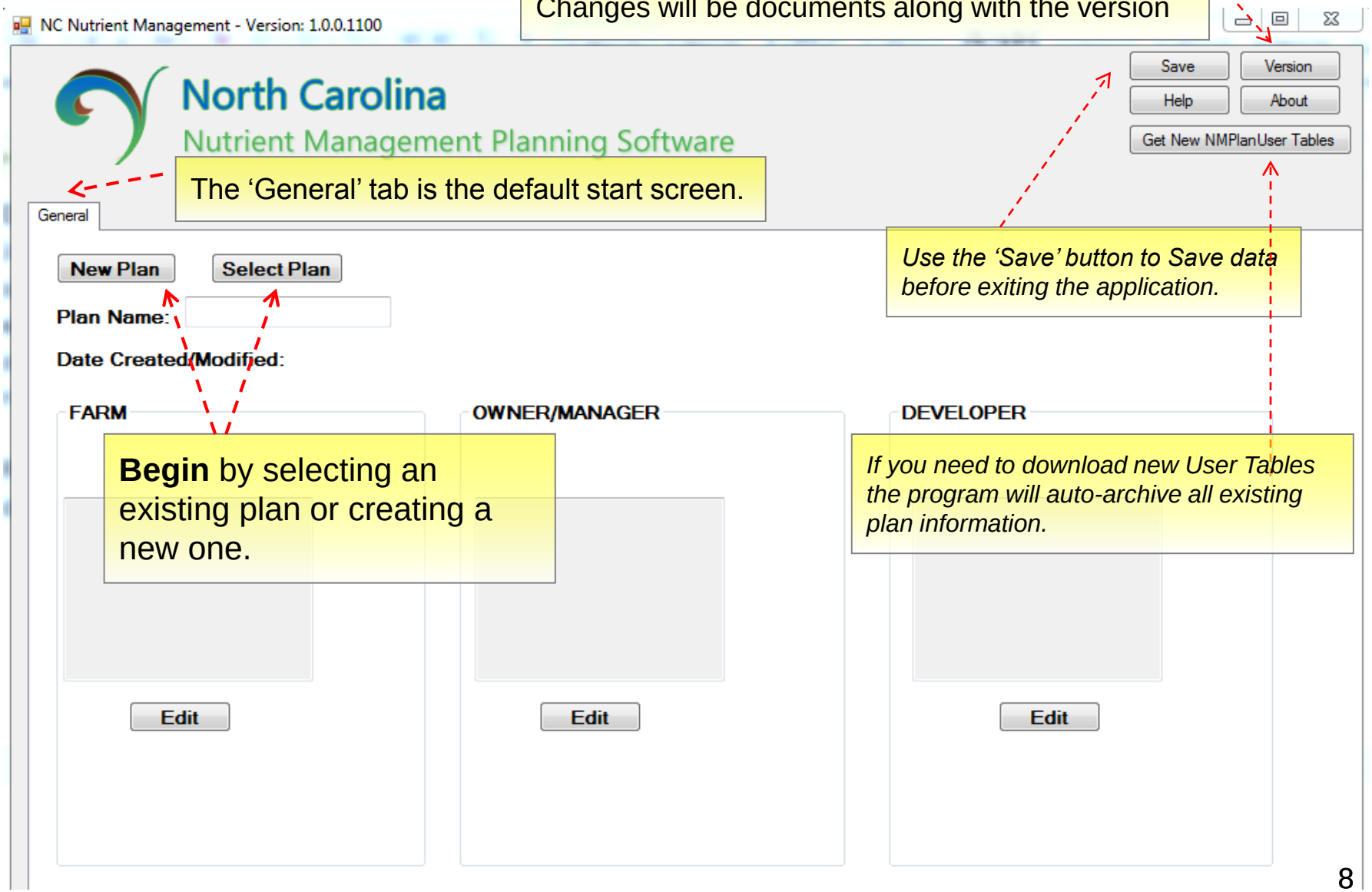
If you are experiencing issues make sure the folder was created.

If not, you can create the folder at the location with exact spelling then the program update accordingly.

Main Screen

Each time the application is launched it will automatically check for database updates.

Changes will be documents along with the version



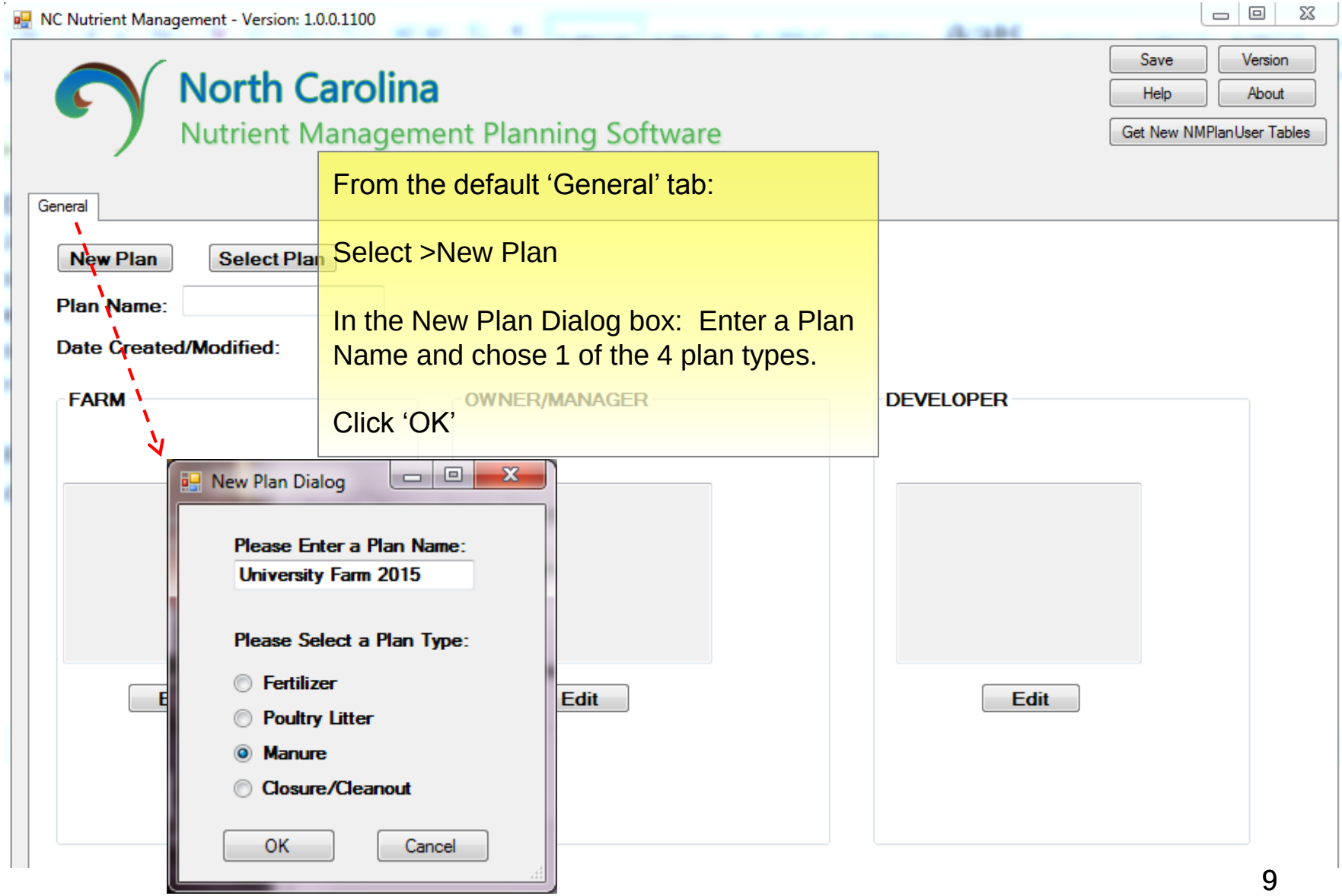
The 'General' tab is the default start screen.

Use the 'Save' button to Save data before exiting the application.

Begin by selecting an existing plan or creating a new one.

If you need to download new User Tables the program will auto-archive all existing plan information.

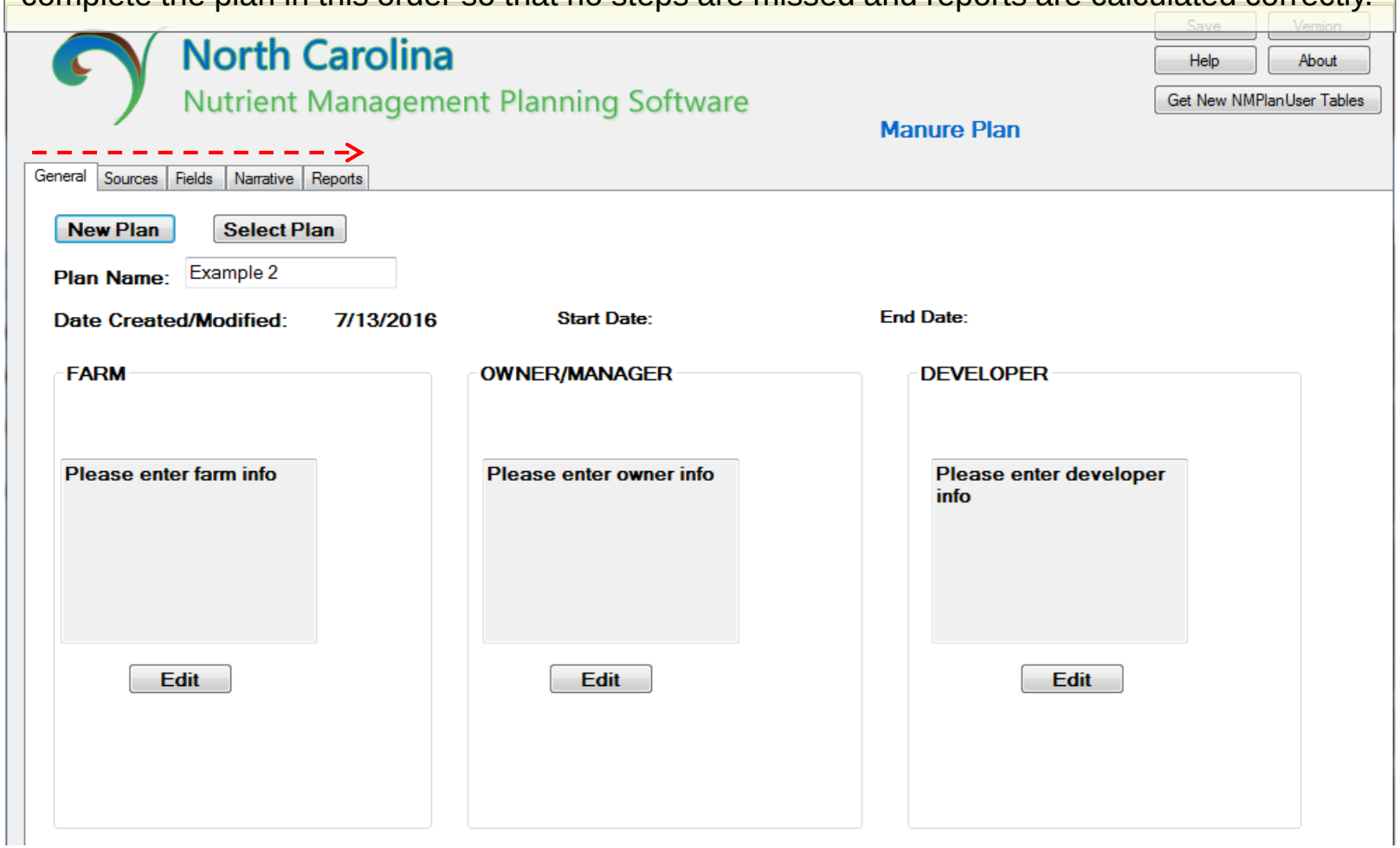
New Plan


NC Nutrient Management - Version: 1.0.0.1100
North Carolina
Nutrient Management Planning Software
Save
Version
Help
About
Get New NMPlanUser Tables
General
New Plan
Select Plan
Plan Name:
Date Created/Modified:
FARM
OWNER/MANAGER
DEVELOPER
Edit
Edit
From the default 'General' tab:
Select >New Plan
In the New Plan Dialog box: Enter a Plan Name and chose 1 of the 4 plan types.
Click 'OK'
New Plan Dialog
Please Enter a Plan Name:
University Farm 2015
Please Select a Plan Type:
Fertilizer
Poultry Litter
Manure
Closure/Cleanout
OK
Cancel

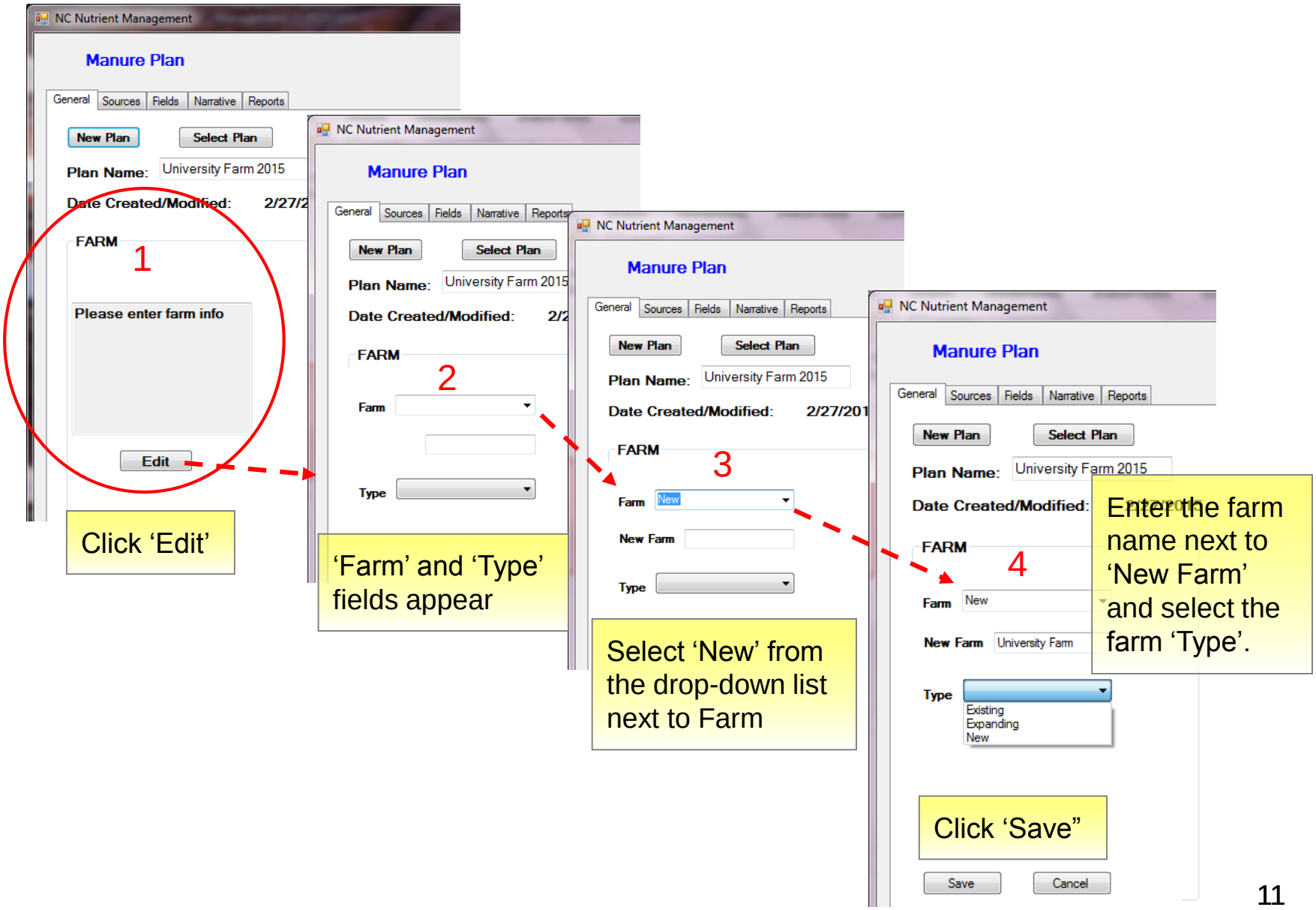
Main Nutrient Management Screen

In Manure Plan, Poultry Litter Plan and Closure/Cleanout Plan types, the 5 main tabs are General, Sources, Fields, Narrative, Reports.

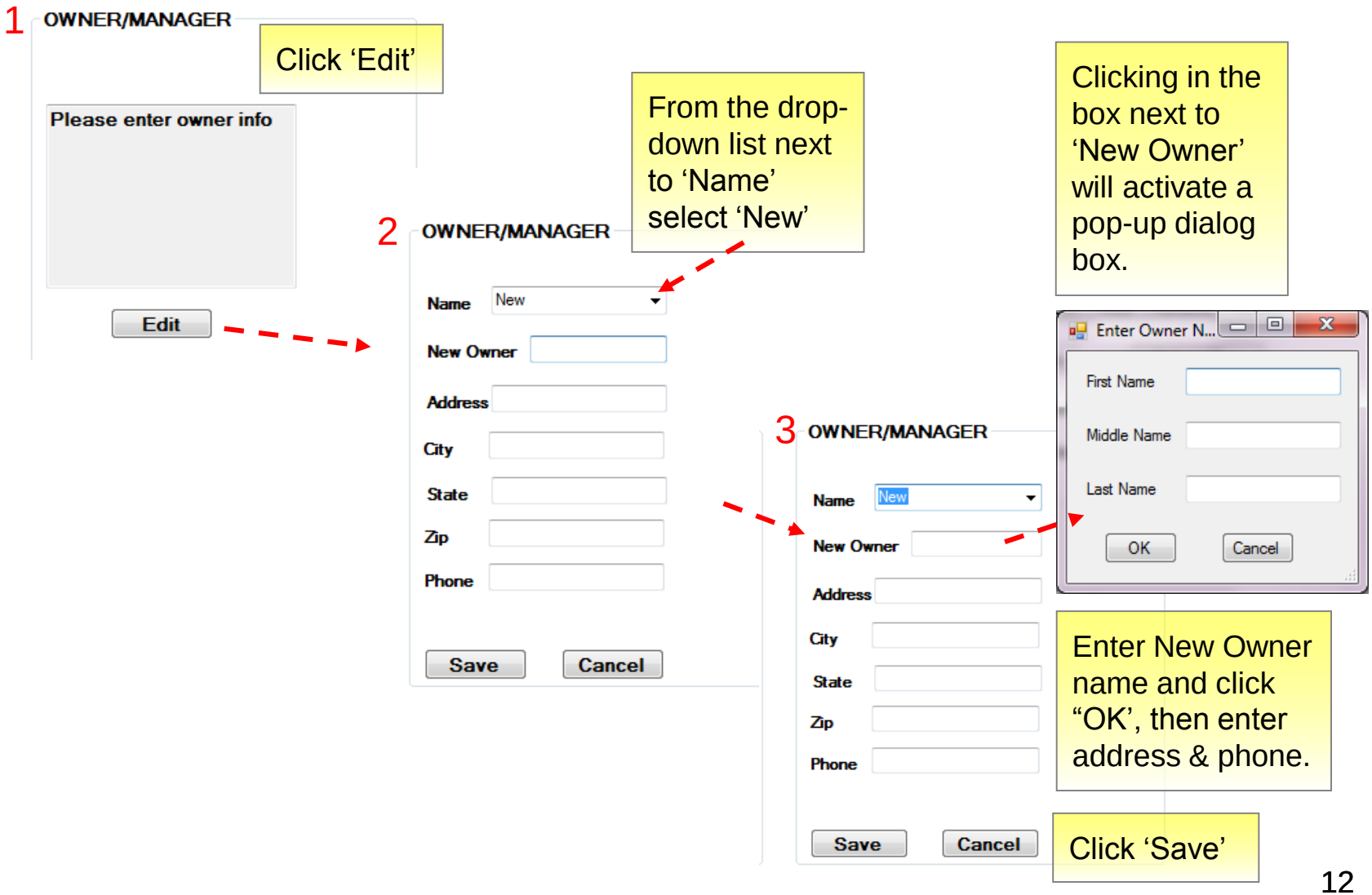
Plan development typically occurs from left to right across these 5 tabs. It is important to complete the plan in this order so that no steps are missed and reports are calculated correctly.



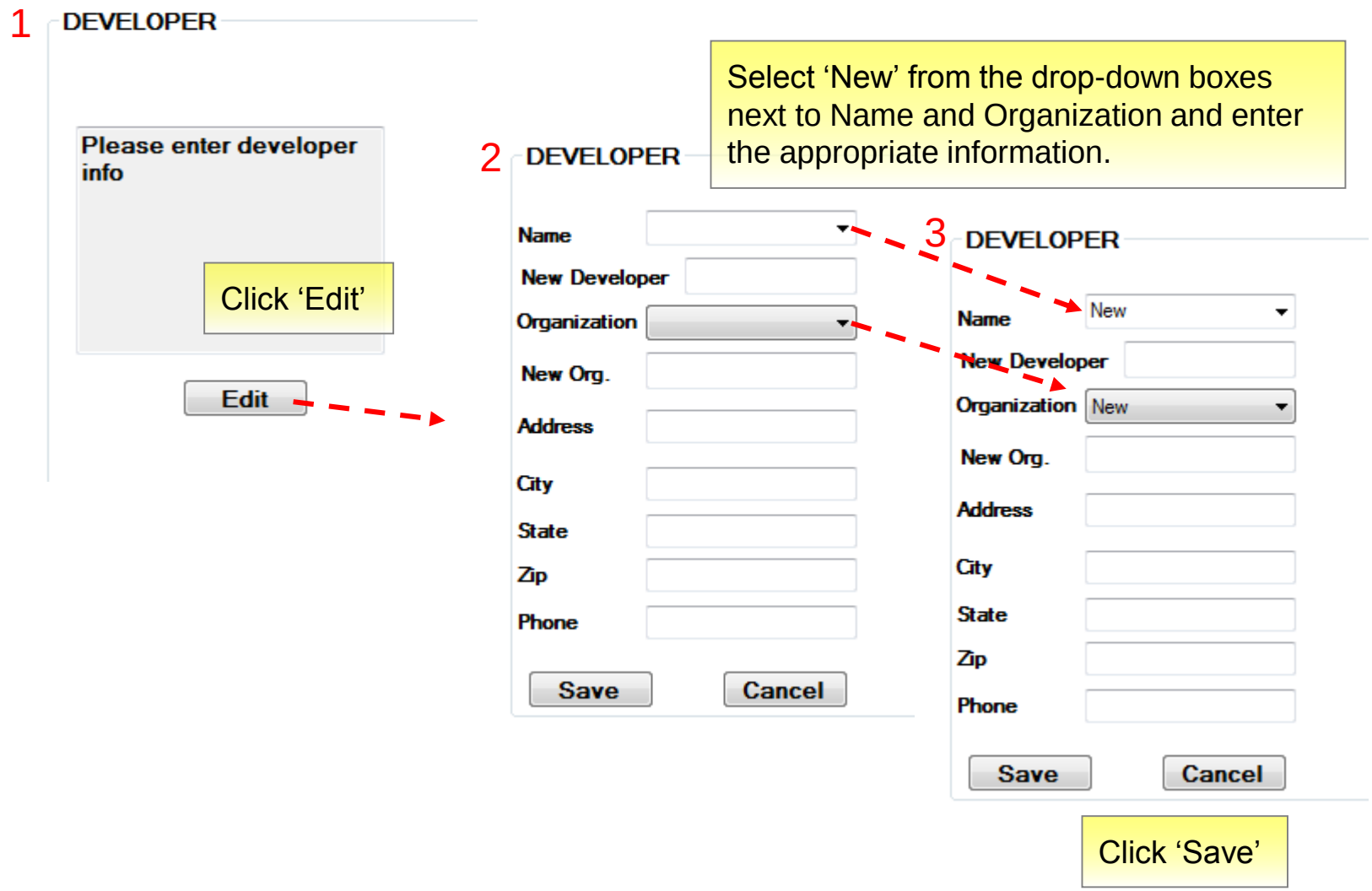
Farm *(General tab)*



Owner/ Manager *(General tab)*



Developer *(General tab)*



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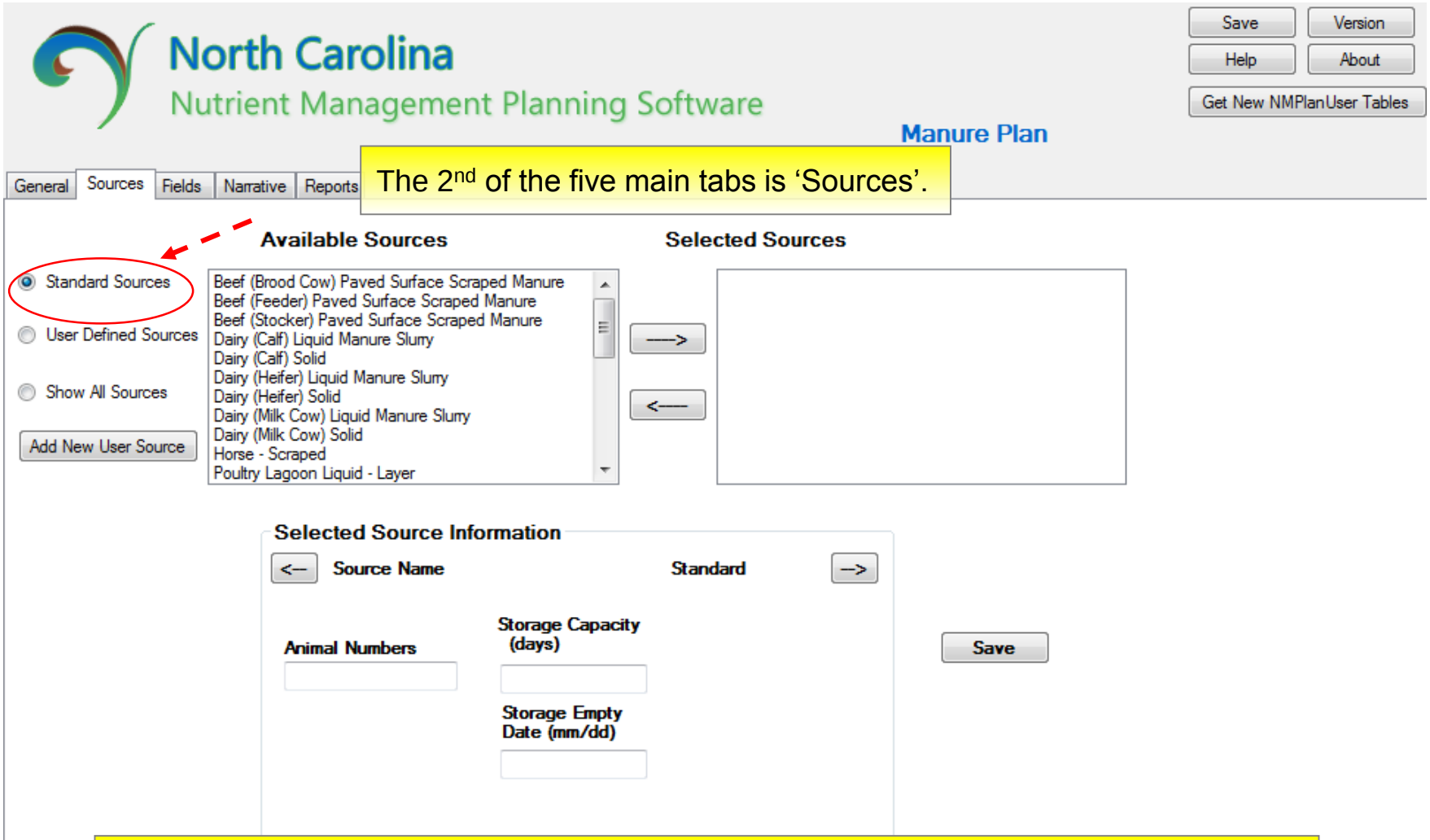
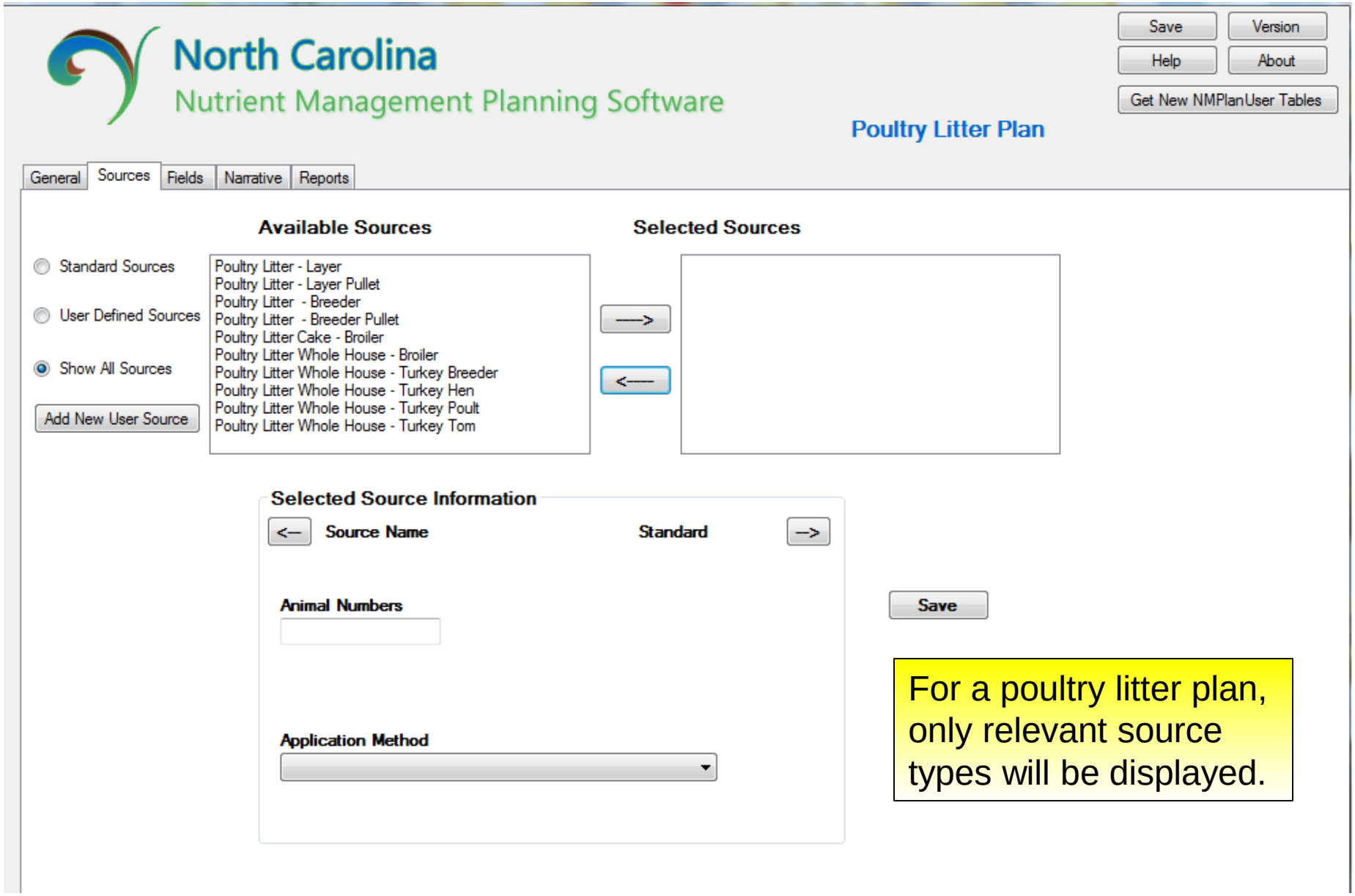
Entering Sources

Sources *(Standard Source)*



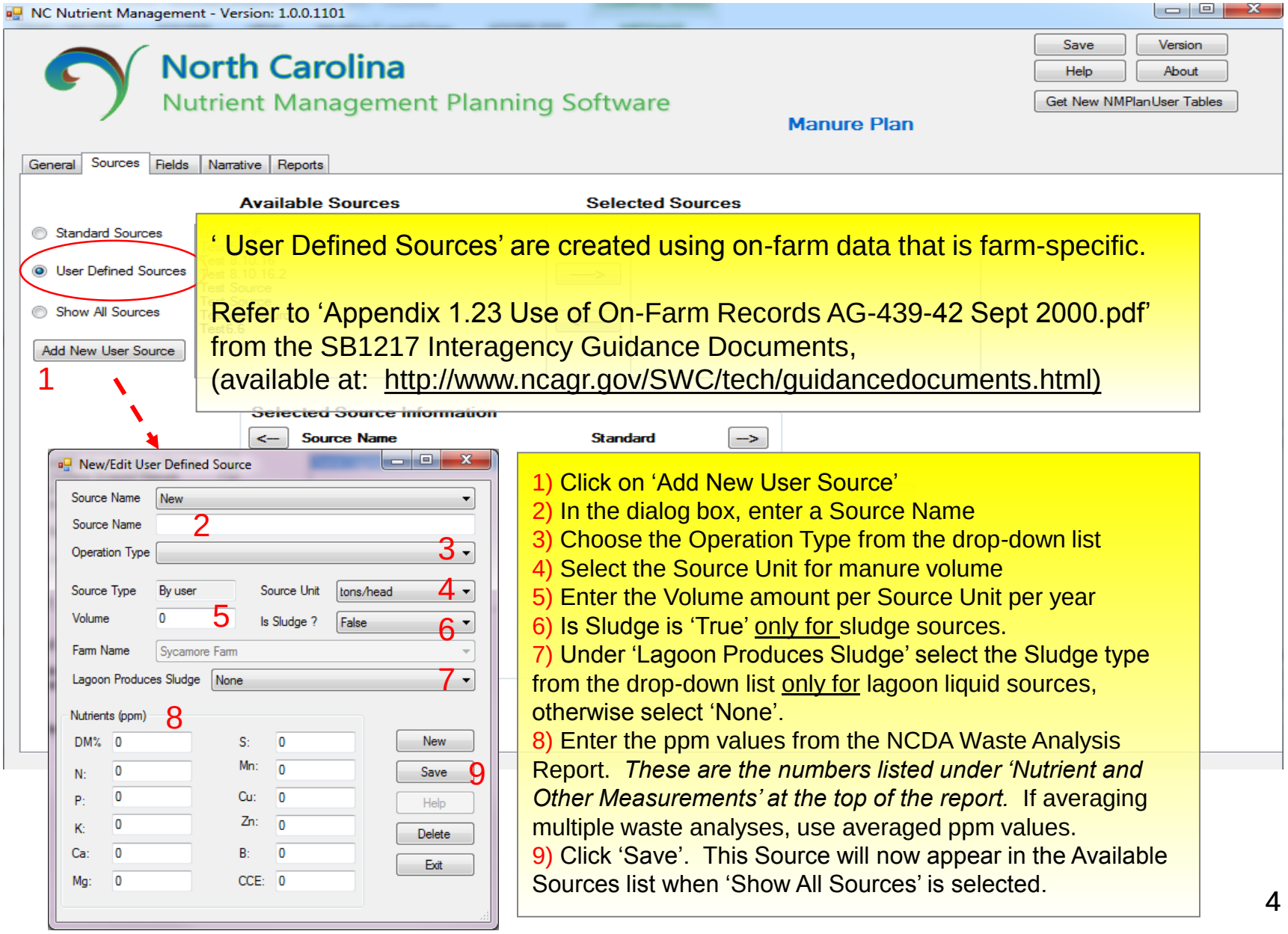
'Standard Sources' shows all animal waste sources for which N.C. data is available. Refer to the website: http://nutrients.soil.ncsu.edu/manures/ for current information on volume, nutrient content and plant-availability data used by this software.

Sources *(Standard Source)*



For a poultry litter plan, only relevant source types will be displayed.

Sources *(User Defined Source)*



‘ User Defined Sources’ are created using on-farm data that is farm-specific.

Refer to ‘Appendix 1.23 Use of On-Farm Records AG-439-42 Sept 2000.pdf’ from the SB1217 Interagency Guidance Documents, (available at: http://www.ncagr.gov/SWC/tech/guidancedocuments.html)

1) Click on ‘Add New User Source’
2) In the dialog box, enter a Source Name
3) Choose the Operation Type from the drop-down list
4) Select the Source Unit for manure volume
5) Enter the Volume amount per Source Unit per year
6) Is Sludge is ‘True’ only for sludge sources.
7) Under ‘Lagoon Produces Sludge’ select the Sludge type from the drop-down list only for lagoon liquid sources, otherwise select ‘None’.
8) Enter the ppm values from the NCDA Waste Analysis Report. *These are the numbers listed under ‘Nutrient and Other Measurements’ at the top of the report.* If averaging multiple waste analyses, use averaged ppm values.
9) Click ‘Save’. This Source will now appear in the Available Sources list when ‘Show All Sources’ is selected.

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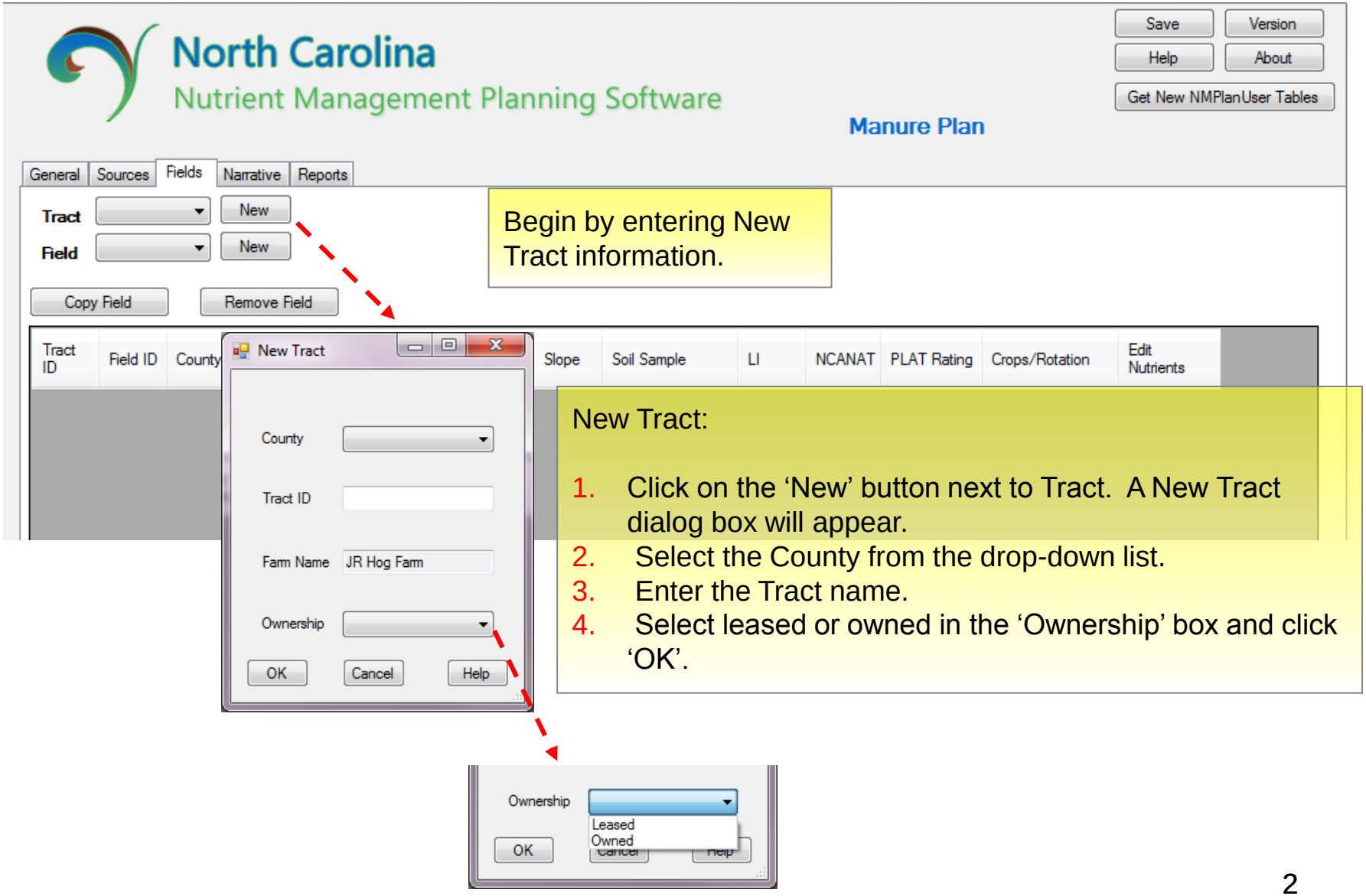
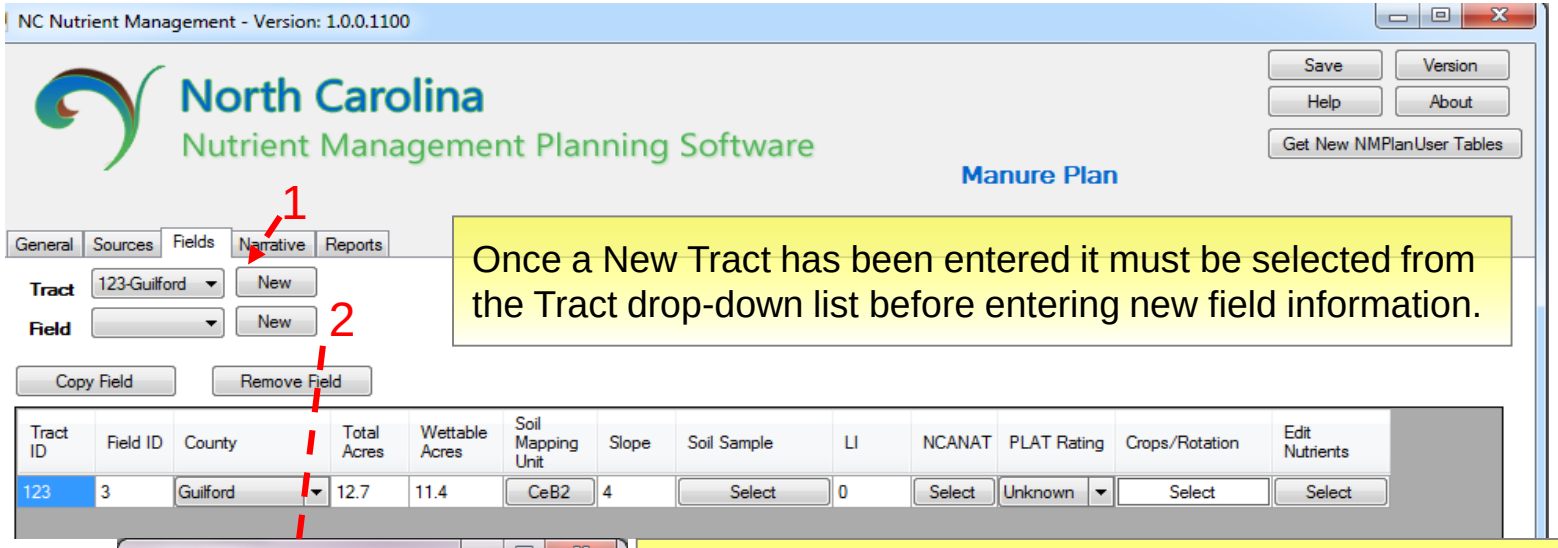
Entering Tract & Field Data

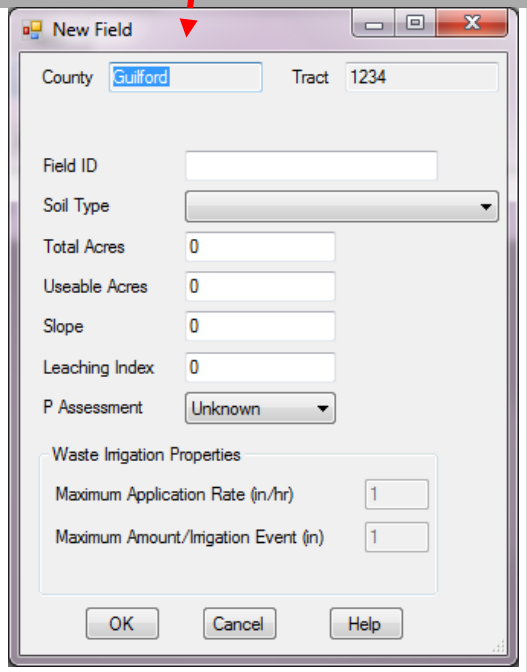
Fields *(New Tract)*



Fields *(New Field)*



Once a New Tract has been entered it must be selected from the Tract drop-down list before entering new field information.

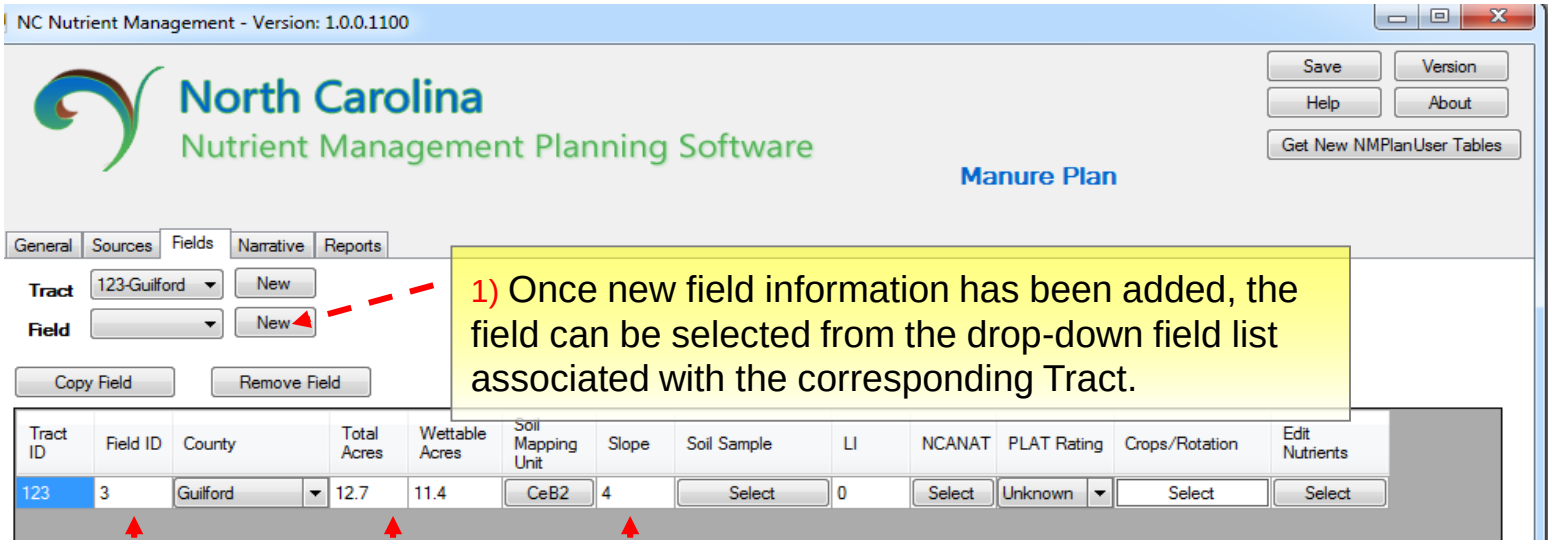


New Field:

1) Click on the drop-down arrow next to Tract and select the appropriate Tract name.
2) Click on the 'New' button next to Field.
3) In the New Field dialog box:
   - enter the field name under **Field ID**
   - select MUSYM from the **Soil Type** drop-down list
   - enter **Total Acres** and **Useable Acres**
   - enter **Slope** (%) *(default value is midpoint)*
   - enter **Leaching Index** value
   - select PLAT rating under **P Assessment**

*Click '**OK**' to save.*

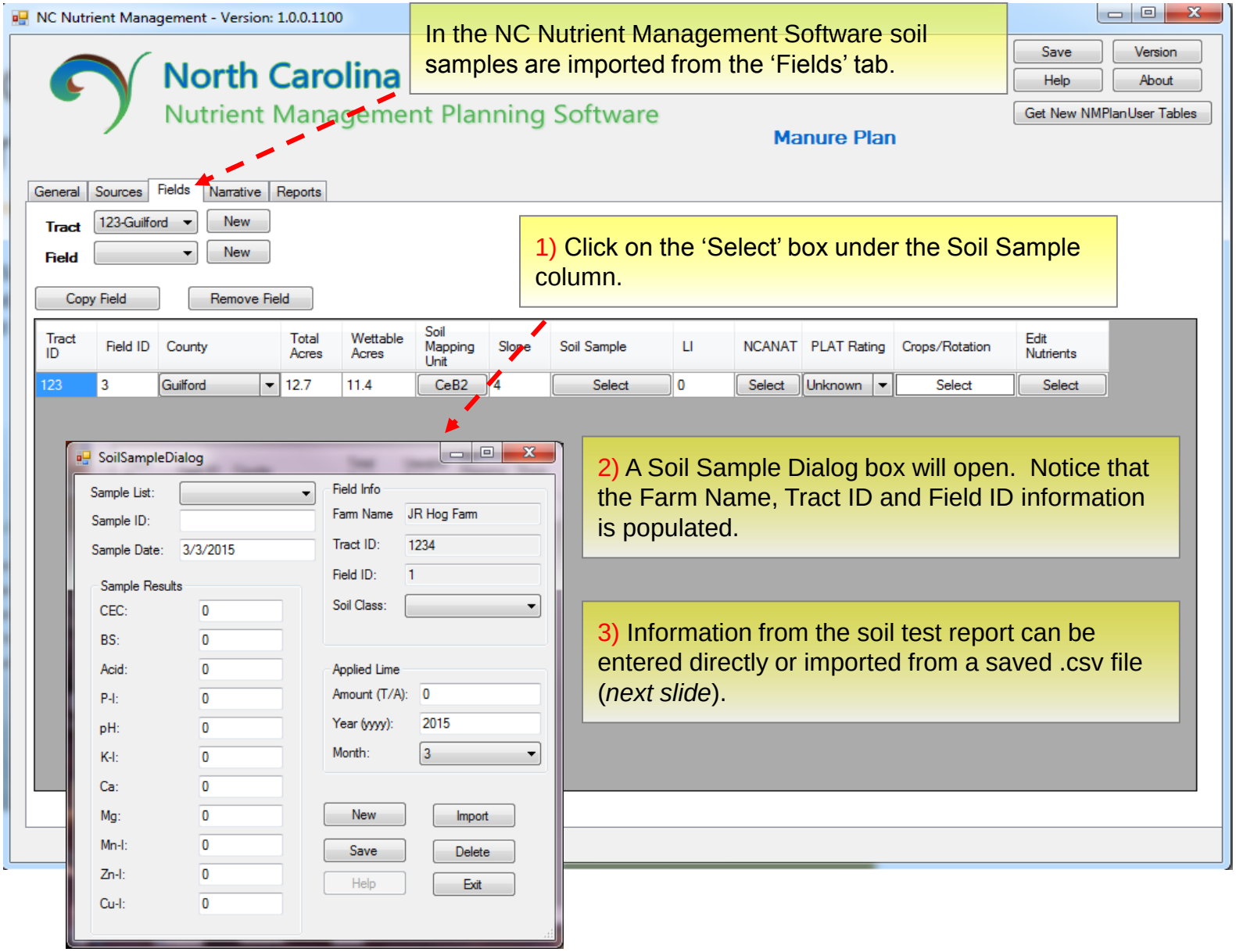
Fields *(New Field)*



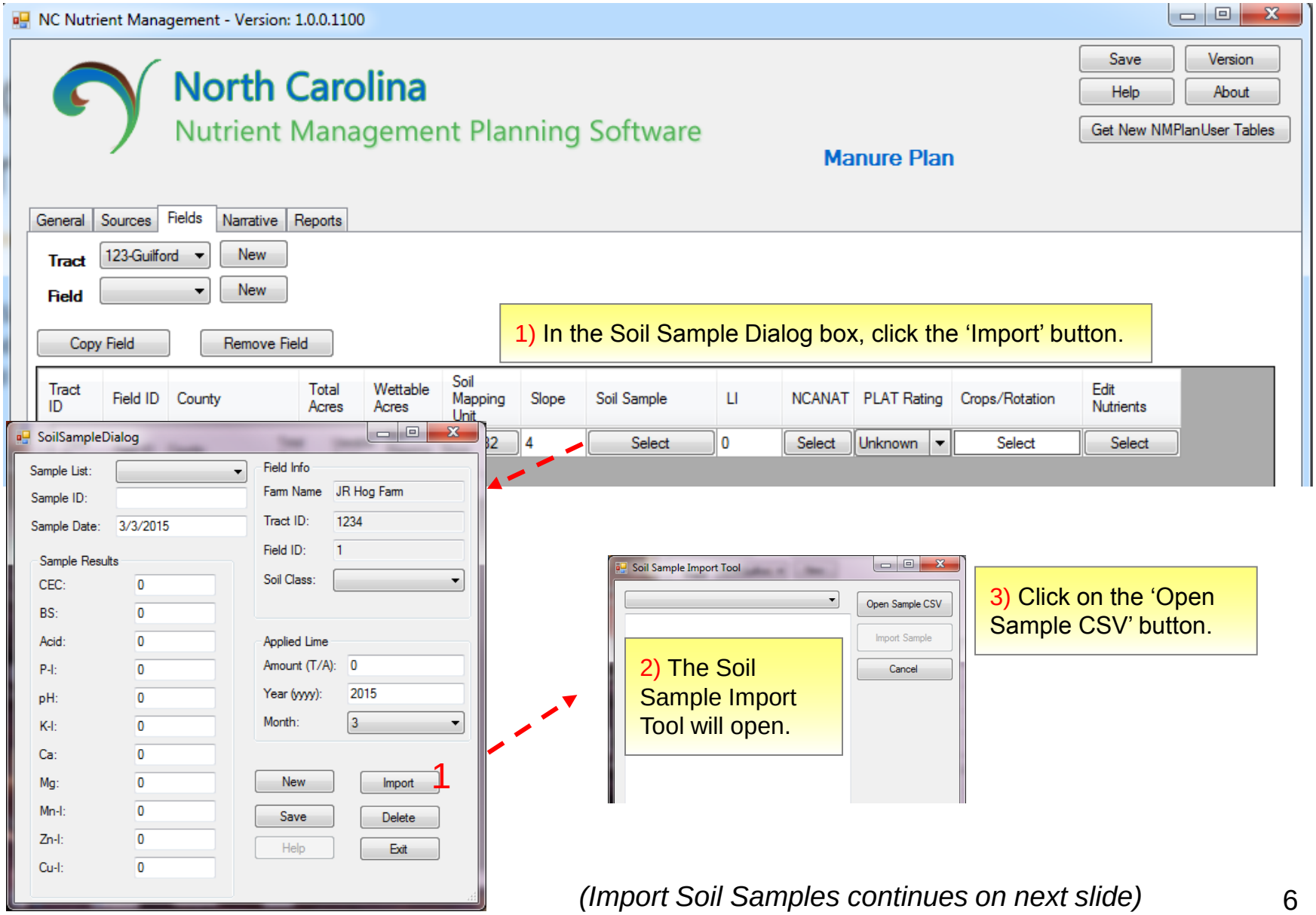
1) Once new field information has been added, the field can be selected from the drop-down field list associated with the corresponding Tract.

2) Field information entered in the ‘New Field’ dialog box now appears as a row here.

Fields *(Soil Sample)*

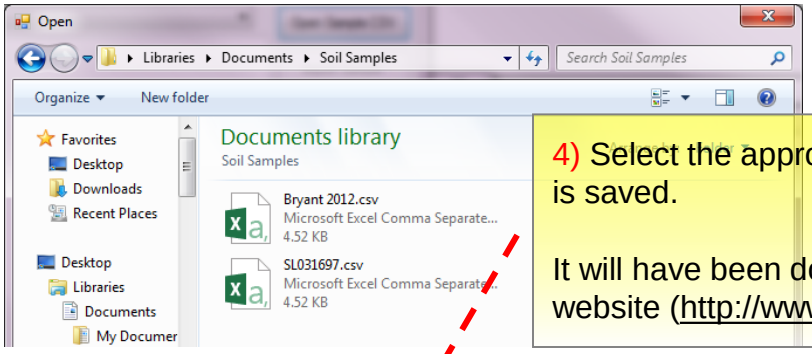


Fields *(Import Soil Sample Information)*



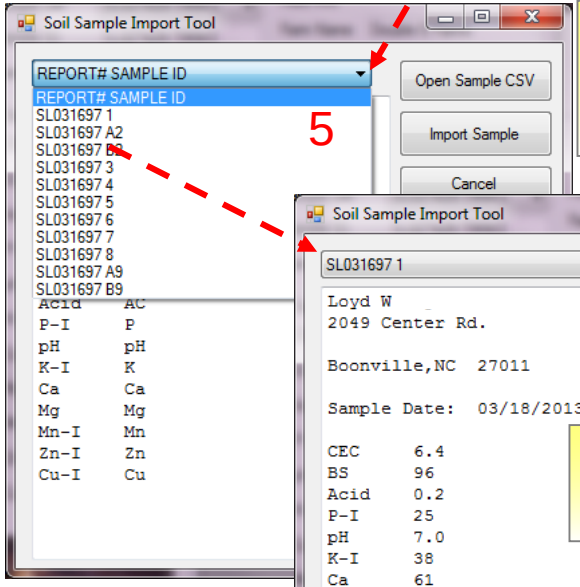
(Import Soil Samples continues on next slide)

Fields *(Import Soil Sample Information)*

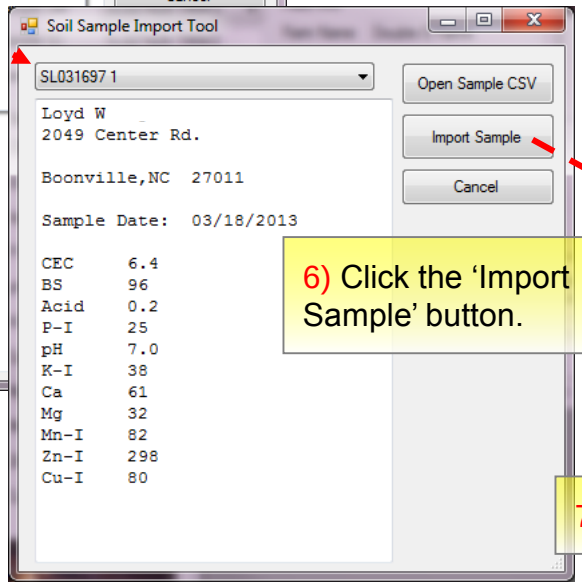


4) Select the appropriate soils .csv file from a file location where it is saved.

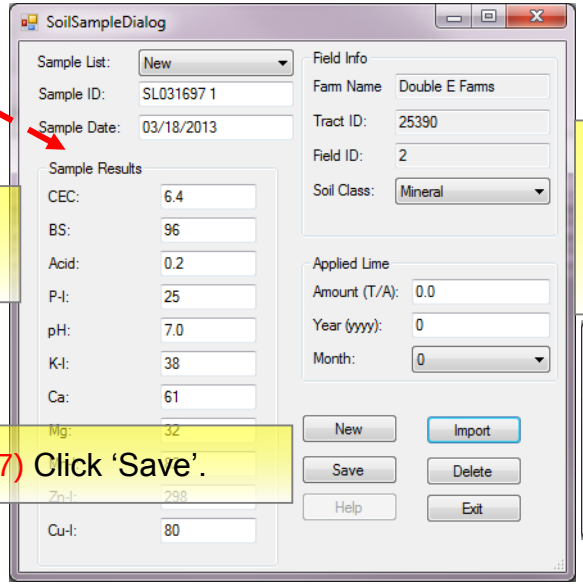
It will have been downloaded from the NCDA Agronomic Division website (http://www.ncagr.gov/agronomi/pals/) previously.



5) In the Soil Sample Import Tool choose the appropriate soil sample (for the field) from the drop-down list of all samples in the report.

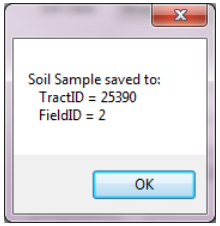


6) Click the 'Import Sample' button.



7) Click 'Save'.

8) A Pop-up message confirms the Save.



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Importing Soils Data from NCDA&CS Agronomic Services Division

Step 1

Download Soils Report

Step 2

Import Soils Data

FROM:

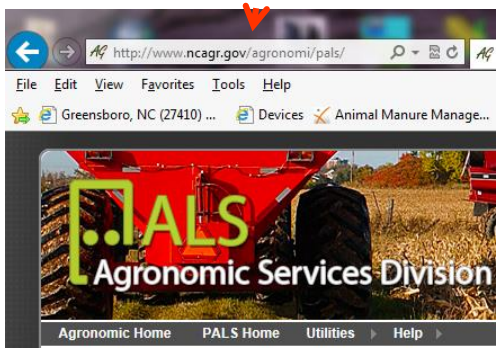
NCDA&CS Agronomic Division Website

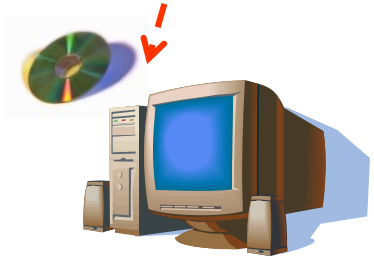
TO:

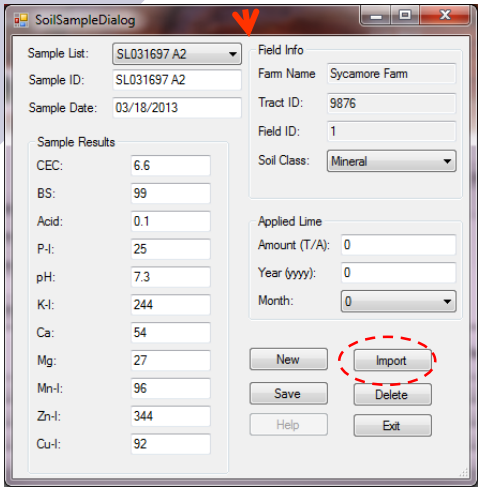
- Your C: drive
- Shared drive
- Other storage

IN:

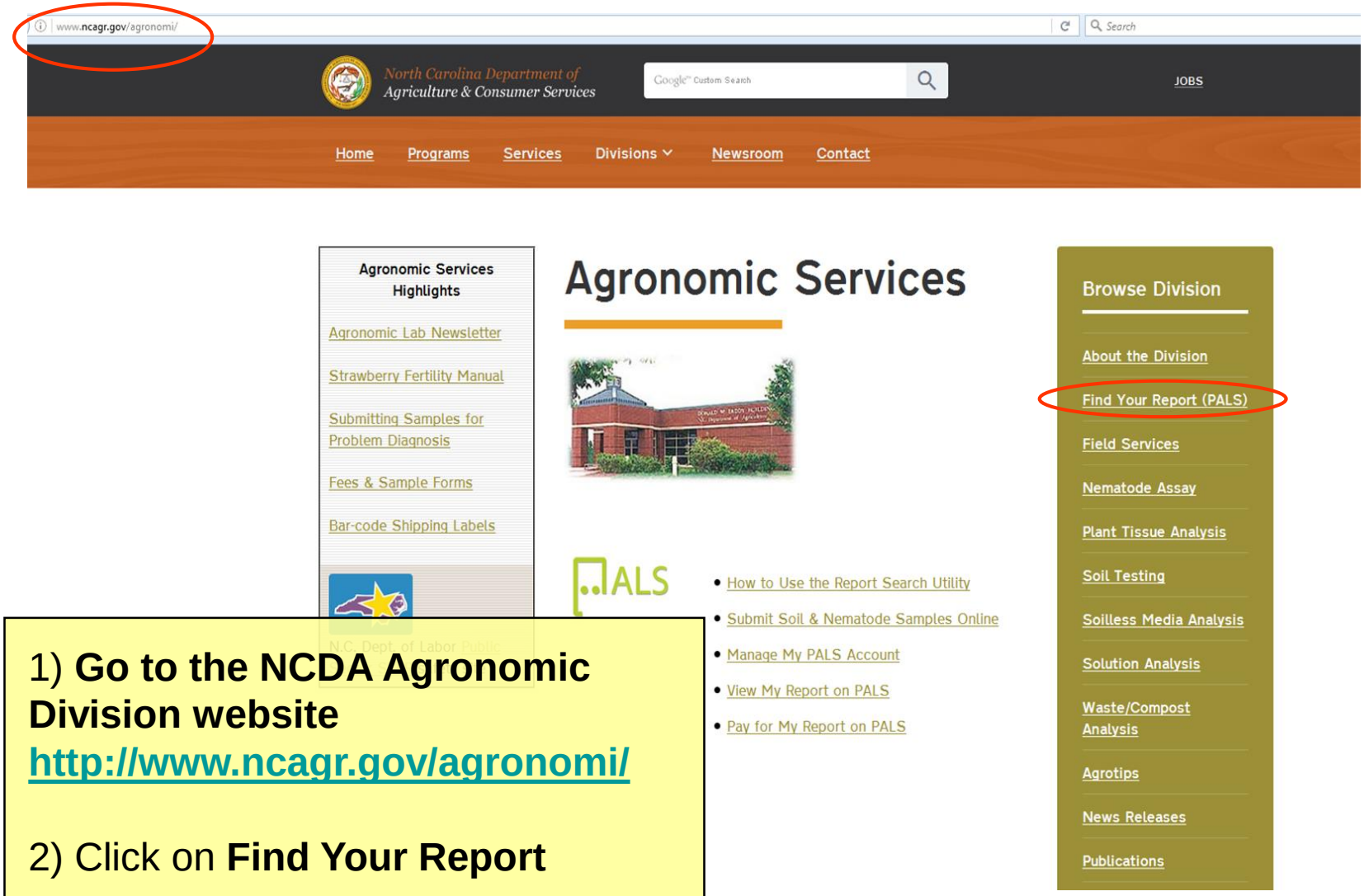
NC Nutrient Management Planning Software







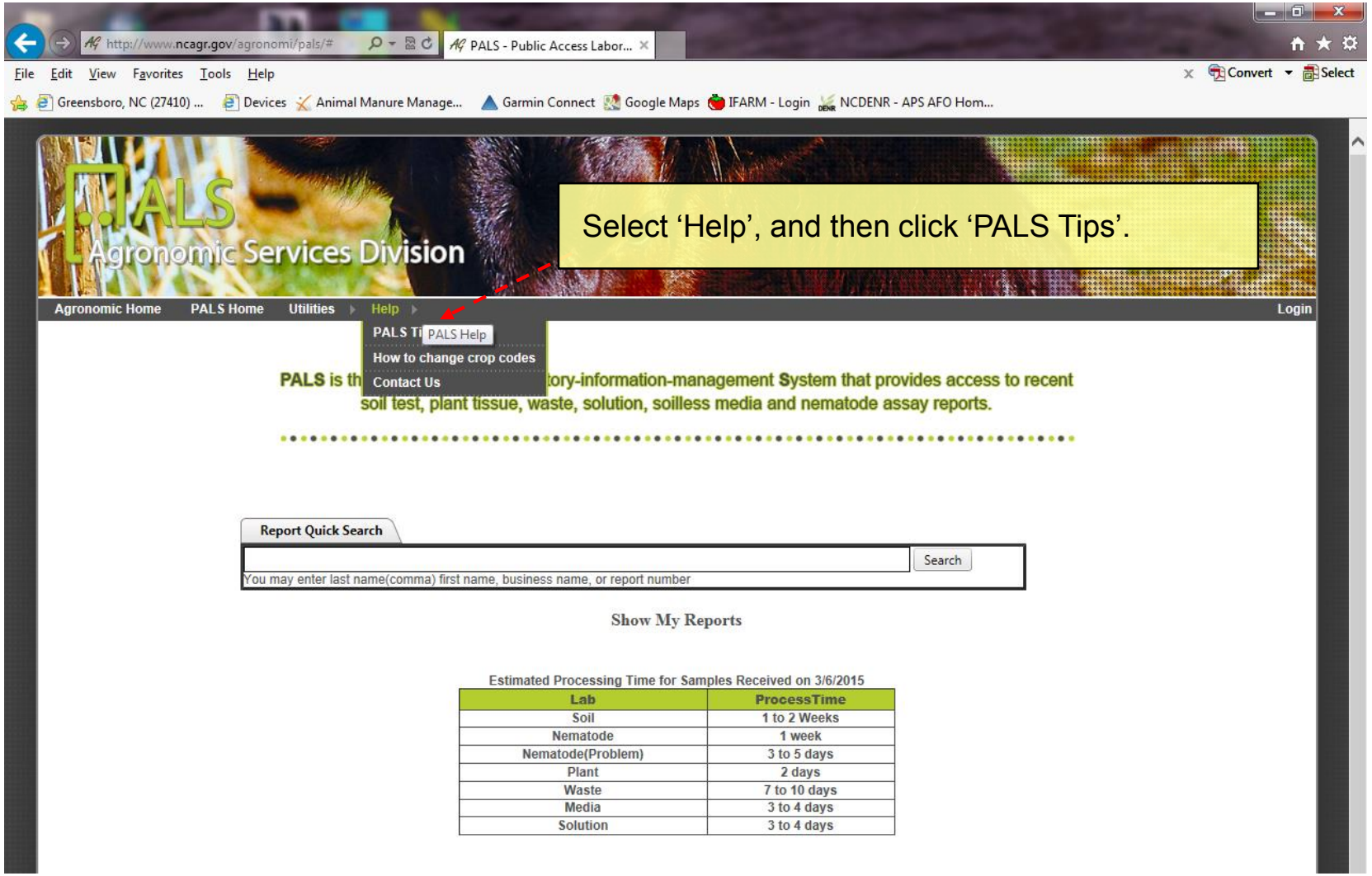
Download



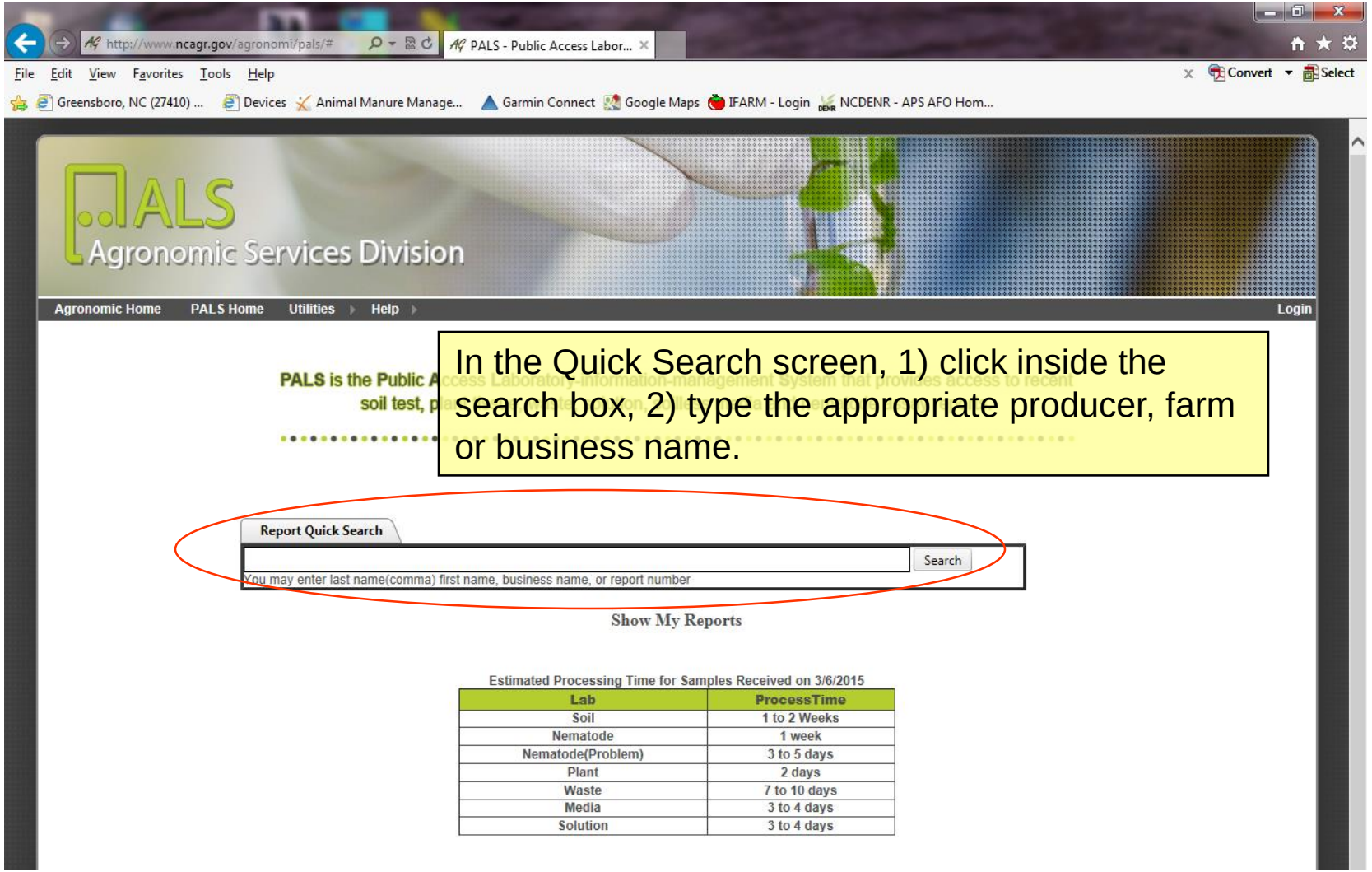
1) **Go to the NCDA Agronomic Division website** http://www.ncagr.gov/agronomi/

2) Click on **Find Your Report**

Download

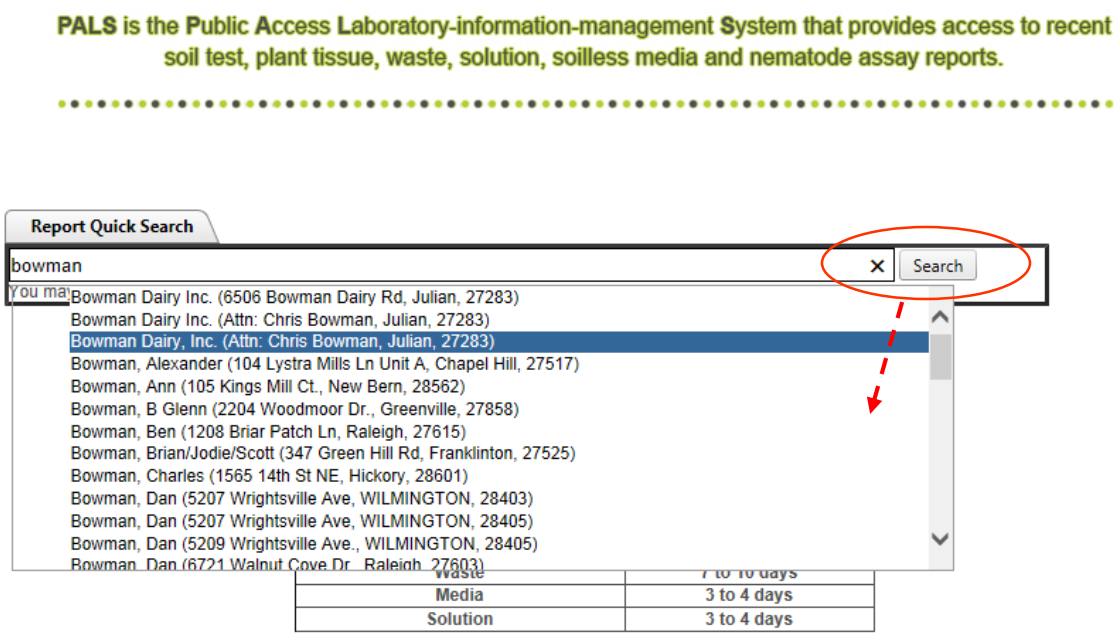

http://www.ncagr.gov/agronomi/pals/#
PALS - Public Access Labor...
File Edit View Favorites Tools Help
Convert
Select
Greensboro, NC (27410) ...
Devices
Animal Manure Manage...
Garmin Connect
Google Maps
IFARM - Login
NCDENR - APS AFO Hom...
PALS
Agronomic Services Division
Select 'Help', and then click 'PALS Tips'.
Agronomic Home
PALS Home
Utilities
Help
Login
PALS Help
How to change crop codes
Contact Us
PALS is th
tory-information-management System that provides access to recent
soil test, plant tissue, waste, solution, soilless media and nematode assay reports.
Report Quick Search
Search
You may enter last name(comma) first name, business name, or report number
Show My Reports
Estimated Processing Time for Samples Received on 3/6/2015
Lab
ProcessTime
Soil
1 to 2 Weeks
Nematode
1 week
Nematode(Problem)
3 to 5 days
Plant
2 days
Waste
7 to 10 days
Media
3 to 4 days
Solution
3 to 4 days

Download


http://www.ncagr.gov/agronomi/pals/#
PALS - Public Access Labor...
File Edit View Favorites Tools Help
Convert
Select
Greensboro, NC (27410) ...
Devices
Animal Manure Manage...
Garmin Connect
Google Maps
IFARM - Login
NCDENR - APS AFO Hom...
PALS
Agronomic Services Division
Agronomic Home
PALS Home
Utilities
Help
Login
In the Quick Search screen, 1) click inside the search box, 2) type the appropriate producer, farm or business name.
Report Quick Search
Search
You may enter last name(comma) first name, business name, or report number
Show My Reports
Estimated Processing Time for Samples Received on 3/6/2015
Lab
ProcessTime
Soil
1 to 2 Weeks
Nematode
1 week
Nematode(Problem)
3 to 5 days
Plant
2 days
Waste
7 to 10 days
Media
3 to 4 days
Solution
3 to 4 days

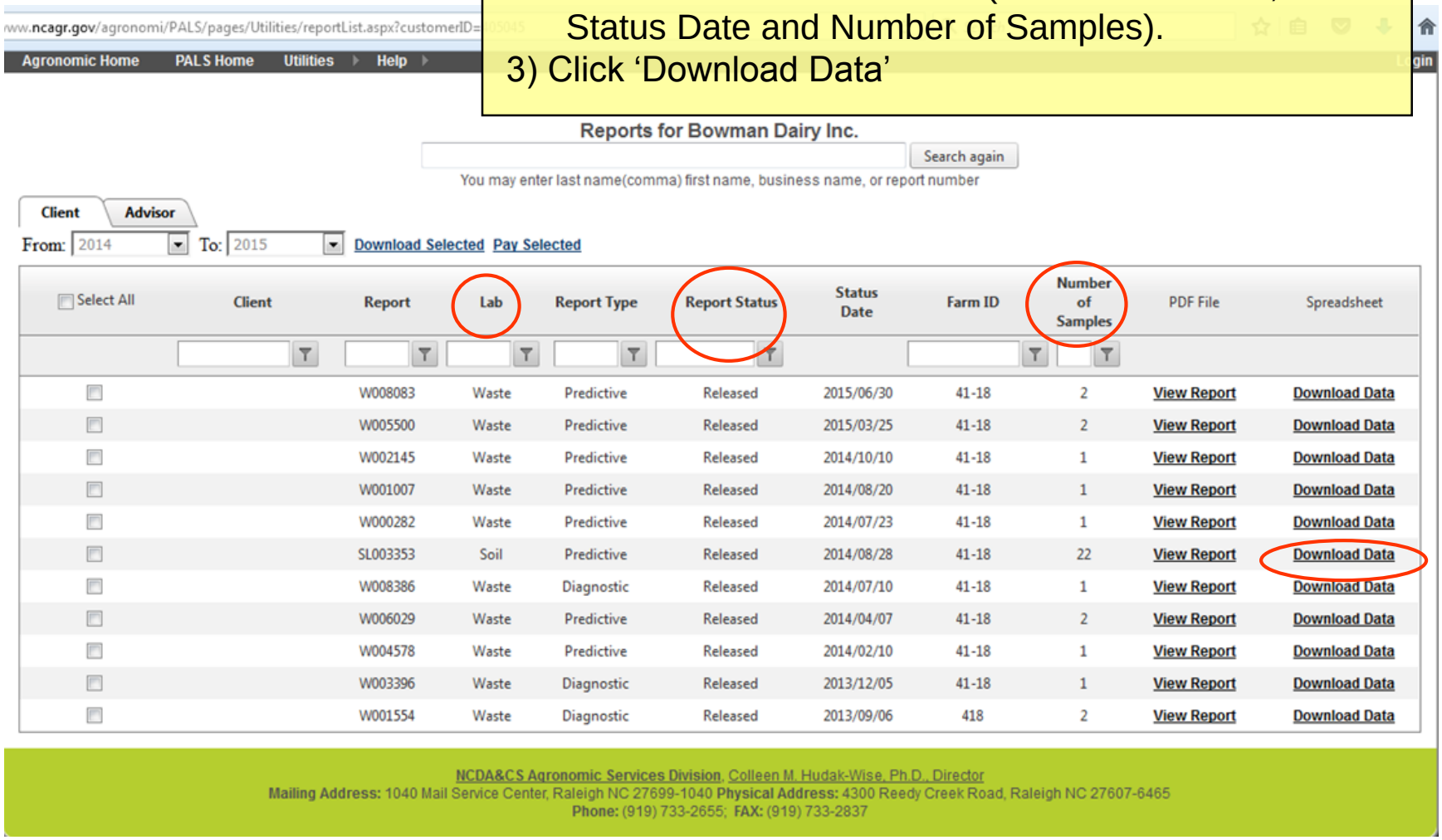
Download

After several letters are typed a list of closest matching search results will appear. Select the Producer of interest from the list of names and click ‘Search’.

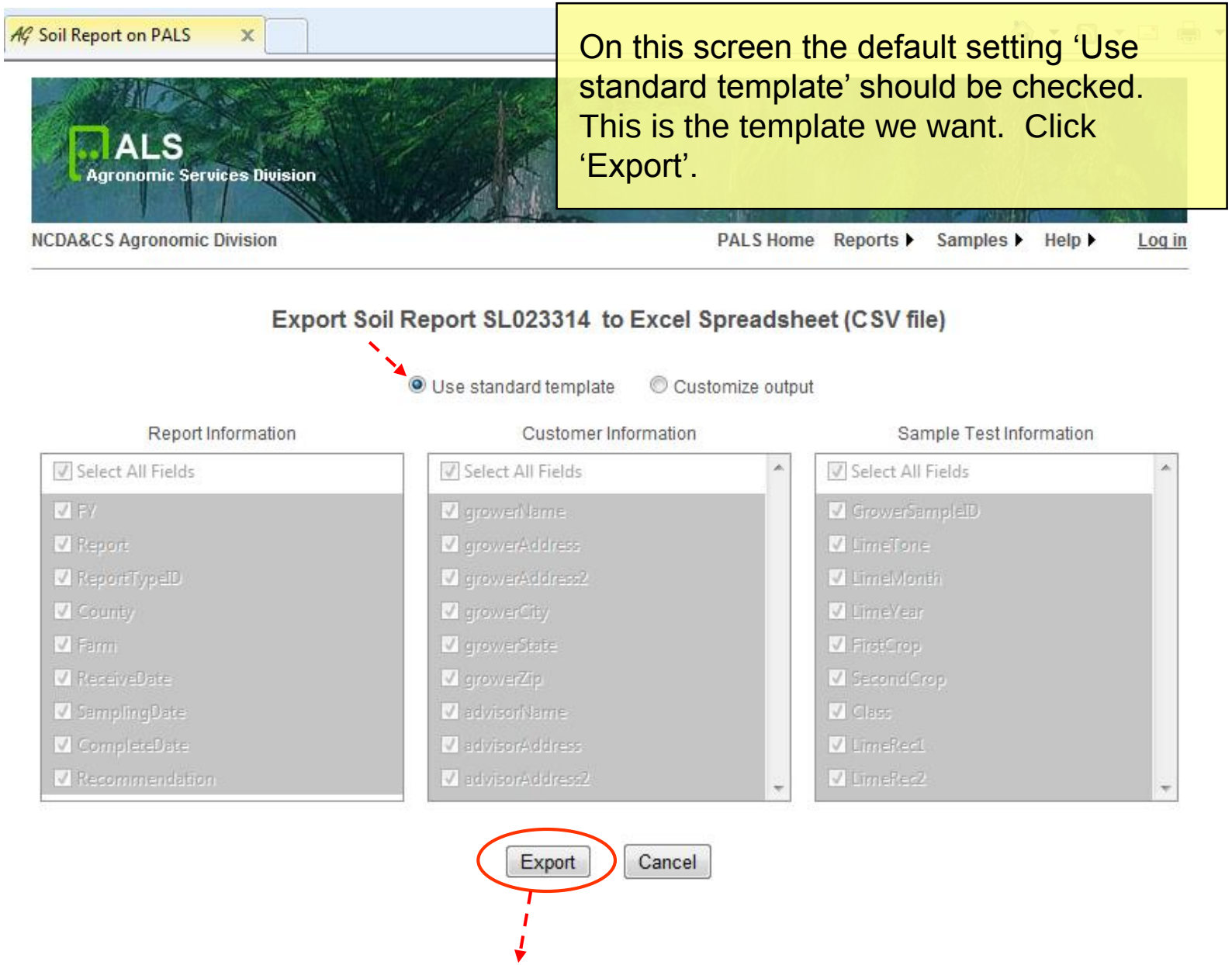


Download

1) Find the appropriate report in the Search Result list that is from the Soils Lab. (Note the Soil Lab, Status Date and Number of Samples).
3) Click 'Download Data'

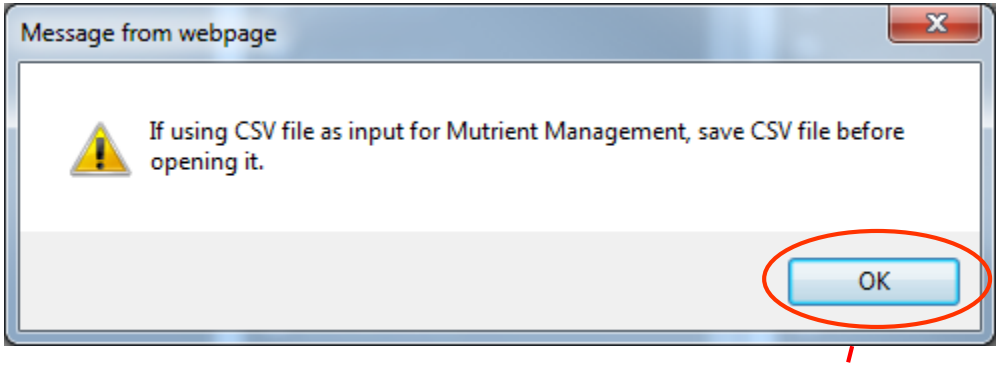


Download



On this screen the default setting 'Use standard template' should be checked. This is the template we want. Click 'Export'.

Download

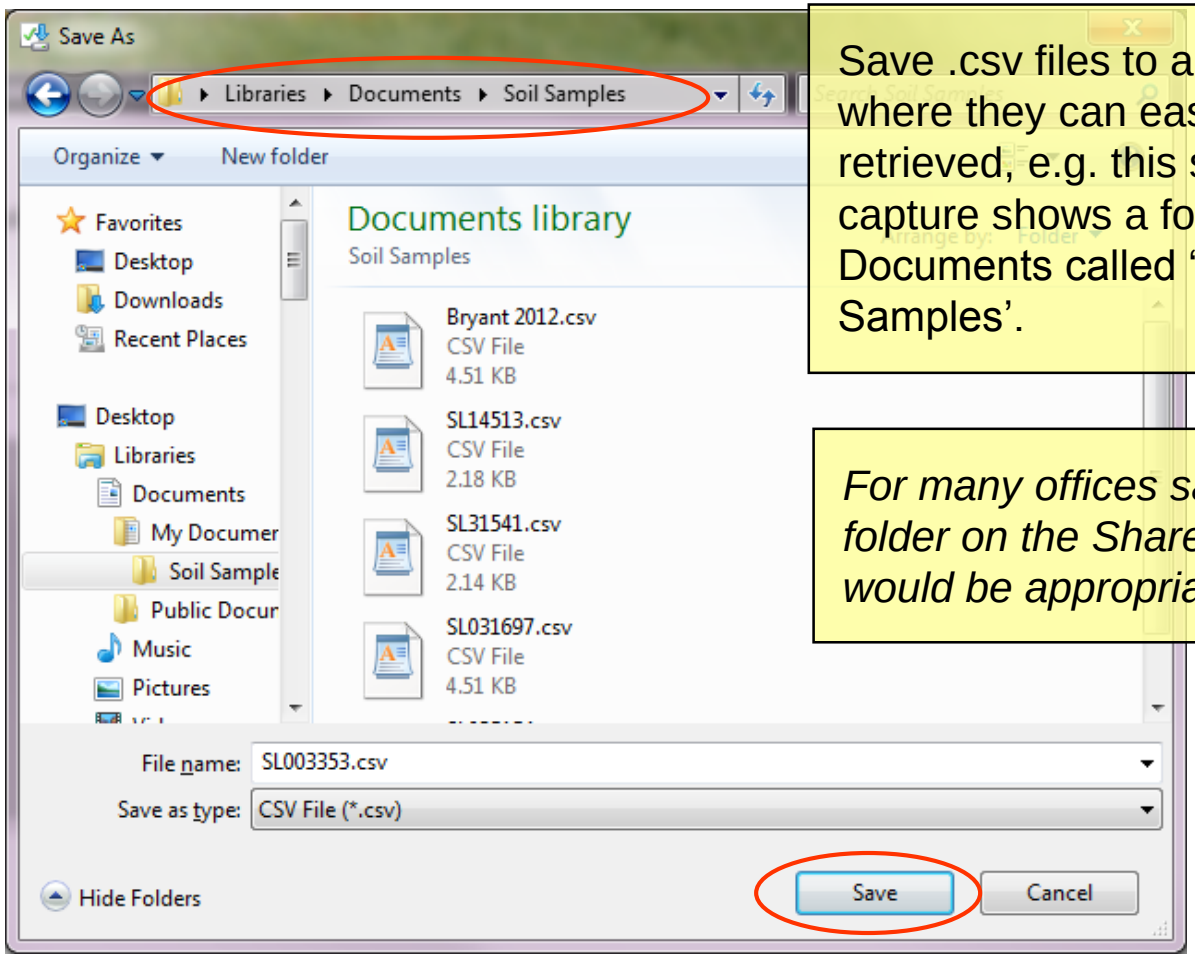


Click ‘OK’ to the message about saving CSV files for Nutrient Management.

*Note: If the .csv file is opened first with Excel it will be altered and will not be recognized by the Nutrient Management Program.

On this screen do NOT open the file. Choose ‘Save’ instead.

Download

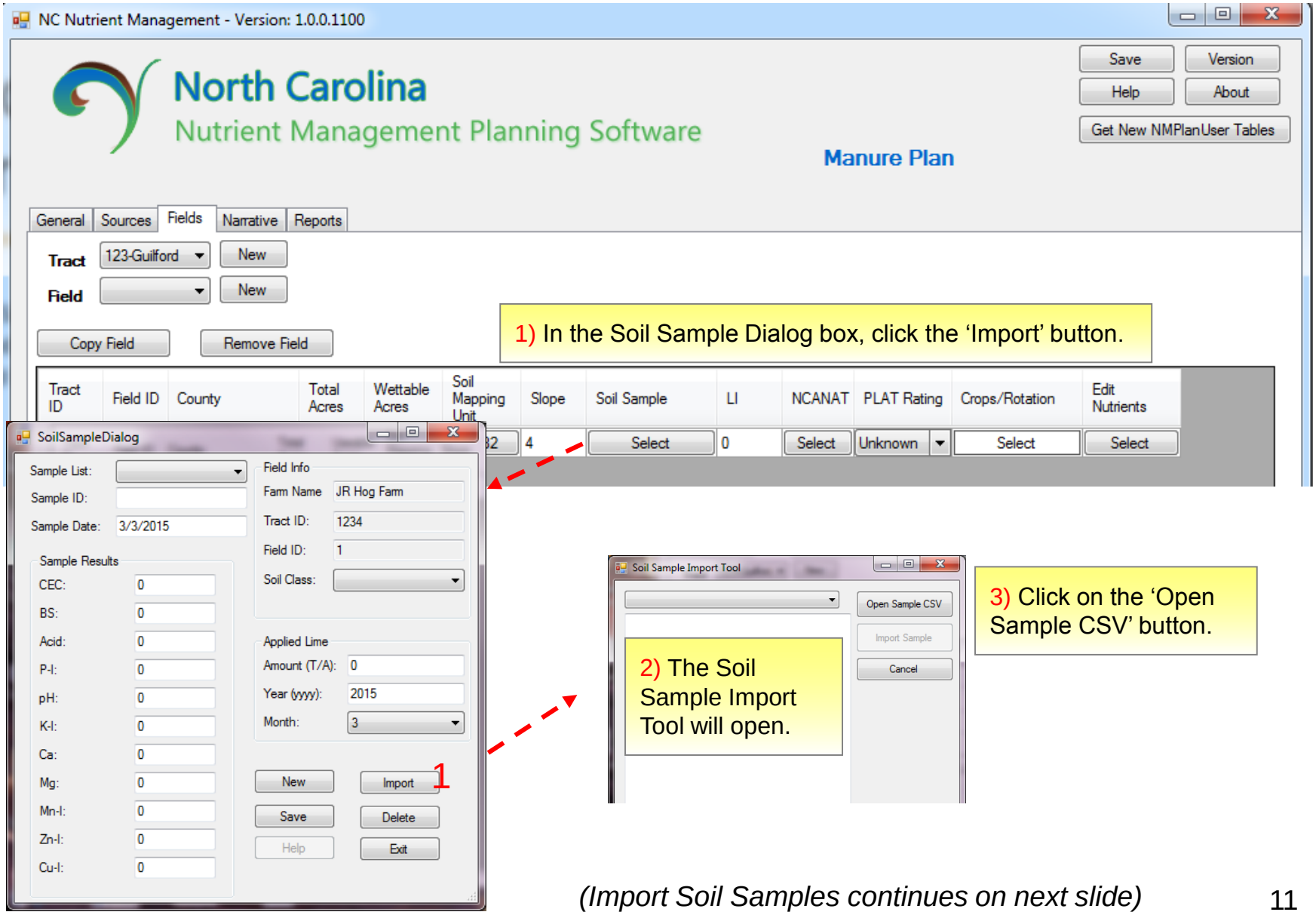


Save .csv files to a location where they can easily be retrieved, e.g. this screen capture shows a folder in My Documents called 'Soil Samples'.

For many offices saving to a folder on the Shared Drive would be appropriate.

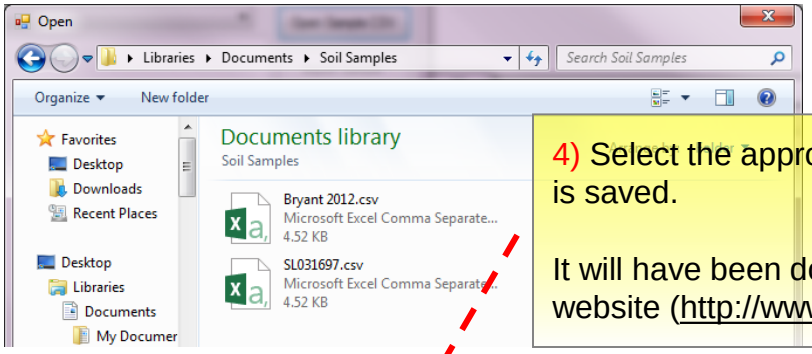
*Note: In some Web browsers you can use 'Internet Options' to specify where downloaded files are saved automatically.

Fields *(Import Soil Sample Information)*



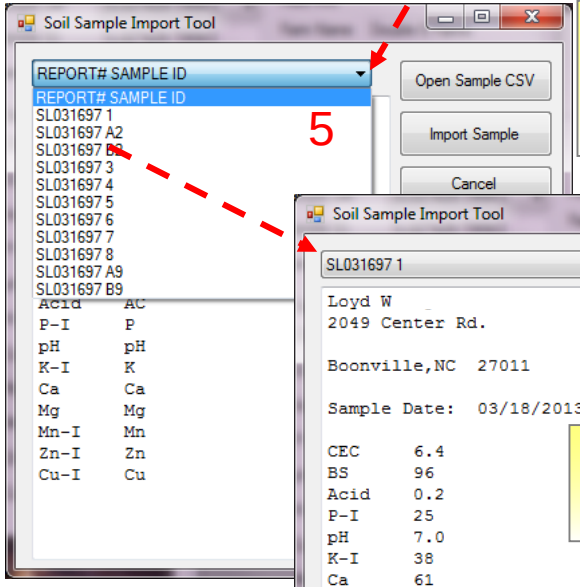
(Import Soil Samples continues on next slide)

Fields *(Import Soil Sample Information)*

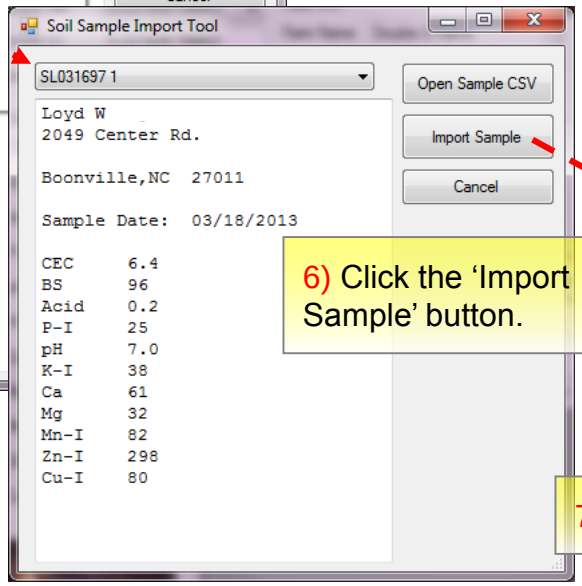


4) Select the appropriate soils .csv file from a file location where it is saved.

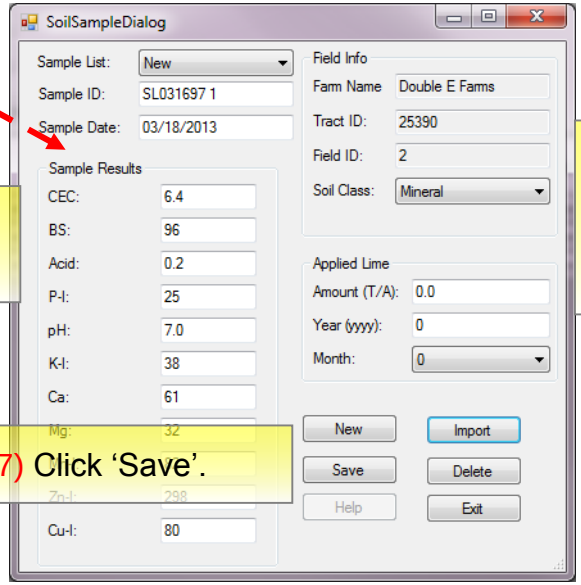
It will have been downloaded from the NCDA Agronomic Division website (http://www.ncagr.gov/agronomi/pals/) previously.



5) In the Soil Sample Import Tool choose the appropriate soil sample (for the field) from the drop-down list of all samples in the report.

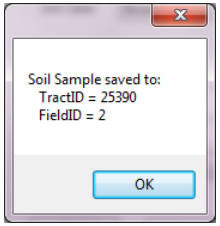


6) Click the 'Import Sample' button.



7) Click 'Save'.

8) A Pop-up message confirms the Save.



North Carolina
Nutrient Management Planning Software

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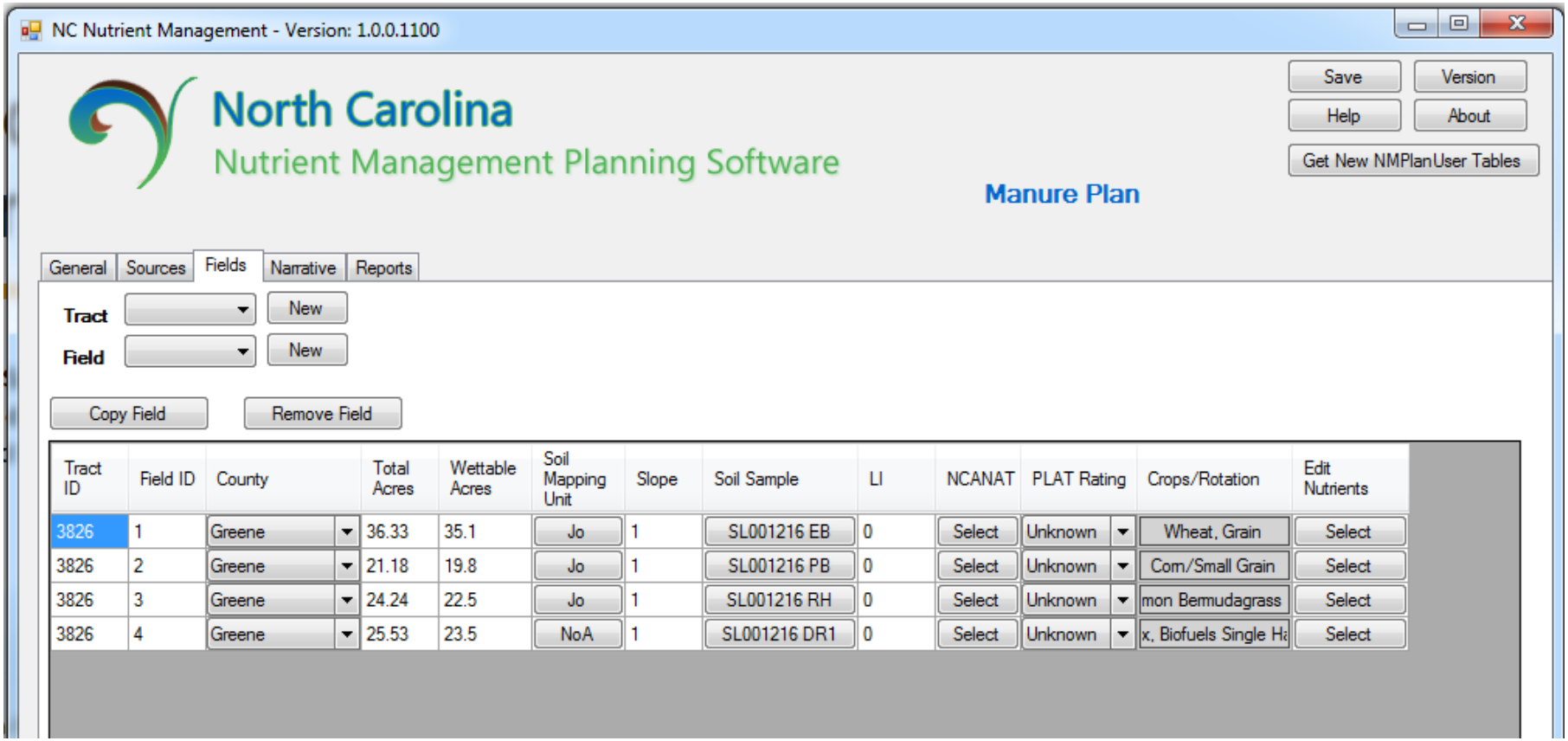
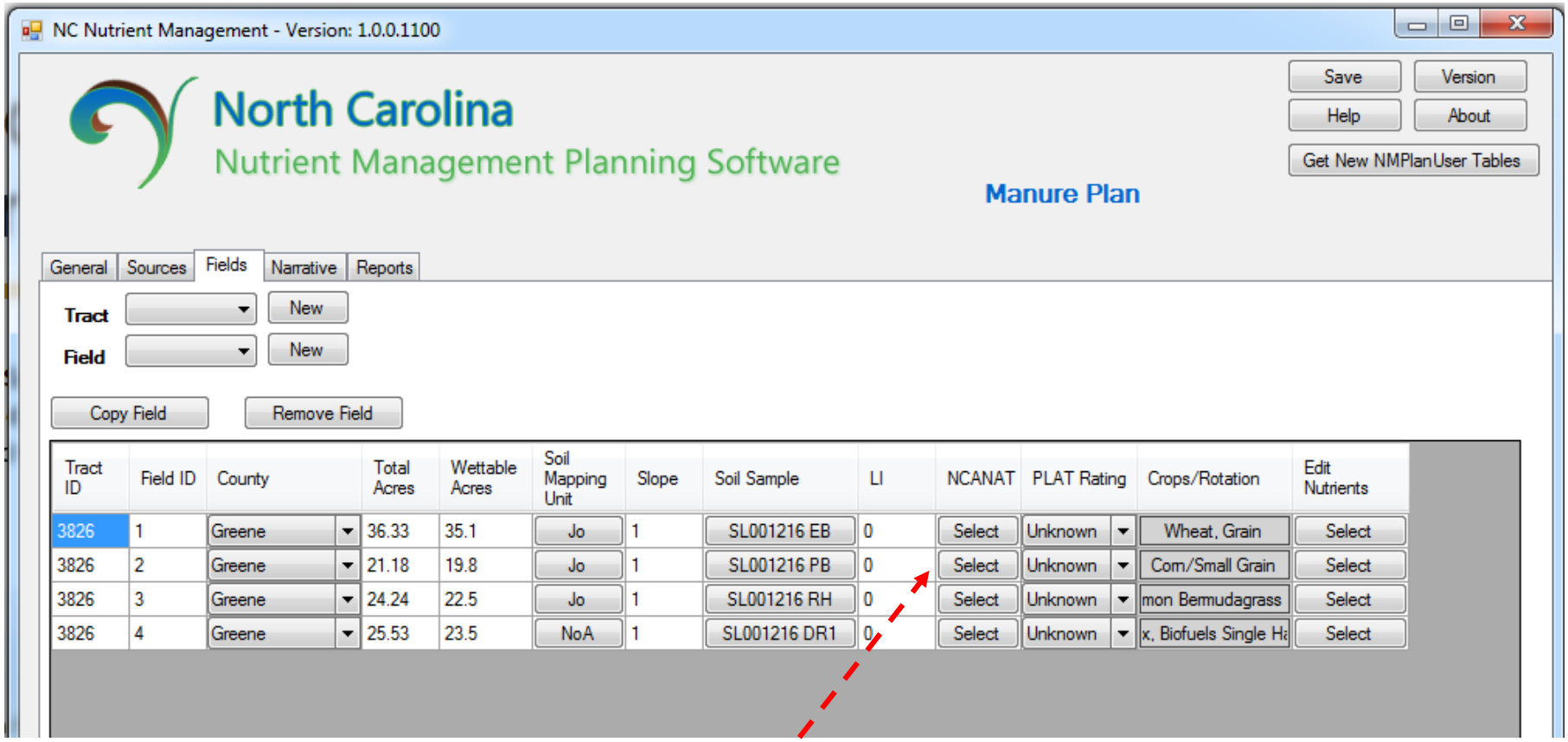
NCANAT

Step by Step Guidance

**additional information can be found at a later section of this manual*

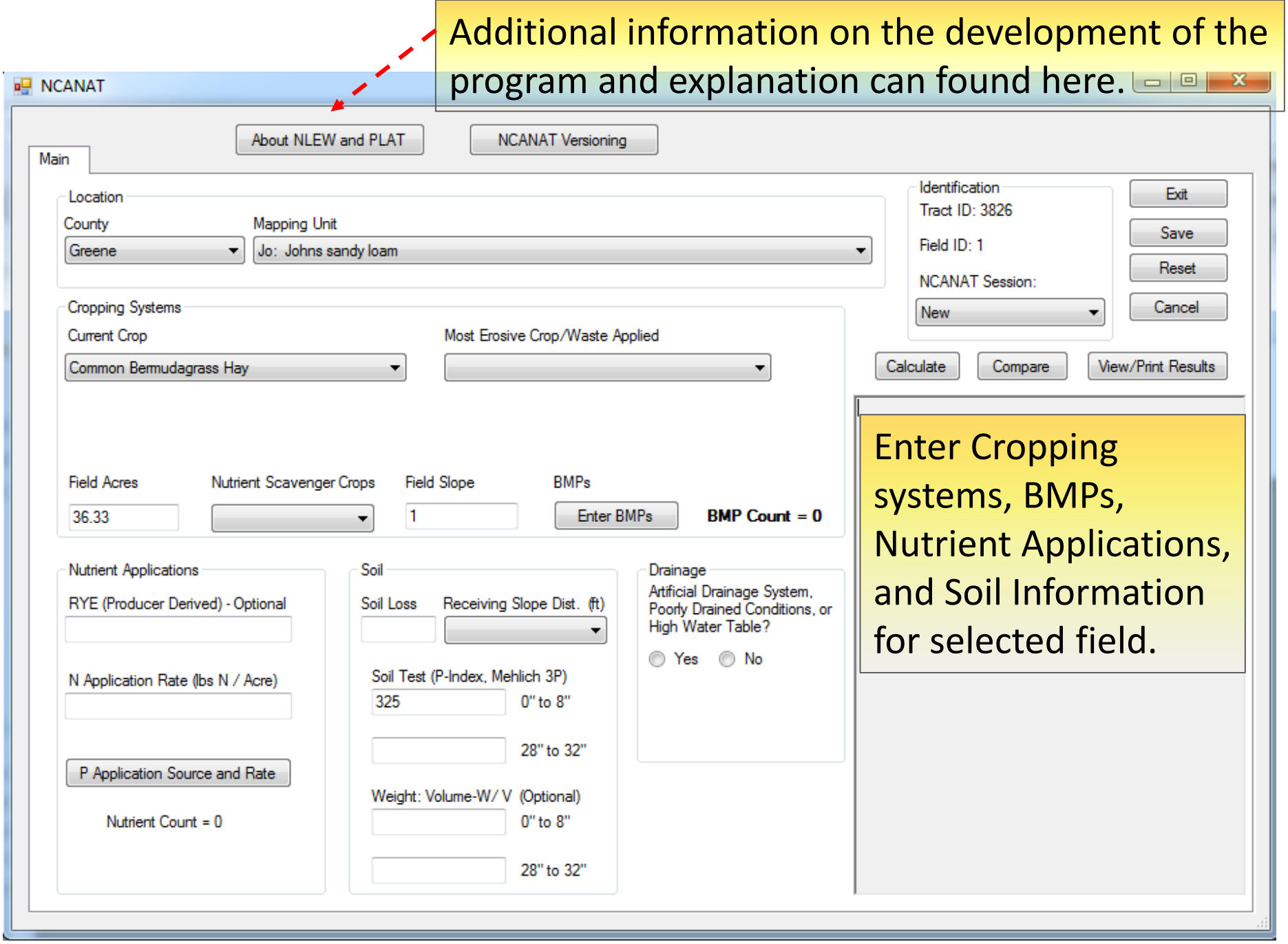
- At this time, NCANAT is not a stand alone program.
- Information must first be entered as if a nutrient management plan is being written up to the point of entering field data.

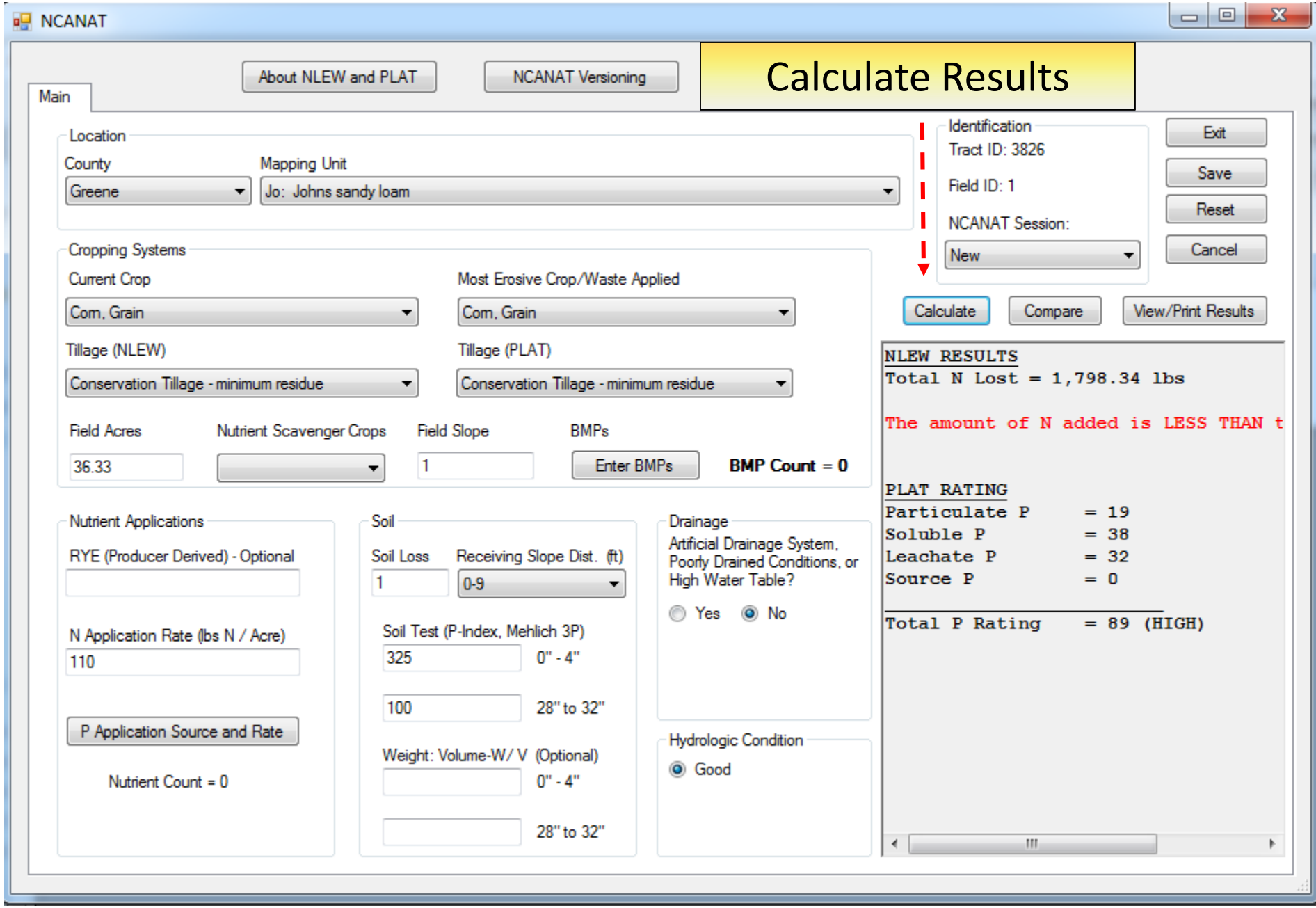


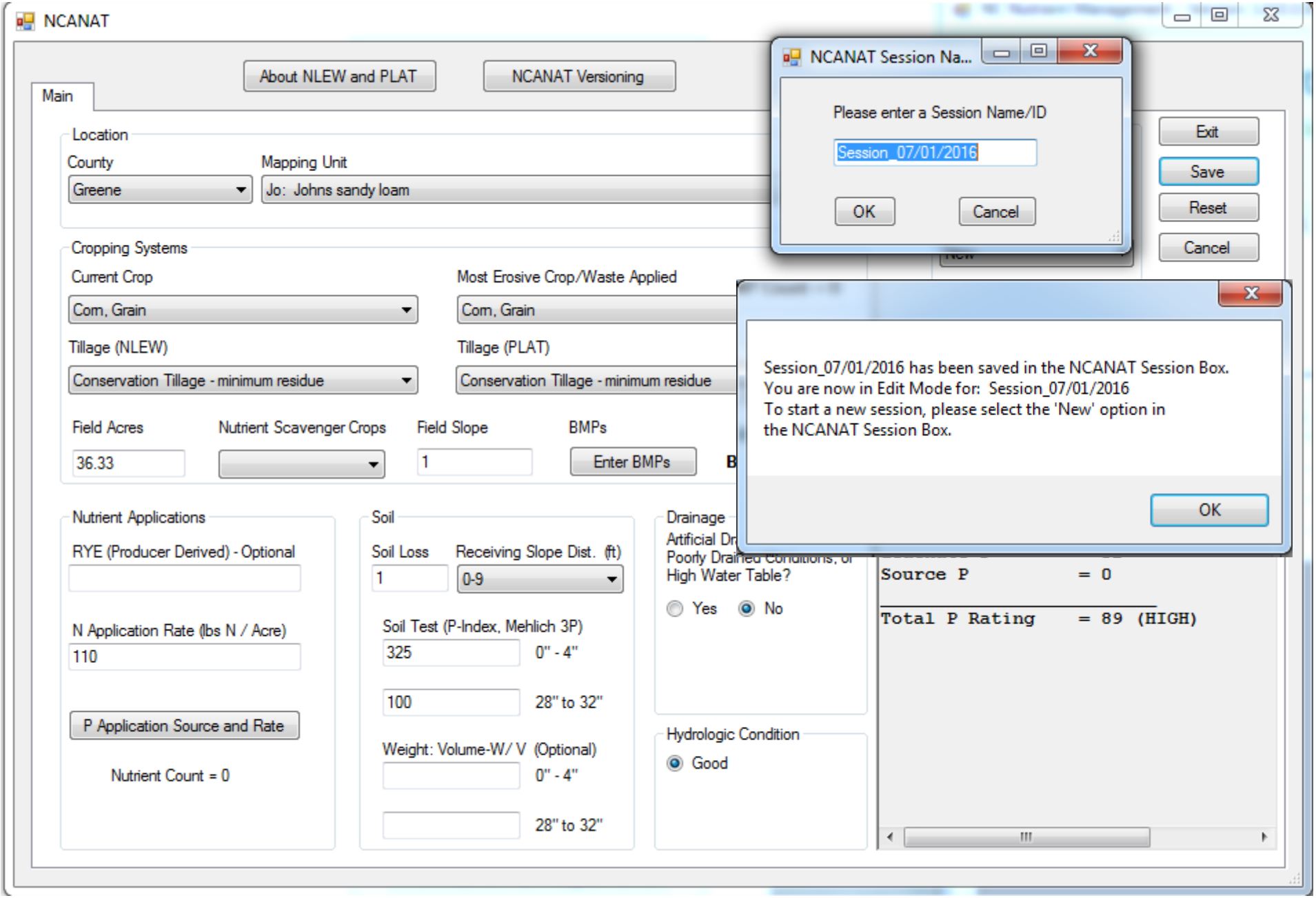


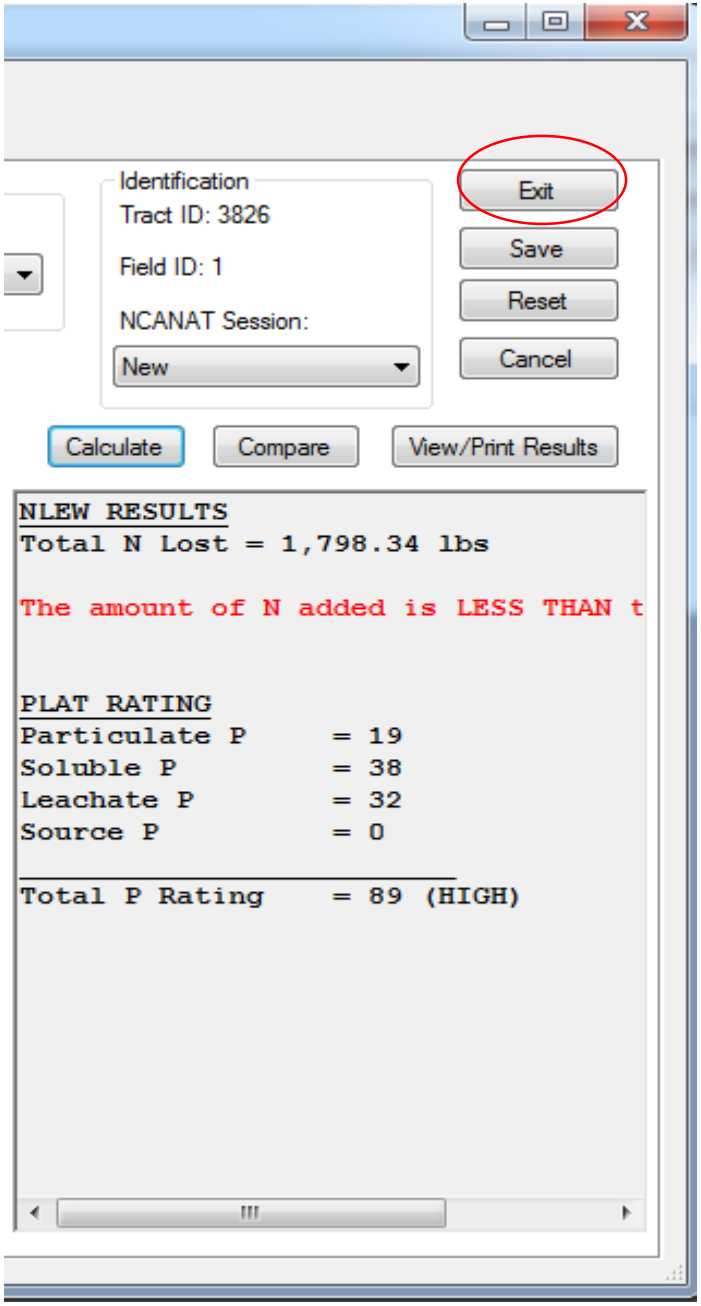
Click the select button under NCANAT.
Then select either NLEW or PLAT or Both

A new screen will become available to calculate NLEW/PLAT results


Additional information on the development of the program and explanation can found here.
NCANAT
About NLEW and PLAT
NCANAT Versioning
Main
Location
County
Greene
Mapping Unit
Jo: Johns sandy loam
Identification
Tract ID: 3826
Field ID: 1
NCANAT Session:
New
Exit
Save
Reset
Cancel
Cropping Systems
Current Crop
Common Bermudagrass Hay
Most Erosive Crop/Waste Applied
Calculate
Compare
View/Print Results
Field Acres
36.33
Nutrient Scavenger Crops
Field Slope
1
BMPs
Enter BMPs
BMP Count = 0
Enter Cropping systems, BMPs, Nutrient Applications, and Soil Information for selected field.
Nutrient Applications
RYE (Producer Derived) - Optional
N Application Rate (lbs N / Acre)
P Application Source and Rate
Nutrient Count = 0
Soil
Soil Loss
Receiving Slope Dist. (ft)
Soil Test (P-Index, Mehlich 3P)
325
0" to 8"
28" to 32"
Weight: Volume-W/V (Optional)
0" to 8"
28" to 32"
Drainage
Artificial Drainage System, Poorly Drained Conditions, or High Water Table?
Yes
No

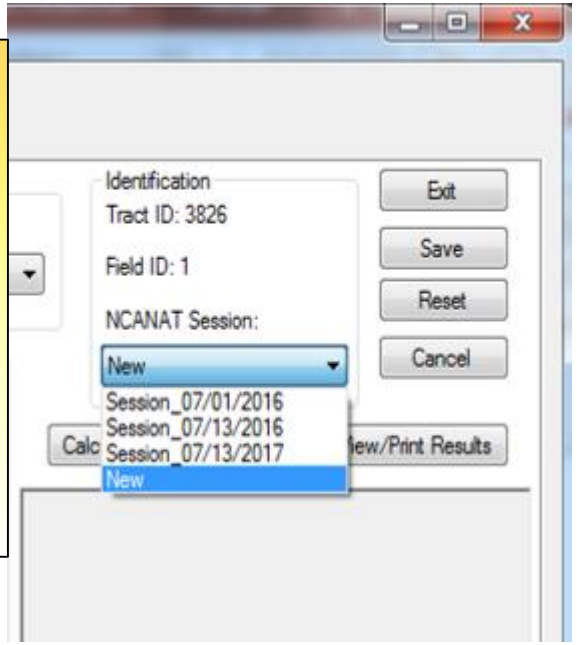

NCANAT
About NLEW and PLAT
NCANAT Versioning
Calculate Results
Main
Location
County
Greene
Mapping Unit
Jo: Johns sandy loam
Identification
Tract ID: 3826
Field ID: 1
NCANAT Session:
New
Exit
Save
Reset
Cancel
Cropping Systems
Current Crop
Corn, Grain
Most Erosive Crop/Waste Applied
Corn, Grain
Tillage (NLEW)
Conservation Tillage - minimum residue
Tillage (PLAT)
Conservation Tillage - minimum residue
Field Acres
36.33
Nutrient Scavenger Crops
Field Slope
1
BMPs
Enter BMPs
BMP Count = 0
Calculate
Compare
View/Print Results
NLEW RESULTS
Total N Lost = 1,798.34 lbs
The amount of N added is LESS THAN t
PLAT RATING
Particulate P = 19
Soluble P = 38
Leachate P = 32
Source P = 0
Total P Rating = 89 (HIGH)
Nutrient Applications
RYE (Producer Derived) - Optional
N Application Rate (lbs N / Acre)
110
P Application Source and Rate
Nutrient Count = 0
Soil
Soil Loss
1
Receiving Slope Dist. (ft)
0-9
Soil Test (P-Index, Mehlich 3P)
325
0" - 4"
100
28" to 32"
Weight: Volume-W/ V (Optional)
0" - 4"
28" to 32"
Drainage
Artificial Drainage System, Poorly Drained Conditions, or High Water Table?
Yes
No
Hydrologic Condition
Good

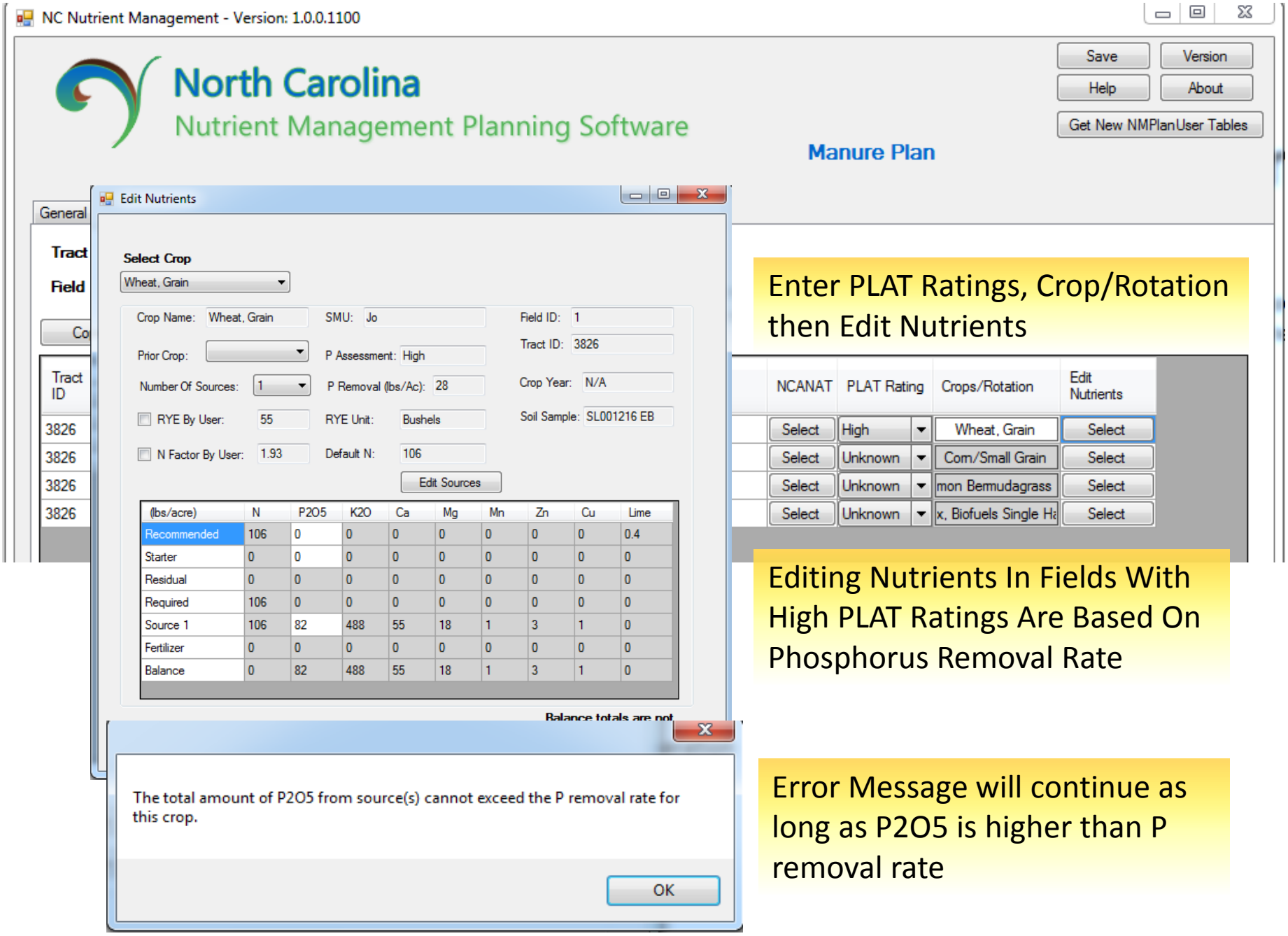

NCANAT
About NLEW and PLAT
NCANAT Versioning
Main
Location
County
Greene
Mapping Unit
Jo: Johns sandy loam
Cropping Systems
Current Crop
Corn, Grain
Most Erosive Crop/Waste Applied
Corn, Grain
Tillage (NLEW)
Conservation Tillage - minimum residue
Tillage (PLAT)
Conservation Tillage - minimum residue
Field Acres
36.33
Nutrient Scavenger Crops
Field Slope
1
BMPs
Enter BMPs
Nutrient Applications
RYE (Producer Derived) - Optional
N Application Rate (lbs N / Acre)
110
P Application Source and Rate
Nutrient Count = 0
Soil
Soil Loss
1
Receiving Slope Dist. (ft)
0-9
Soil Test (P-Index, Mehlich 3P)
325
0" - 4"
100
28" to 32"
Weight: Volume-W/ V (Optional)
0" - 4"
28" to 32"
Drainage
Artificial Dr
Poorly Drained Conditions, or
High Water Table?
Yes
No
Hydrologic Condition
Good
Exit
Save
Reset
Cancel
Source P = 0
Total P Rating = 89 (HIGH)
NCANAT Session Na...
Please enter a Session Name/ID
Session_07/01/2016
OK
Cancel
Session_07/01/2016 has been saved in the NCANAT Session Box.
You are now in Edit Mode for: Session_07/01/2016
To start a new session, please select the 'New' option in
the NCANAT Session Box.
OK



Select Exit for the final P Rating to be uploaded into the Nutrient Management Software for each field.

Selecting a previously saved session, then selecting Exit will also upload the final P Rating into the Nutrient Management Software.





Enter PLAT Ratings, Crop/Rotation then Edit Nutrients

Editing Nutrients In Fields With High PLAT Ratings Are Based On Phosphorus Removal Rate

Error Message will continue as long as P2O5 is higher than P removal rate

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NCANAT Compare Function

North Carolina
Nutrient Management Planning Software

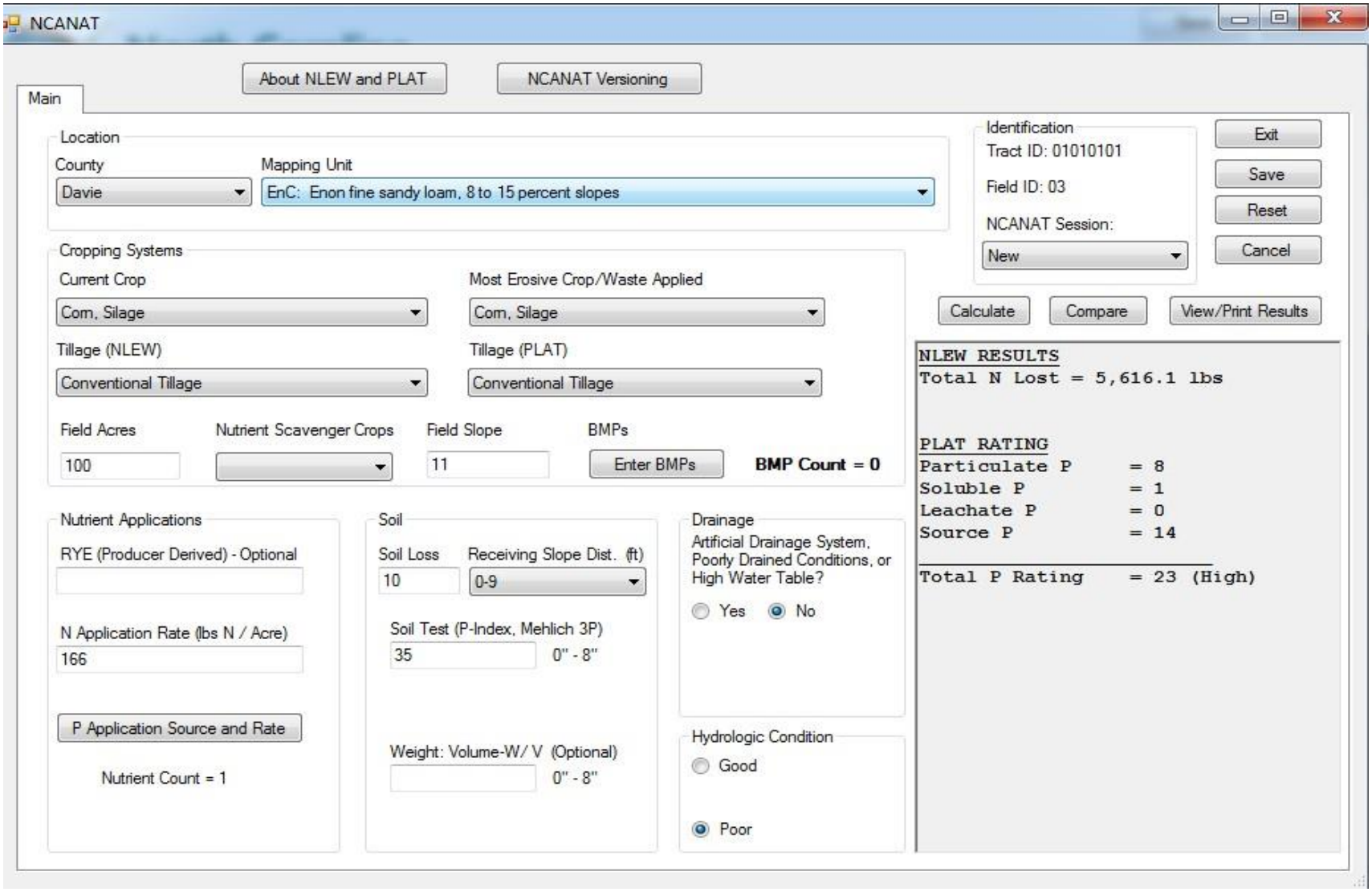
NCANAT Compare Function

- The function of this tool is to allow the user to calculate reductions in nitrogen and phosphorus through running various scenarios with conversation tillage methods, nutrient scavenger crops and best management practices.

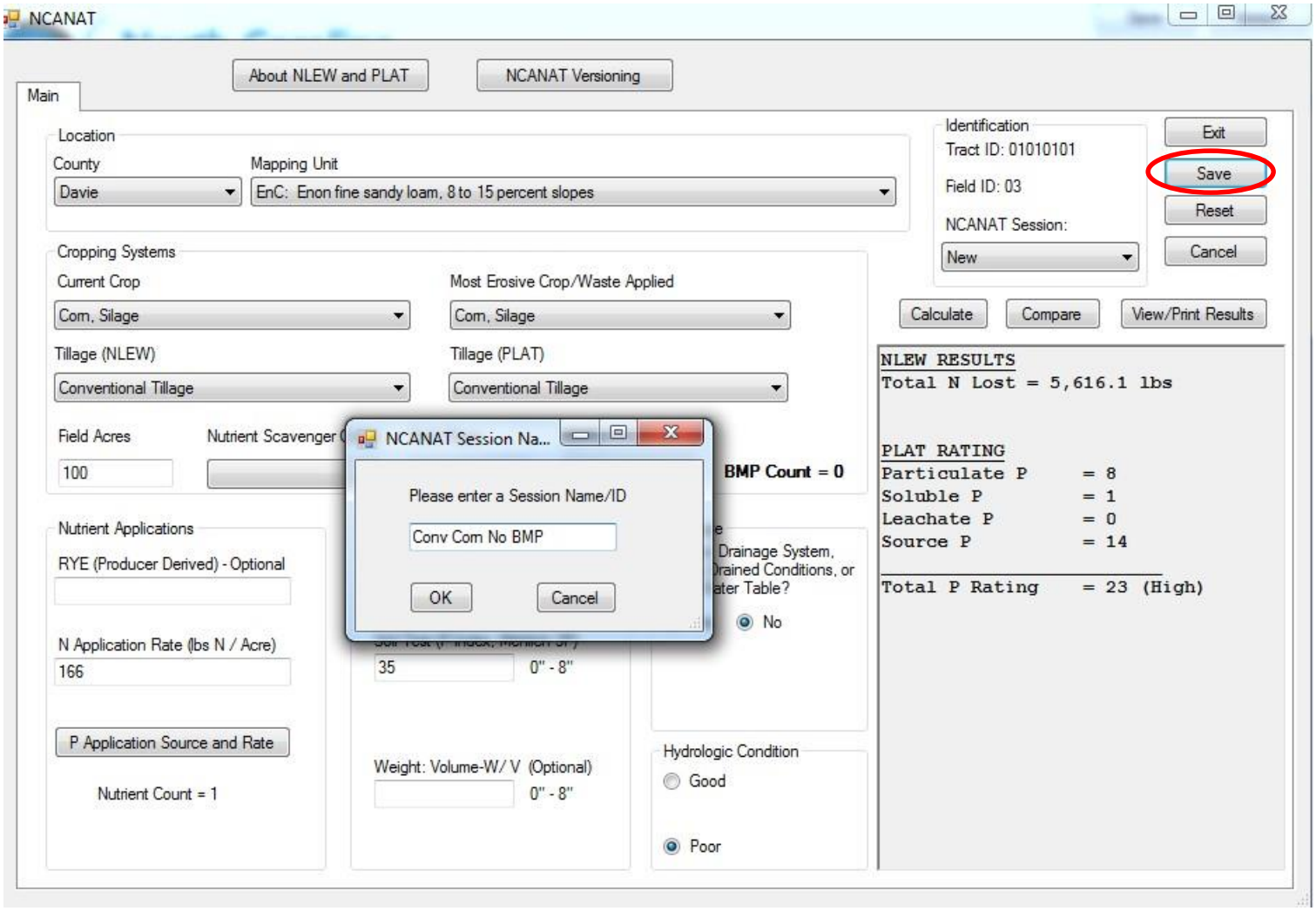
- This is the approved method for calculating required nutrient and sediment loss reductions for NC Agriculture Cost Share Program.

Example Session 1 – Before Conditions

Conventional Tillage No BMP Poor Hydrologic Condition and High Phosphorus

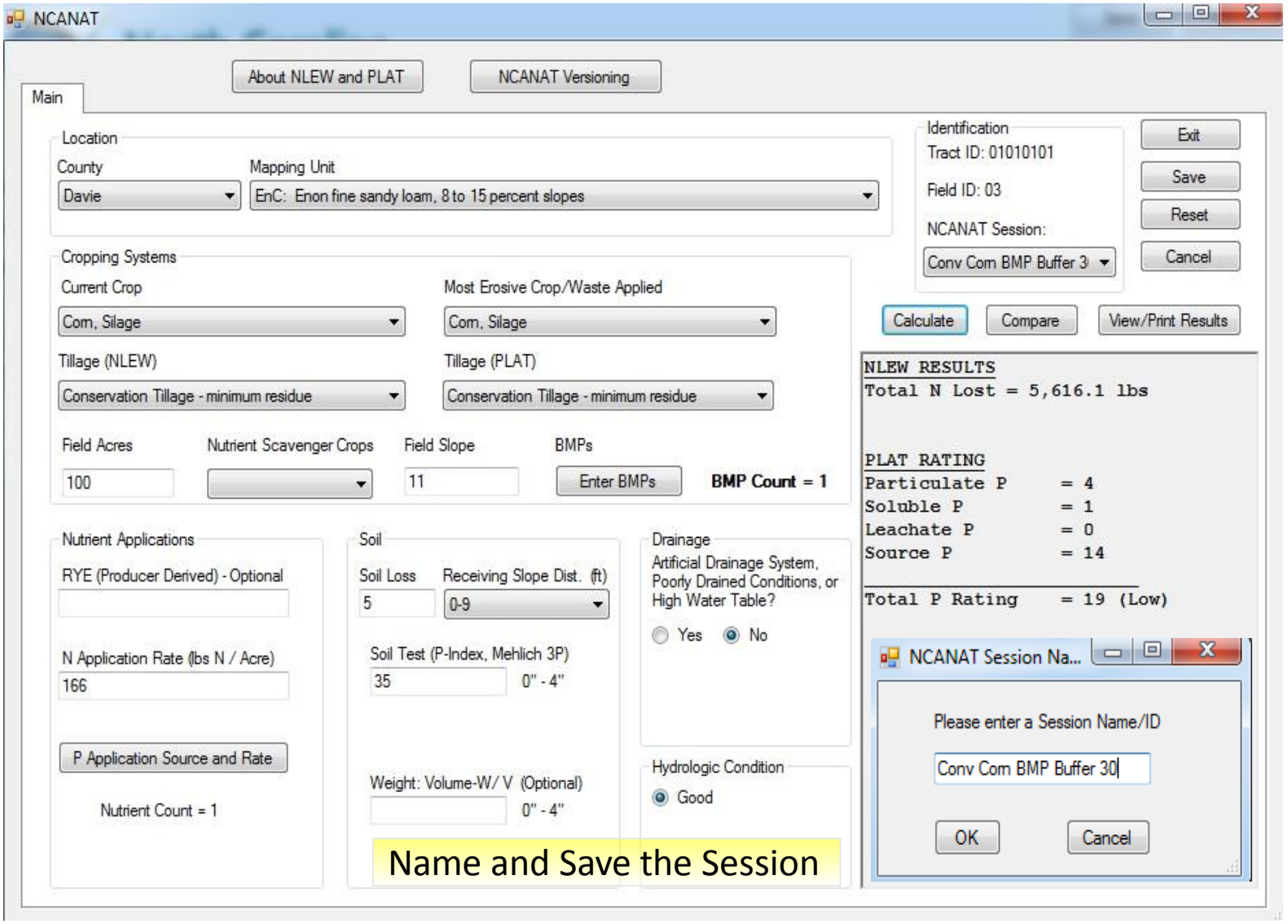


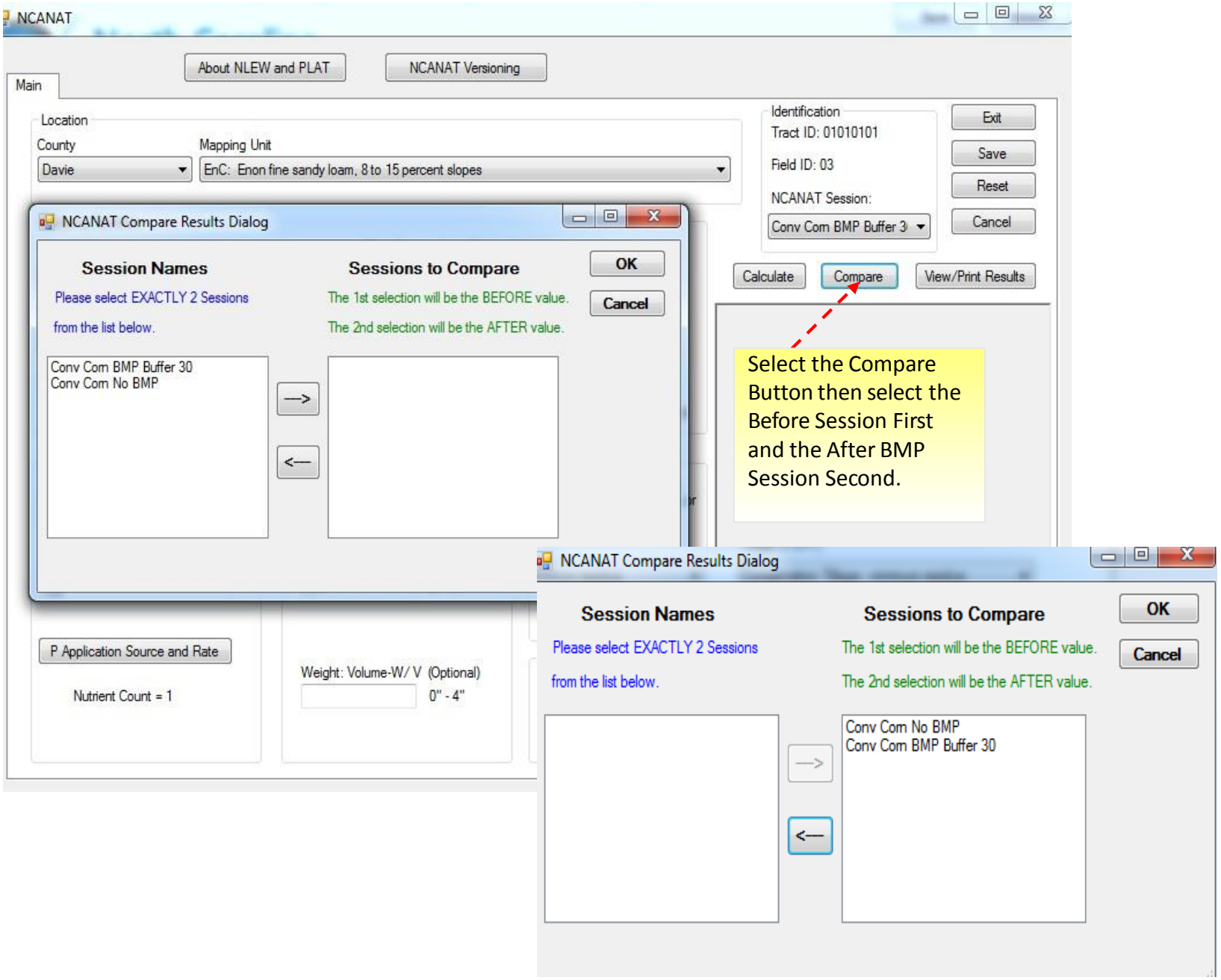
Name and Save the Session

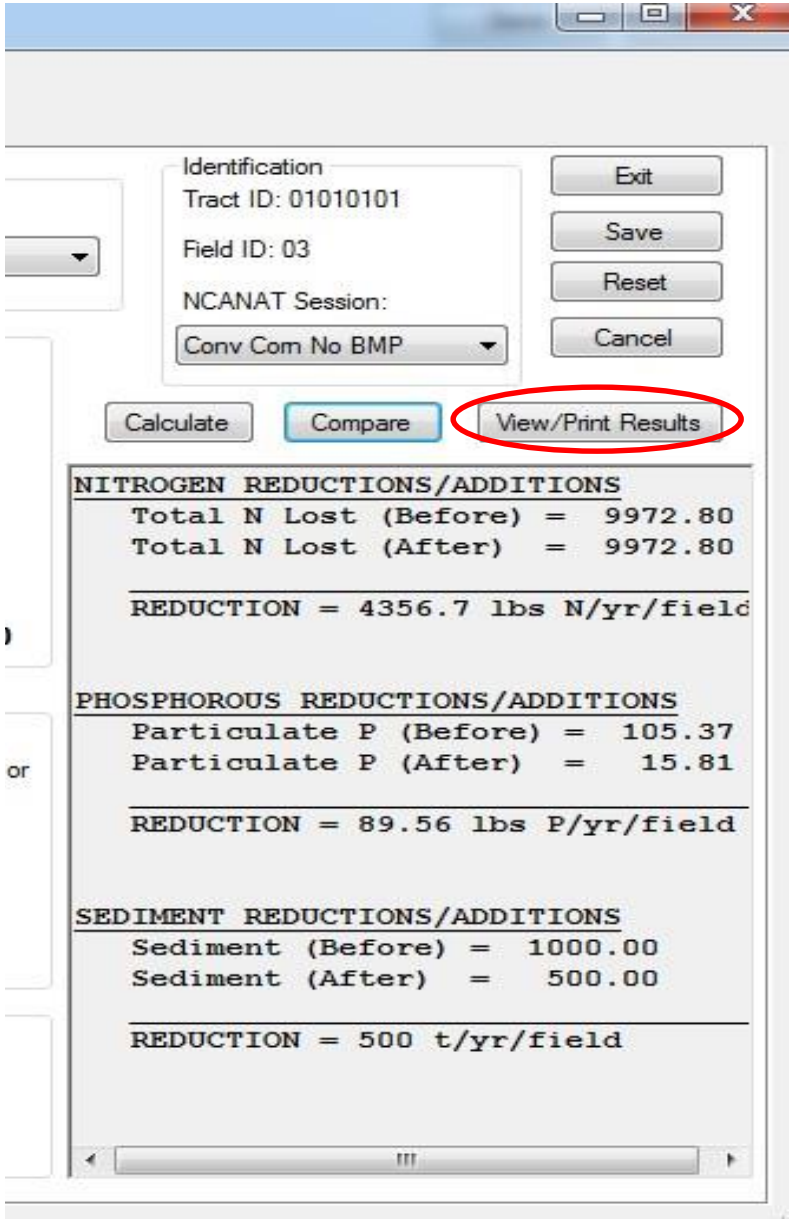


Example Session 2 – After Conditions

Same Field Changed Tillage to Conservation Tillage and added a 30-ft BMP Buffer.




NCANAT
About NLEW and PLAT
NCANAT Versioning
Main
Location
County
Davie
Mapping Unit
EnC: Enon fine sandy loam, 8 to 15 percent slopes
Identification
Tract ID: 01010101
Field ID: 03
NCANAT Session:
Conv Com BMP Buffer 3
Exit
Save
Reset
Cancel
Calculate
Compare
View/Print Results
NCANAT Compare Results Dialog
Session Names
Please select EXACTLY 2 Sessions
from the list below.
Sessions to Compare
The 1st selection will be the BEFORE value.
The 2nd selection will be the AFTER value.
OK
Cancel
Conv Com BMP Buffer 30
Conv Com No BMP
—>
<—
Select the Compare Button then select the Before Session First and the After BMP Session Second.
P Application Source and Rate
Nutrient Count = 1
Weight: Volume-W/ V (Optional)
0" - 4"
NCANAT Compare Results Dialog
Session Names
Please select EXACTLY 2 Sessions
from the list below.
Sessions to Compare
The 1st selection will be the BEFORE value.
The 2nd selection will be the AFTER value.
OK
Cancel
Conv Com No BMP
Conv Com BMP Buffer 30
—>
<—



View/Print Results allows for keeping hard copy record for your file.

Comparison shows the Reductions/Additions of nitrogen, phosphorous and sediment before and after BMPs.

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Nutrient Management Planning Software

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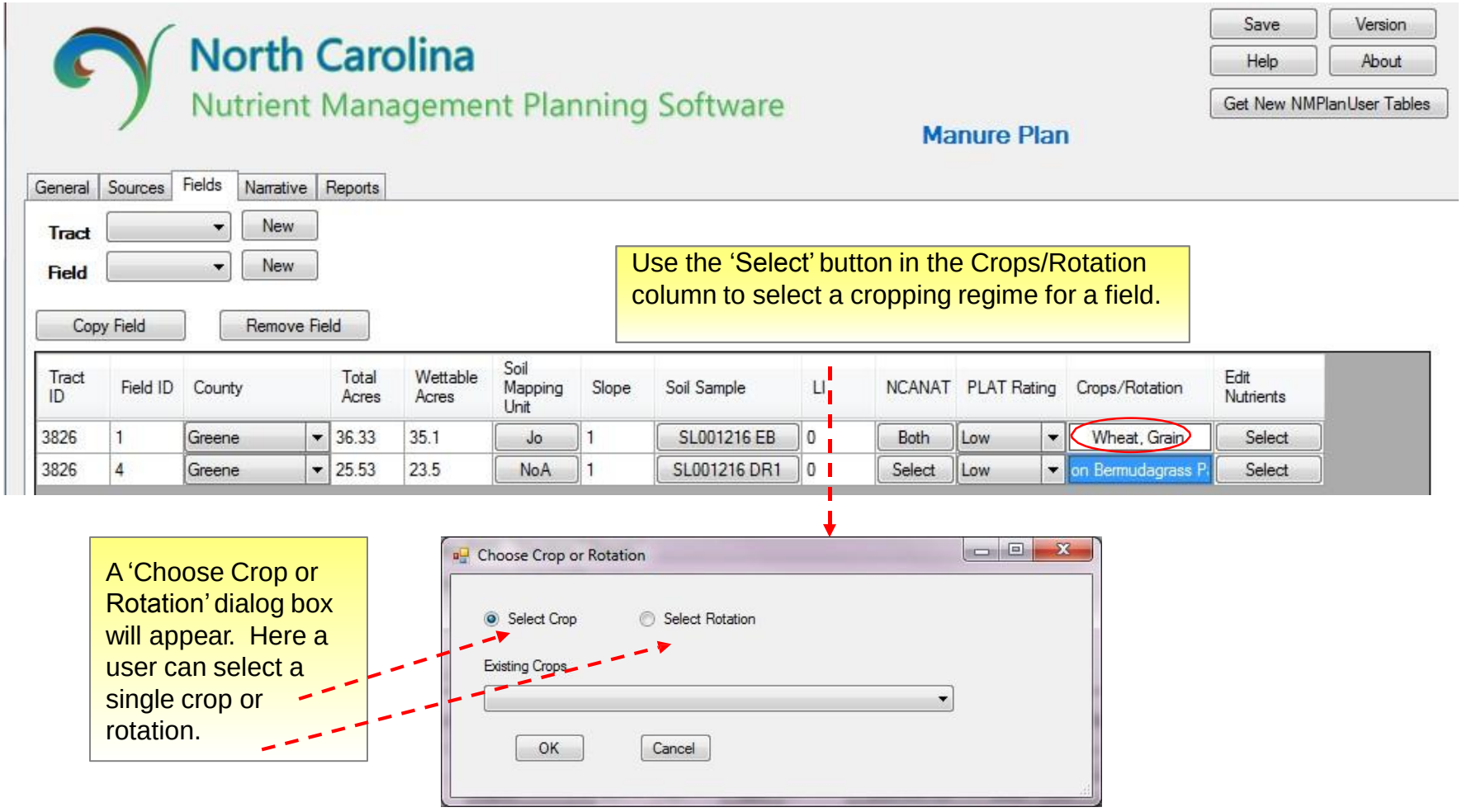
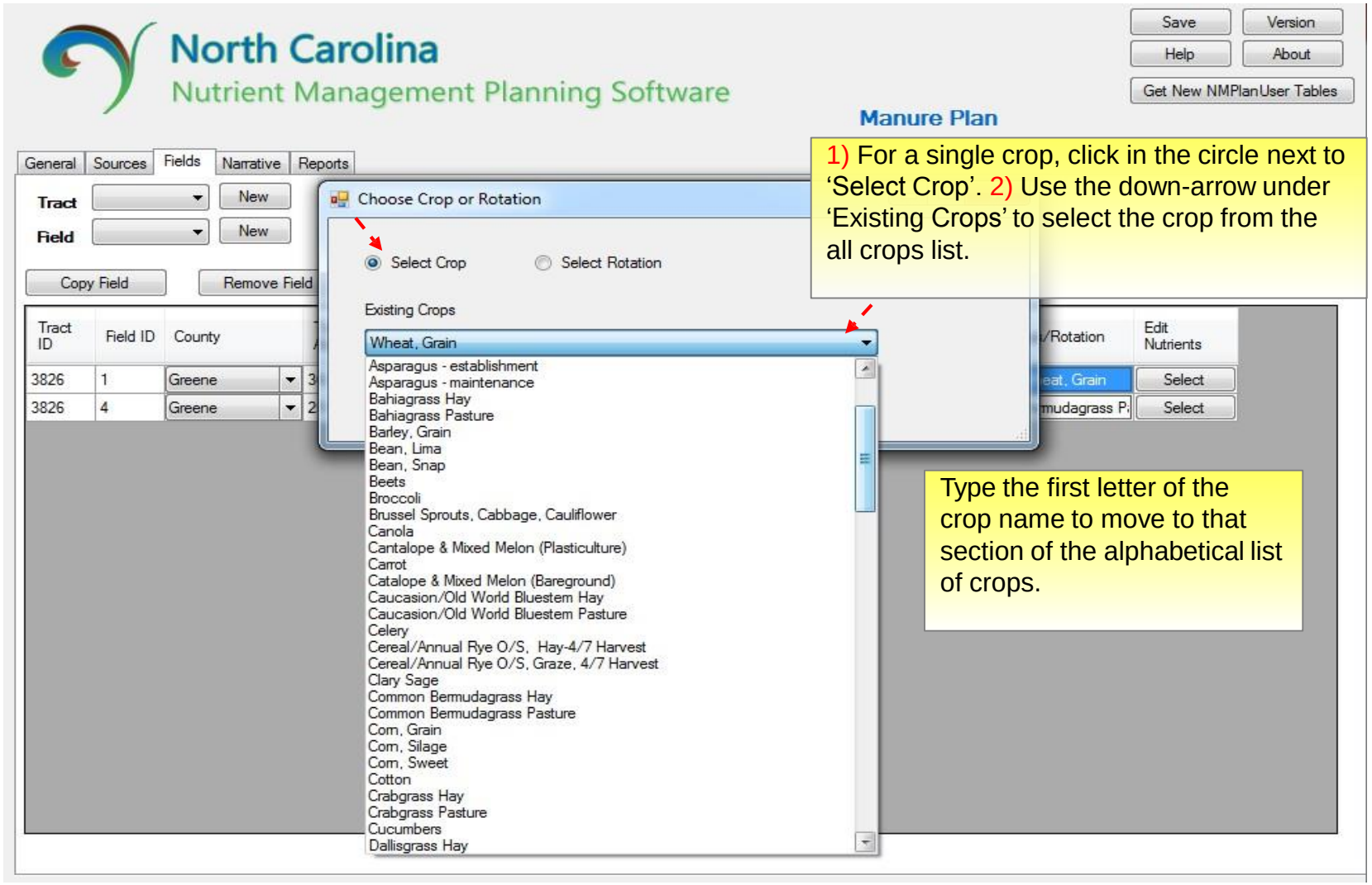
Adding Crops and Rotations

Crops/ Rotation

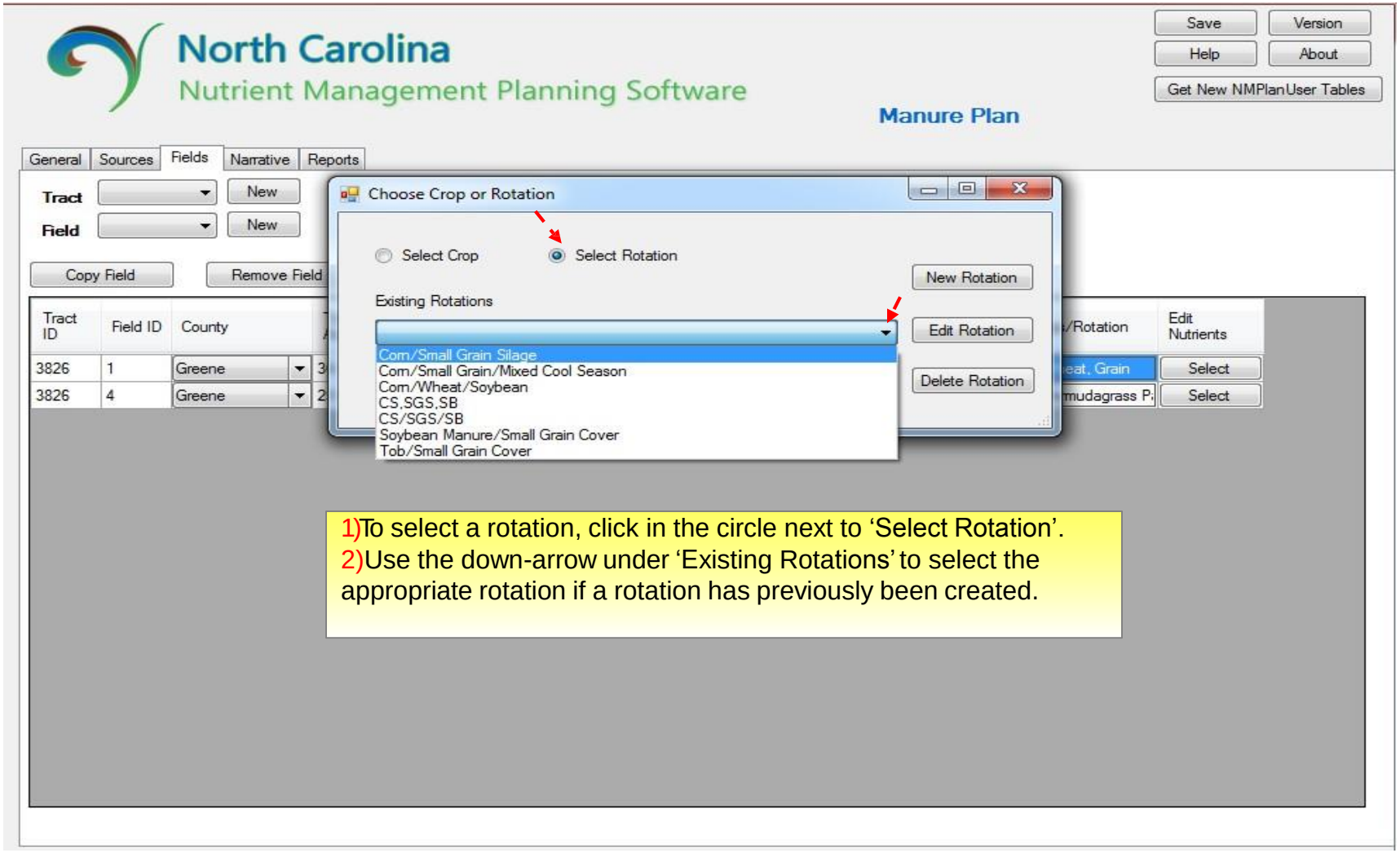


Crops/ Rotation *(single crop)*



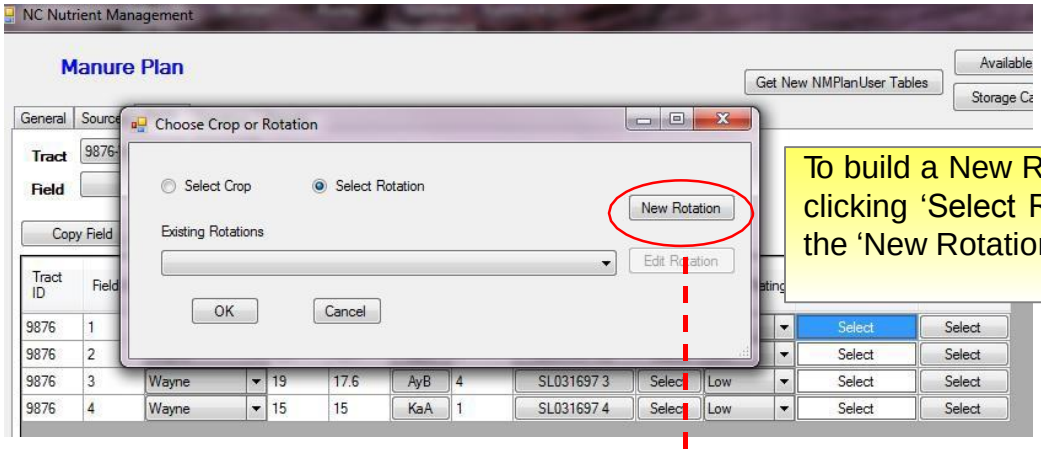
Remember that each crop that is selected must have a nutrient application regime assigned to it using the ‘Edit Nutrients’ function.

Crops/ Rotation *(rotation)*

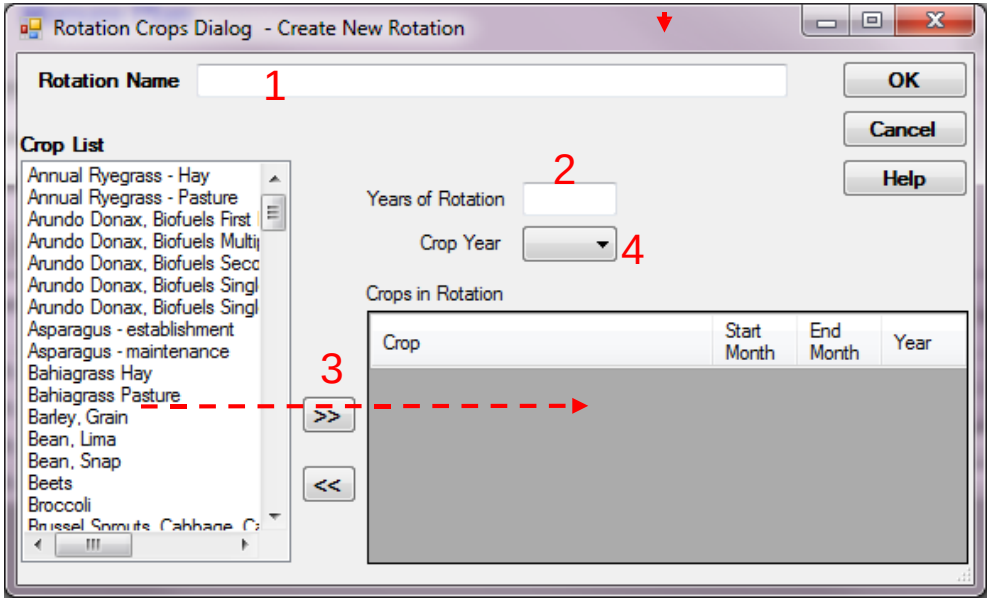


1)To select a rotation, click in the circle next to ‘Select Rotation’.
2)Use the down-arrow under ‘Existing Rotations’ to select the appropriate rotation if a rotation has previously been created.

Crops/ Rotation *(New Rotation Builder)*



To build a New Rotation: After clicking 'Select Rotation', click the 'New Rotation' button.



In the Create New Rotation dialog box:

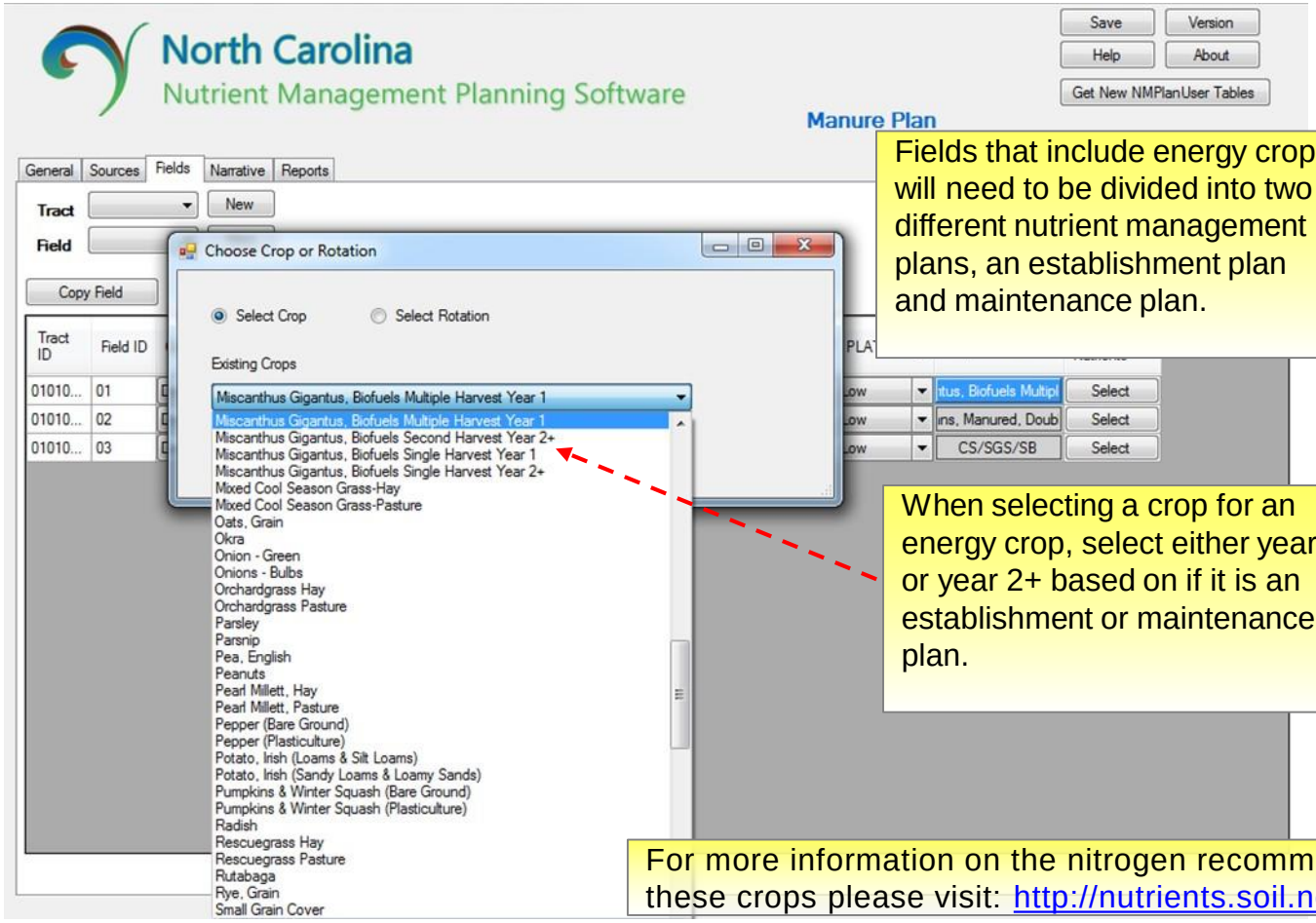
1)Assign a 'Rotation Name'.
2) Add total Years of the Rotation.
3)Move crops (in order) to the Crops in Rotation box by selecting them from the Crop List and clicking on the "»" button.
4) Adjust the 'Crop Year' for a crop if necessary (*defaults are usually OK*).

The Crop, Start Month, End Month and Year will fill-in automatically.

Start and End Month refer to the time periods when it is OK to apply waste to that crop (based on plant nutrient uptake).

Use the '«' button to remove a crop from the list if necessary.

Crops/ Rotation *(Energy Crops)*



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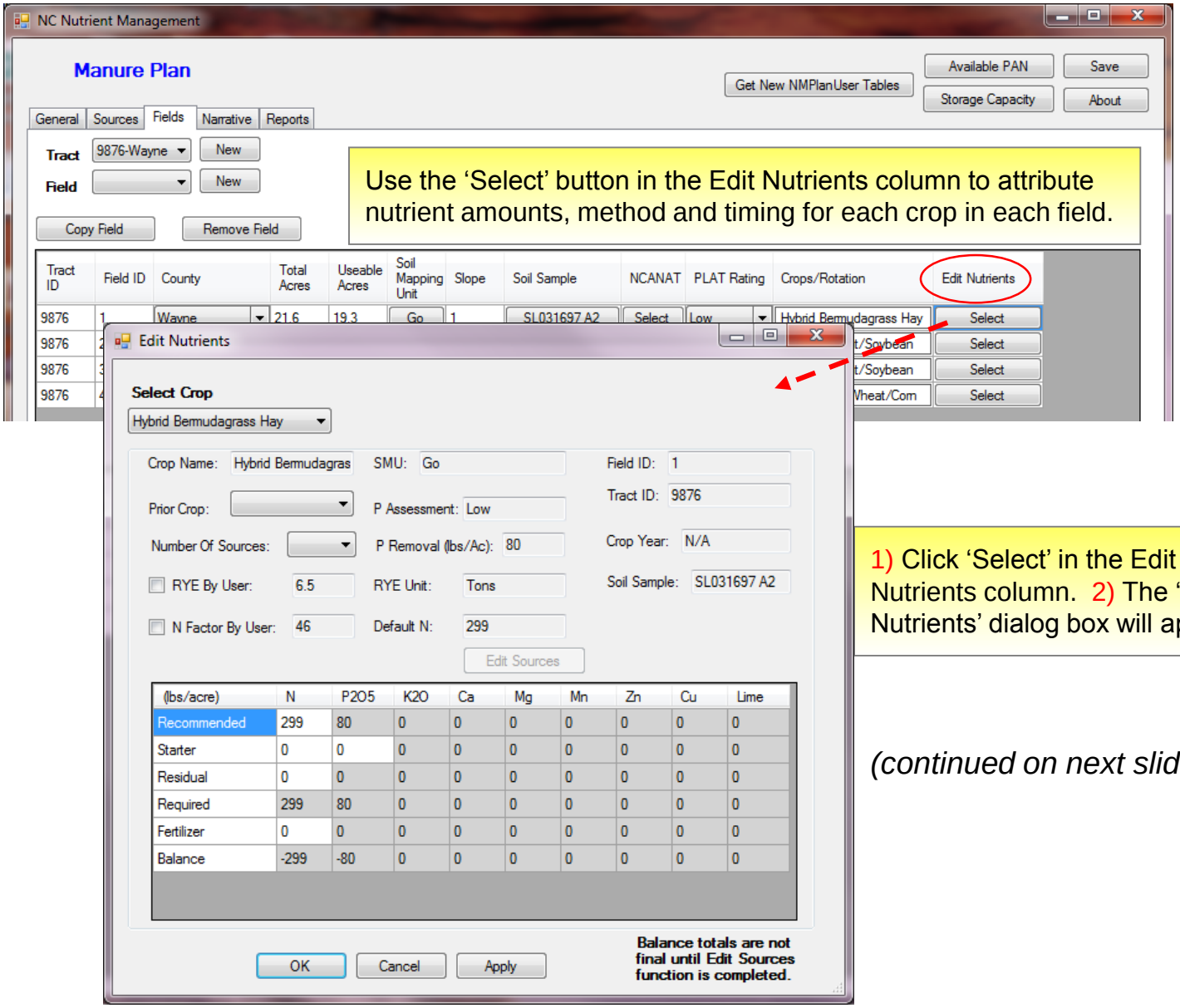
Nutrient Management Planning Software

User Manual

Editing Nutrients

Edit Nutrients *(single crop scenario)*

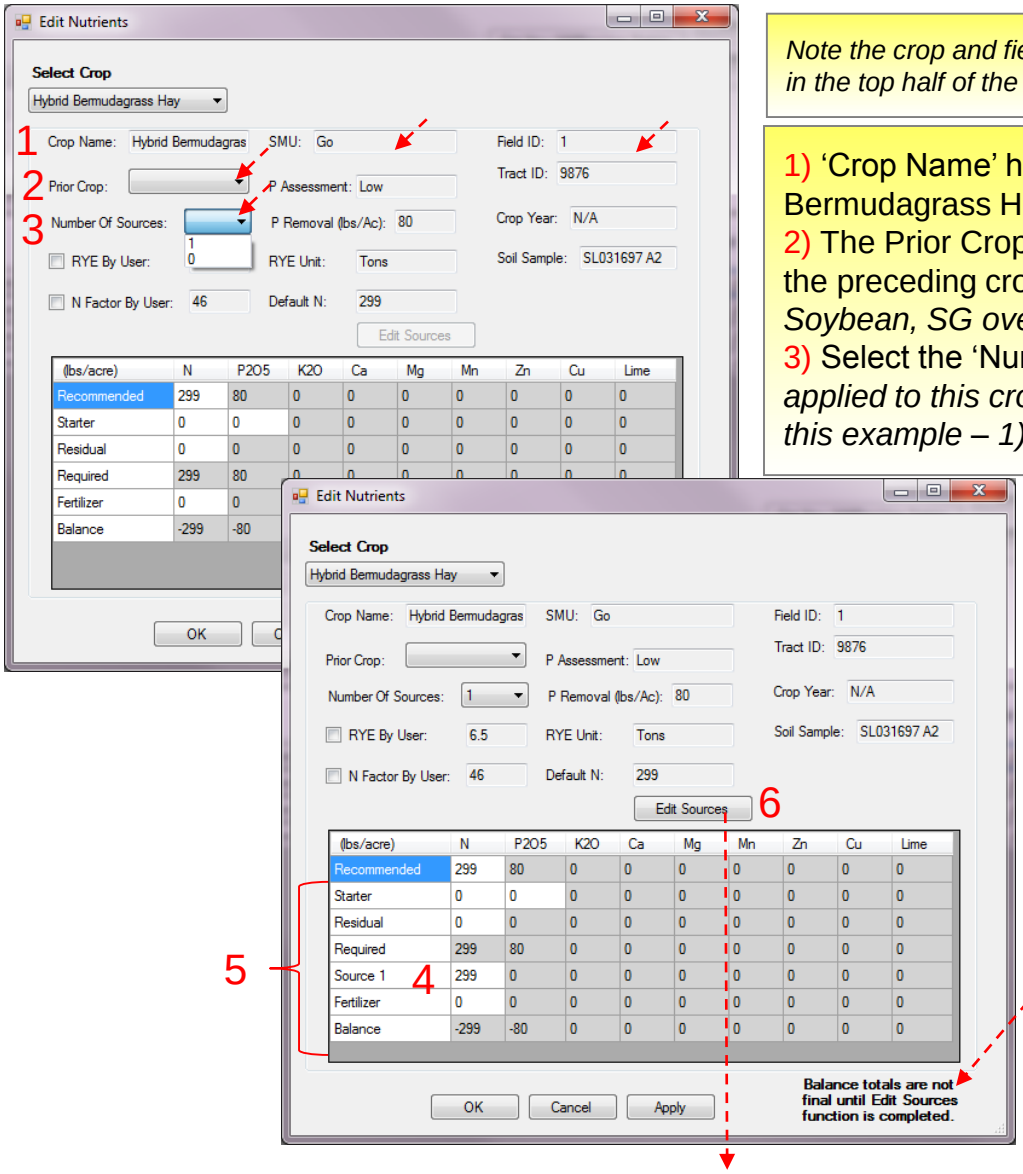
This step is the crux of the plan!



1) Click 'Select' in the Edit Nutrients column. 2) The 'Edit Nutrients' dialog box will appear.

(continued on next slide)

Edit Nutrients *(single crop scenario)*



Note the crop and field information that is populated in the top half of the Edit Nutrients screen.

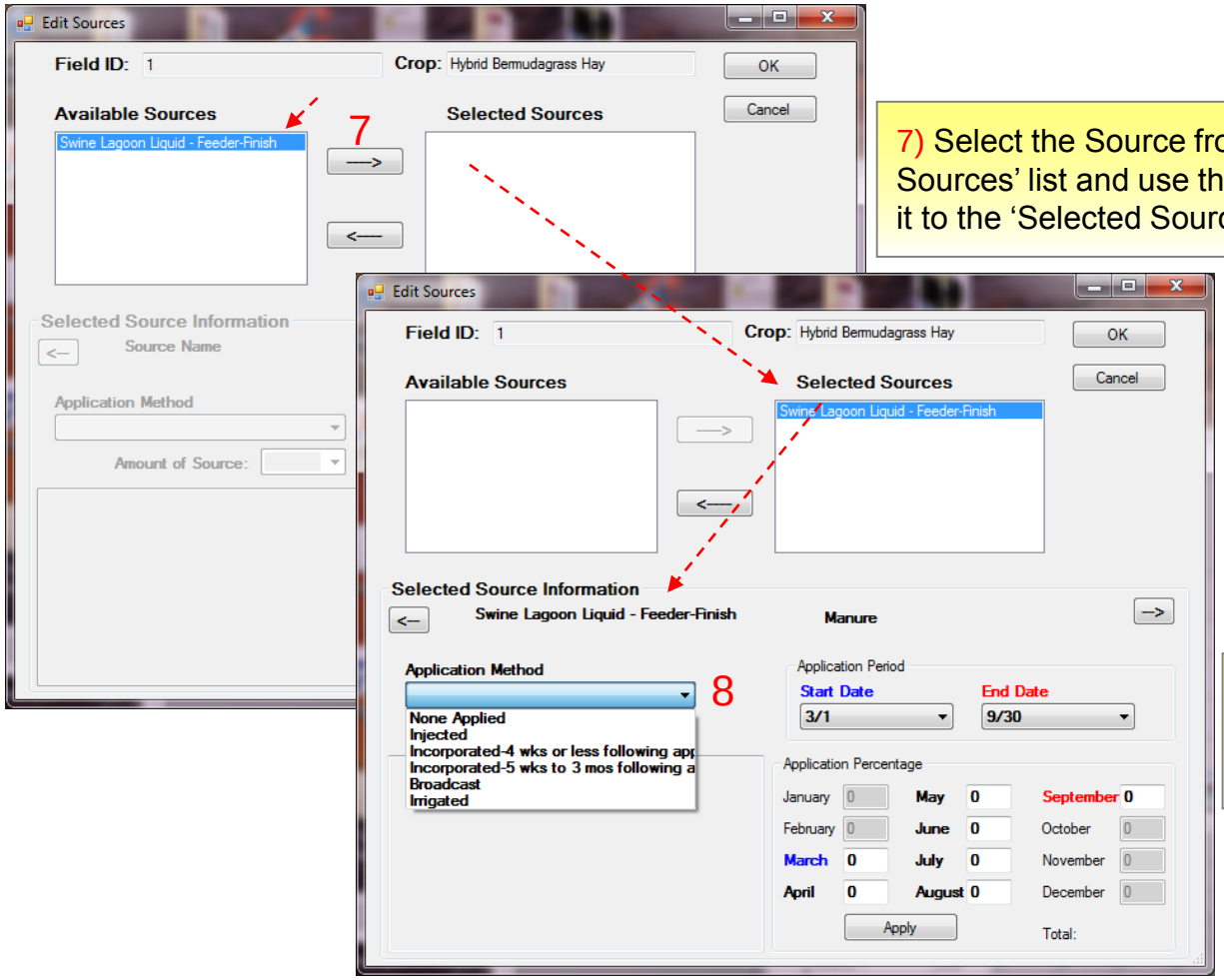
1) 'Crop Name' here is single crop (Hybrid Bermudagrass Hay).
2) The Prior Crop selection is only applicable when the preceding crop has a residual N credit (*e.g. Soybean, SG overseed*)
3) Select the 'Number of Sources' (*that will be applied to this crop/field*) from the drop-down list *(in this example – 1)*

4) All of the recommended N is assigned to Source 1 (*default*). If applicable, less than the recommended N can come from Source 1. *The program assumes the N balance will be met with Fertilizer*.

5) Assign all nutrient sources (Starter, Residual, Source 1 & Fertilizer), but ignore 'Balance' for now.

6) Next, click the 'Edit Sources' button.

Edit Nutrients *(single crop scenario)*

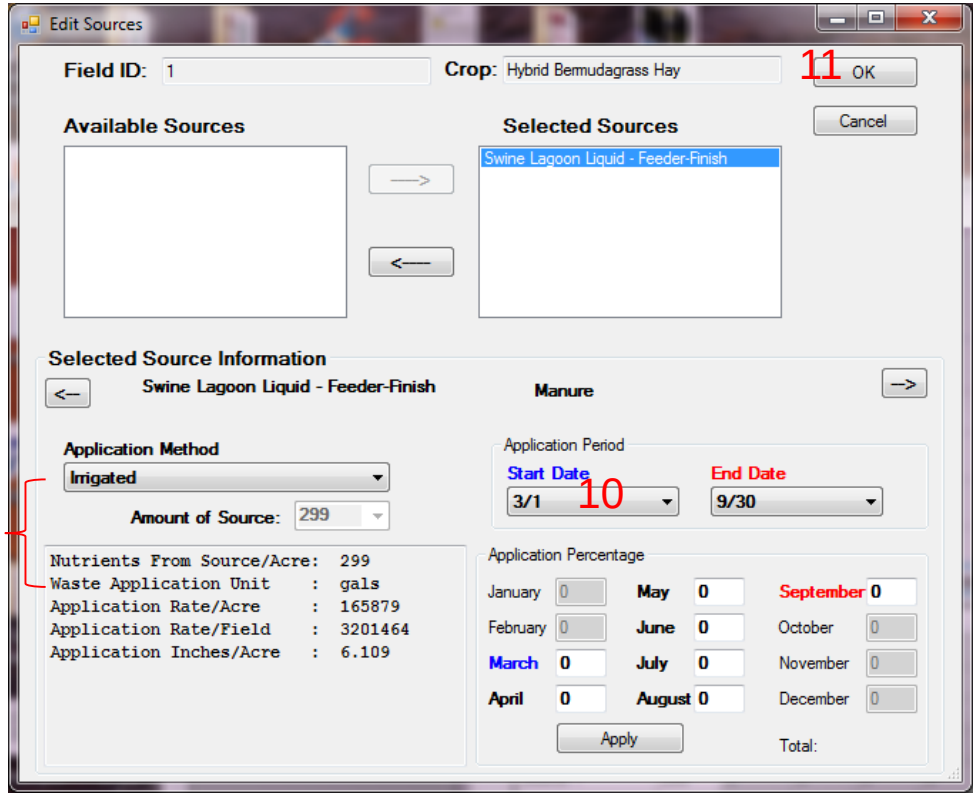


7) Select the Source from the 'Available Sources' list and use the arrow to move it to the 'Selected Sources' list.

Note: If more than one source is available one or both can be attributed to a field. Use the left and right arrows to toggle to the appropriate 'Selected Source Information'.

8) Choose an 'Application Method' from the drop-down list.

Edit Nutrients *(single crop scenario)*



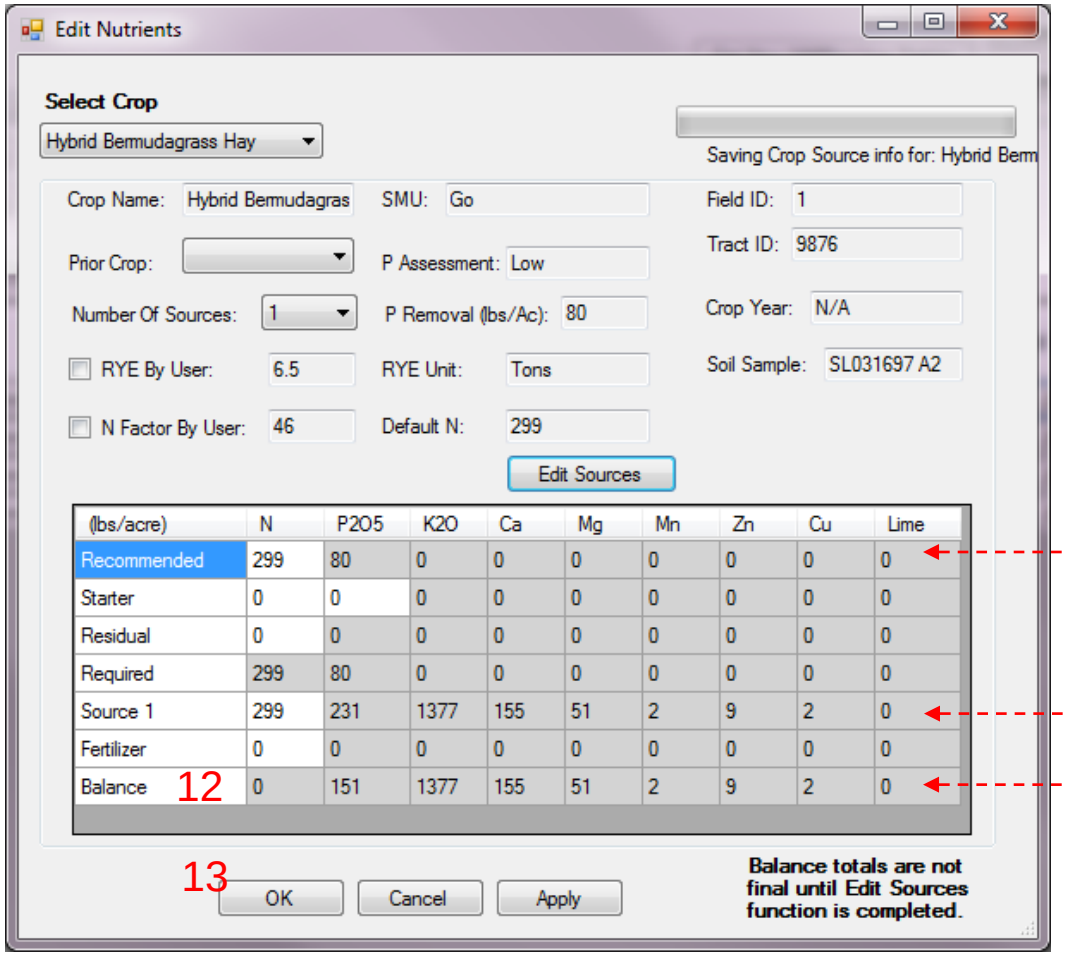
9) Notice the nutrient and application rate information that fills-in when 'Application Method' is selected.

10) Assign the percentage of the source applied by month. Only months within the crop application period can be edited. The total must equal 100%. Use the 'Apply' button to totalize.

11) When information is complete, click 'OK'.

Helpful hints:
- *Nutrient application is ideally timed for maximum plant uptake.*
- *Anticipated waste accumulation, i.e. waste storage structure levels, must also be factored when selecting timing of waste application on crops.*
- *Refer to existing published information on agronomic considerations for specific crops in N.C. if you are not familiar with them (e.g. NCSU, CES, NRCS, NCDA, etc.)*

Edit Nutrients *(single crop scenario)*



12) The 'Balance' should now equal zero. *Adjust N column numbers if necessary. Use 'Apply' to total.*

This row indicates nutrient recommendations (RYE database for N, soil test report for others).

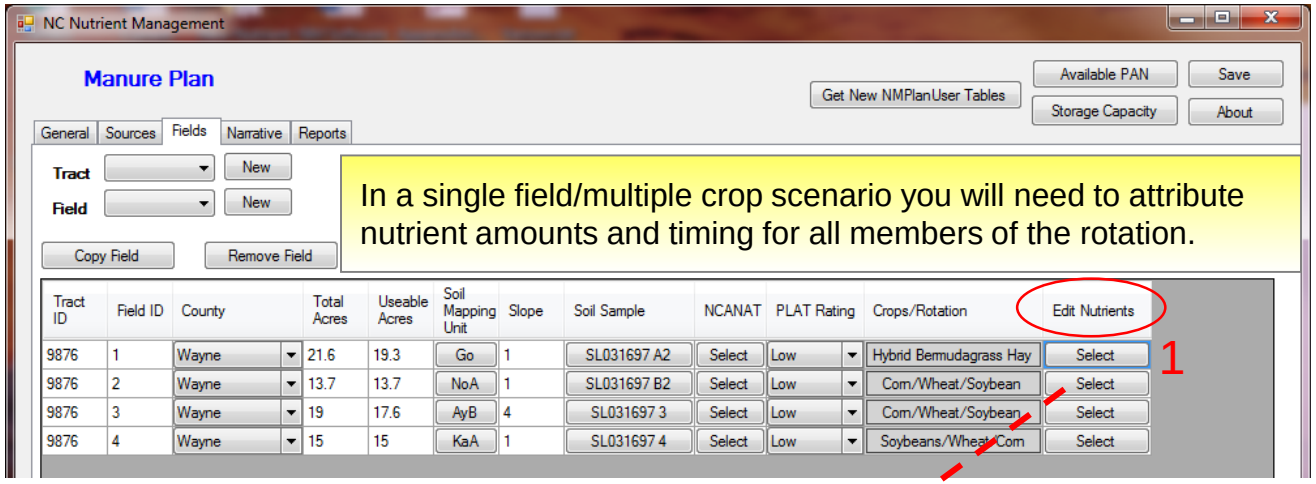
This row indicates nutrients supplied by manure source(s).

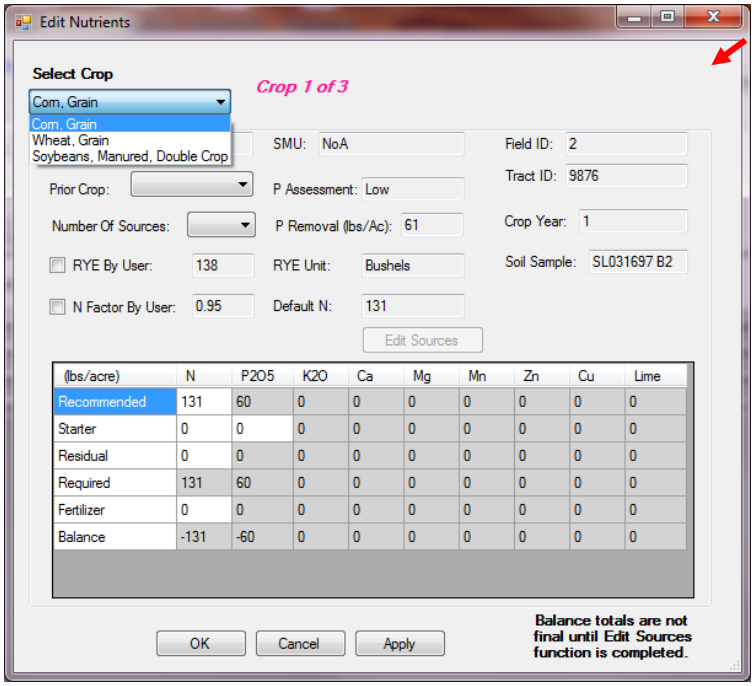
This row indicates expected nutrient balance following annual manure application cycle.

13) Final Step: Click 'OK'.

Edit Nutrients *(rotation scenario)*

This step is the crux of the plan!





1) Click ‘Select’ in the Edit Nutrients column next to the rotation.
2) The ‘Edit Nutrients’ dialog box will appear.
3) Use the drop-down list under ‘Select Crop’ to select members of the rotation individually.

Proceed with the same Edit Nutrients steps as a single crop for each individual crop in the rotation *(in this e.g. Corn, Wheat and Soybeans).*

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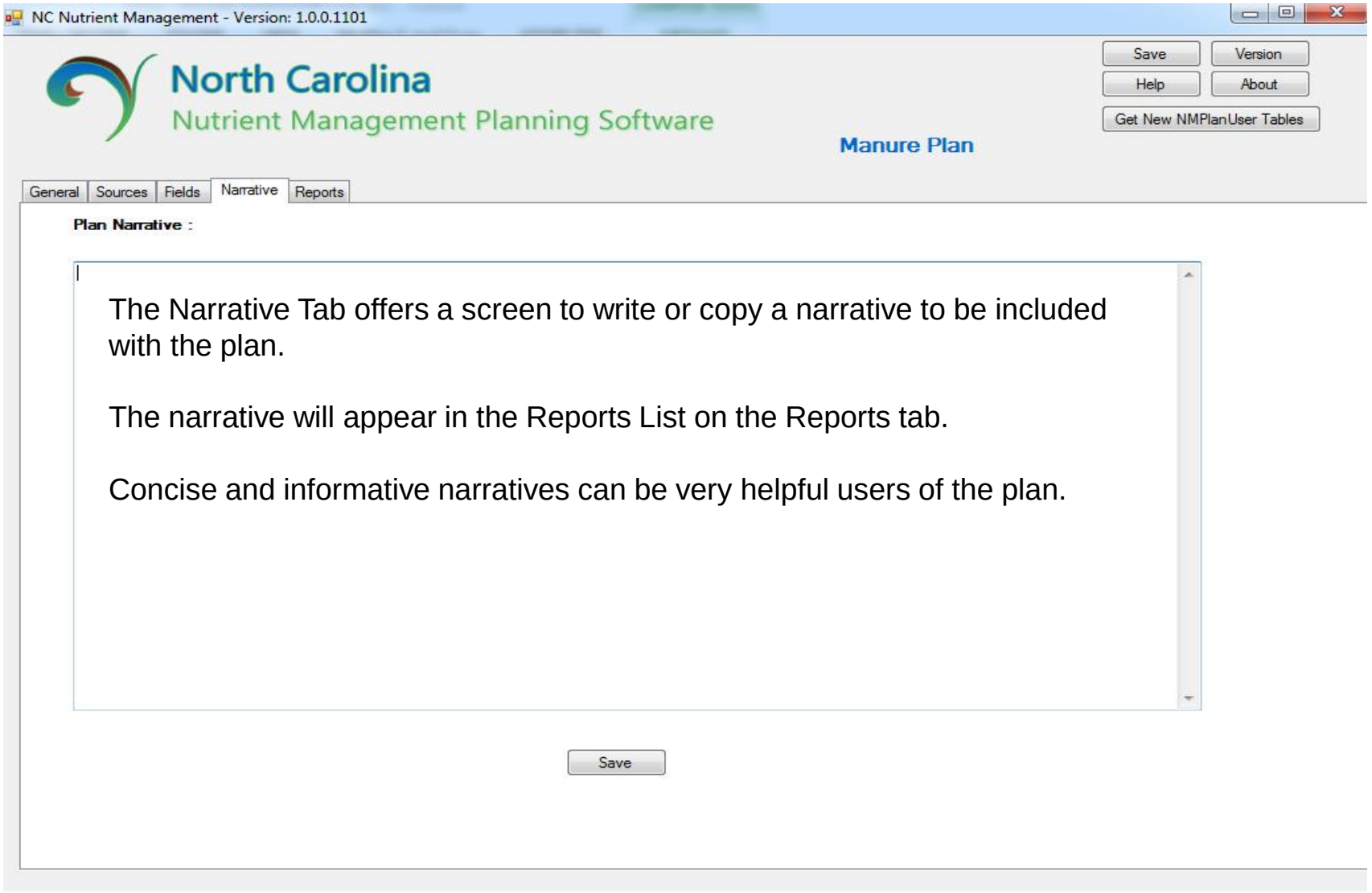
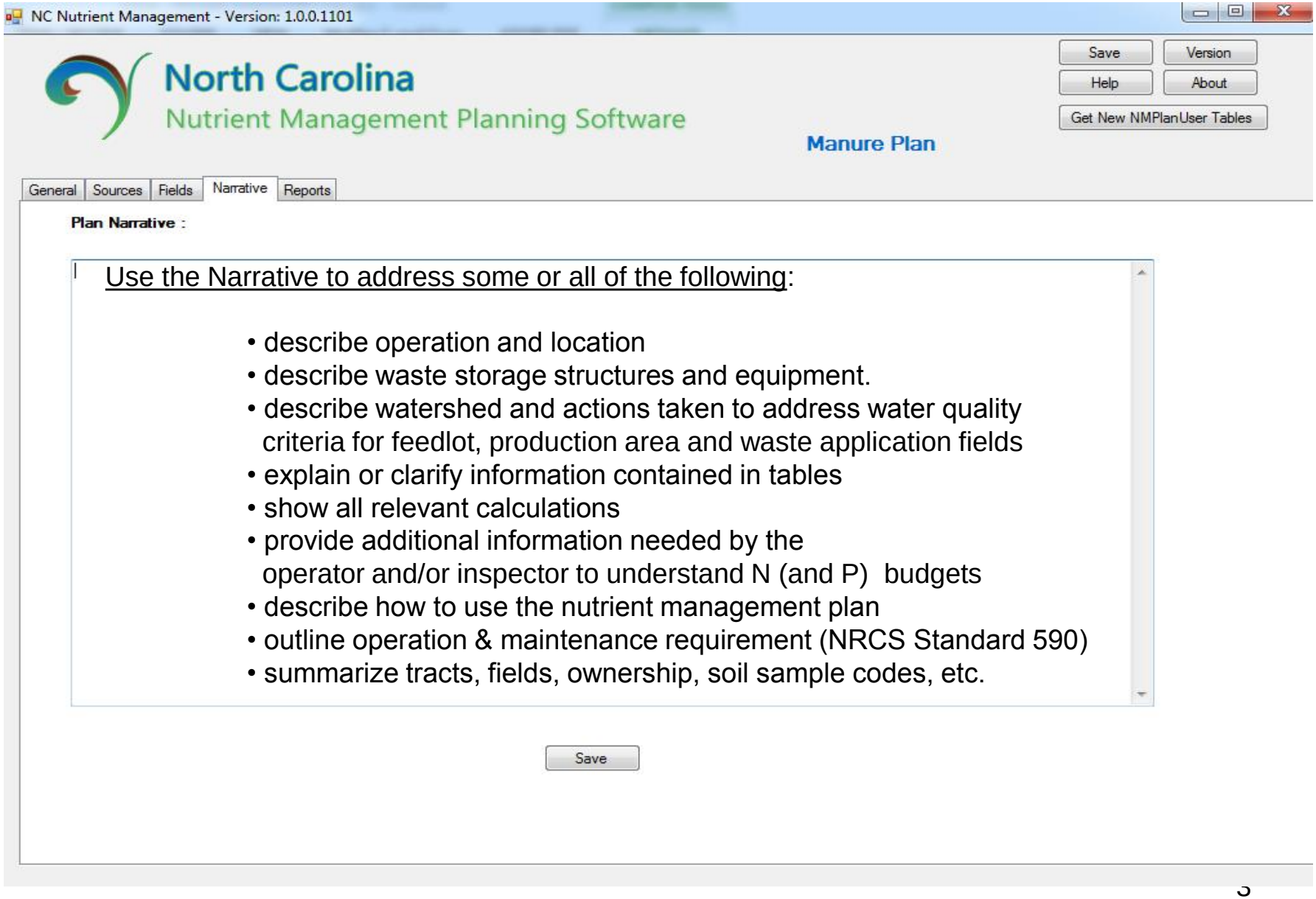
Narratives and Reports

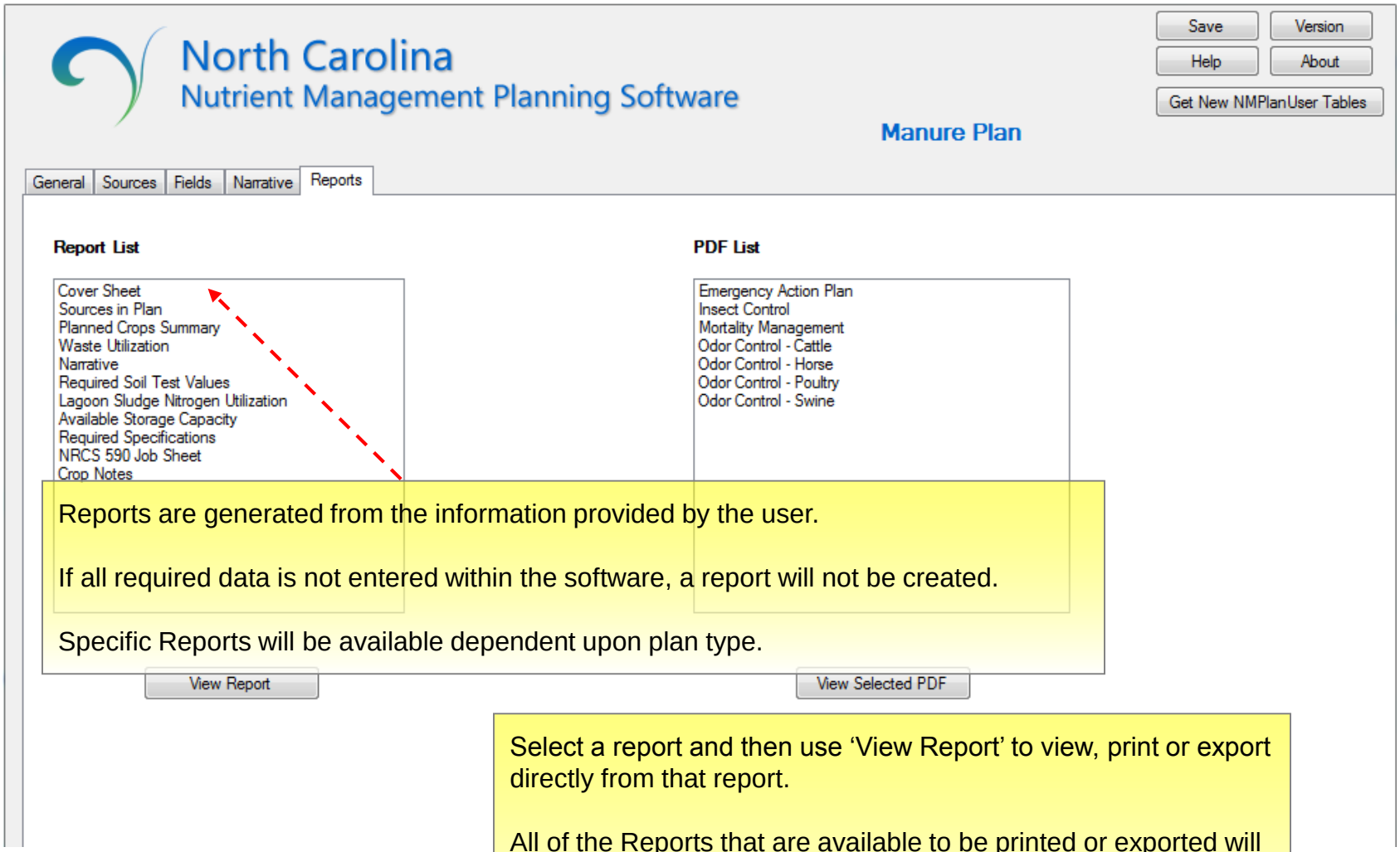
Narrative


NC Nutrient Management - Version: 1.0.0.1101
North Carolina
Nutrient Management Planning Software
Save
Version
Help
About
Get New NMPlanUser Tables
Manure Plan
General
Sources
Fields
Narrative
Reports
Plan Narrative :
The Narrative Tab offers a screen to write or copy a narrative to be included with the plan.
The narrative will appear in the Reports List on the Reports tab.
Concise and informative narratives can be very helpful users of the plan.
Save

Narrative


NC Nutrient Management - Version: 1.0.0.1101
North Carolina
Nutrient Management Planning Software
Save
Version
Help
About
Get New NMPlanUser Tables
Manure Plan
General
Sources
Fields
Narrative
Reports
Plan Narrative :
Use the Narrative to address some or all of the following:
• describe operation and location
• describe waste storage structures and equipment.
• describe watershed and actions taken to address water quality criteria for feedlot, production area and waste application fields
• explain or clarify information contained in tables
• show all relevant calculations
• provide additional information needed by the operator and/or inspector to understand N (and P) budgets
• describe how to use the nutrient management plan
• outline operation & maintenance requirement (NRCS Standard 590)
• summarize tracts, fields, ownership, soil sample codes, etc.
Save

Reports



Reports are generated from the information provided by the user.

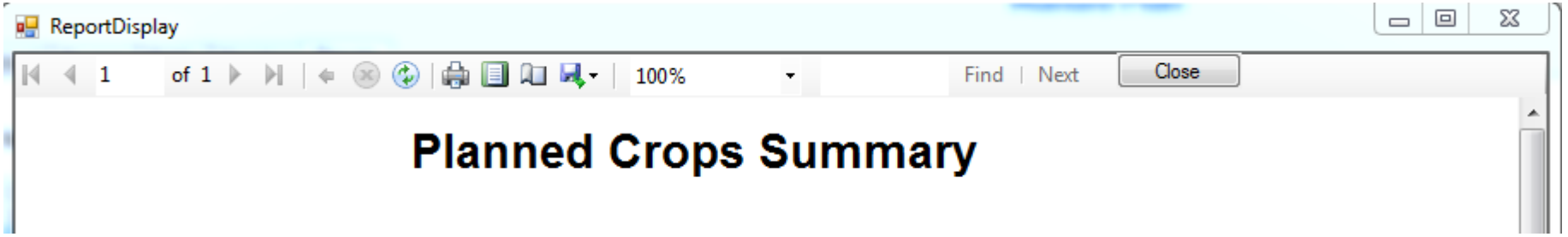
If all required data is not entered within the software, a report will not be created.

Specific Reports will be available dependent upon plan type.

Select a report and then use ‘View Report’ to view, print or export directly from that report.

All of the Reports that are available to be printed or exported will be in the Reports list.

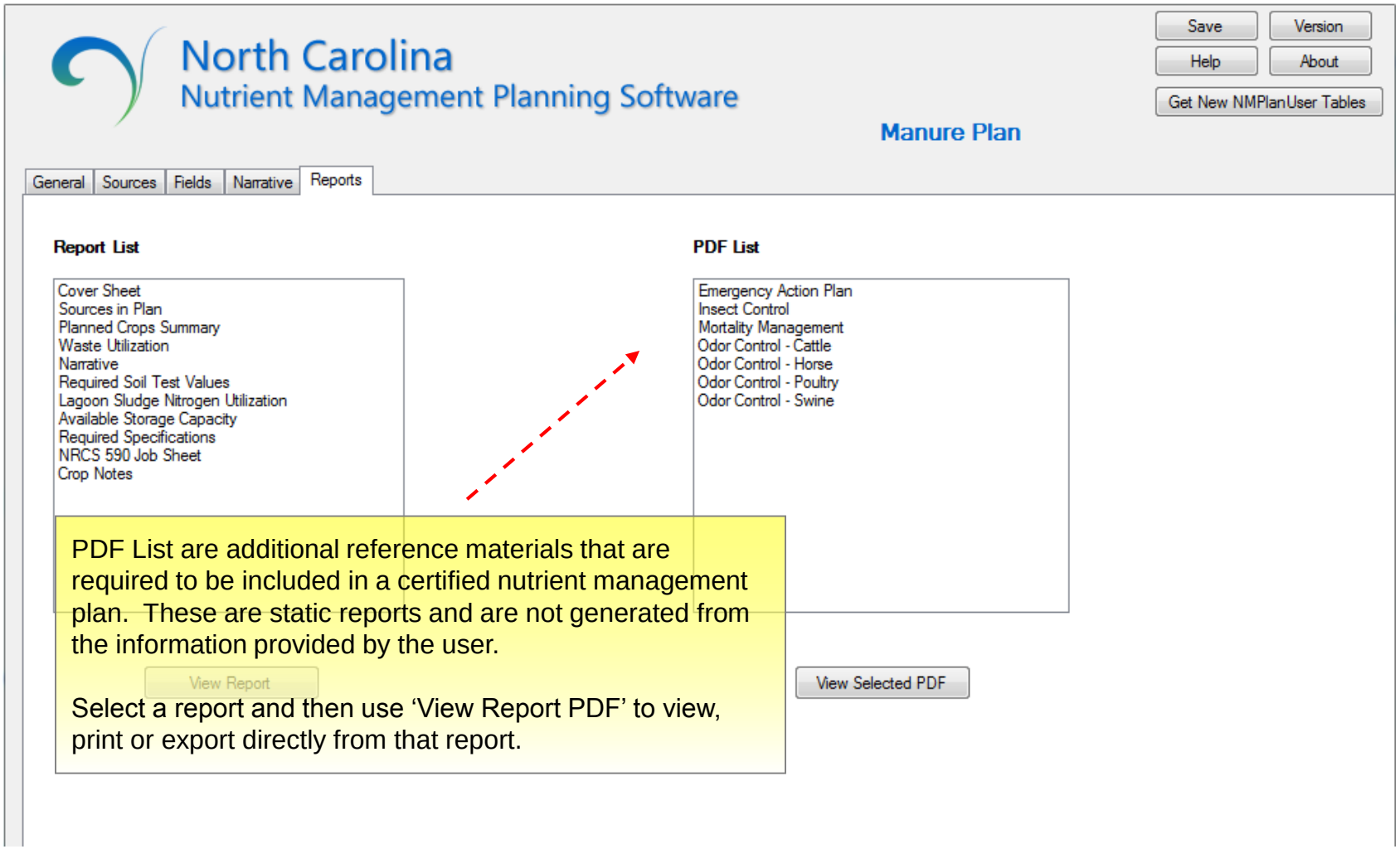
Reports



Each Report will have a toolbar across the top that will allow for the following:

- Scroll to each page or jump to end/beginning of document
- Refresh the report - These reports will automatically change as information is changed by the user.
- Print – Report will print to a local printer.
- Page Layout - User can see a preview of report layout prior to printing.
- Page Setup - User can reset margins and page orientation.
- Save – Users will have three options formats to save each report. (excel, .pdf and word). Due to the ability for these reports to change as new information is entered, it is highly recommended that users set up a system to save final .pdf versions as a reference document should older copies be needed.
- Size – User can resize the view of the report
- Search – User is able to search for a specific word or phrase.

Reports



PDF List are additional reference materials that are required to be included in a certified nutrient management plan. These are static reports and are not generated from the information provided by the user.

Select a report and then use 'View Report PDF' to view, print or export directly from that report.

All of the PDFs that are available can be printed or saved.

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Closures and Cleanouts

1. Be sure the waste samples and volume estimates reflect the method of sludge removal!

Different Methods of Sludge Removal & Land Application:

- Agitate and combine liquid and sludge layers, apply as a ‘slurry’ on sludge application fields.
- Irrigate most of the liquids on existing spray-fields, retain just enough liquid to use for agitating the sludge. Tank haul the sludge mix to sludge application fields.
- Dredge the sludge and tank haul to sludge application fields.
- Irrigate most of the liquids on existing spray-fields, dredge sludge and remaining liquid, and tank haul to sludge application fields.

- **The method of removal will have a significant impact on volume and nutrient concentration of material removed.** For example, agitation and pumping will result in a high volume of slurry (sludge and liquid), versus dredging which results in a lesser volume (sludge and some liquid). **Volume estimates and waste sampling should appropriately reflect the material (solid vs. liquid) that will be applied.**

- **Sludge should be applied only to fields not used for continual animal waste application** to prevent prohibitive phosphorus and persistent metal build-up. If the sludge is to be applied on spray fields already listed in the CAWMP, the overall PAN balance must include the additional PAN from the sludge and still remain in a PAN deficit for the animal operation.

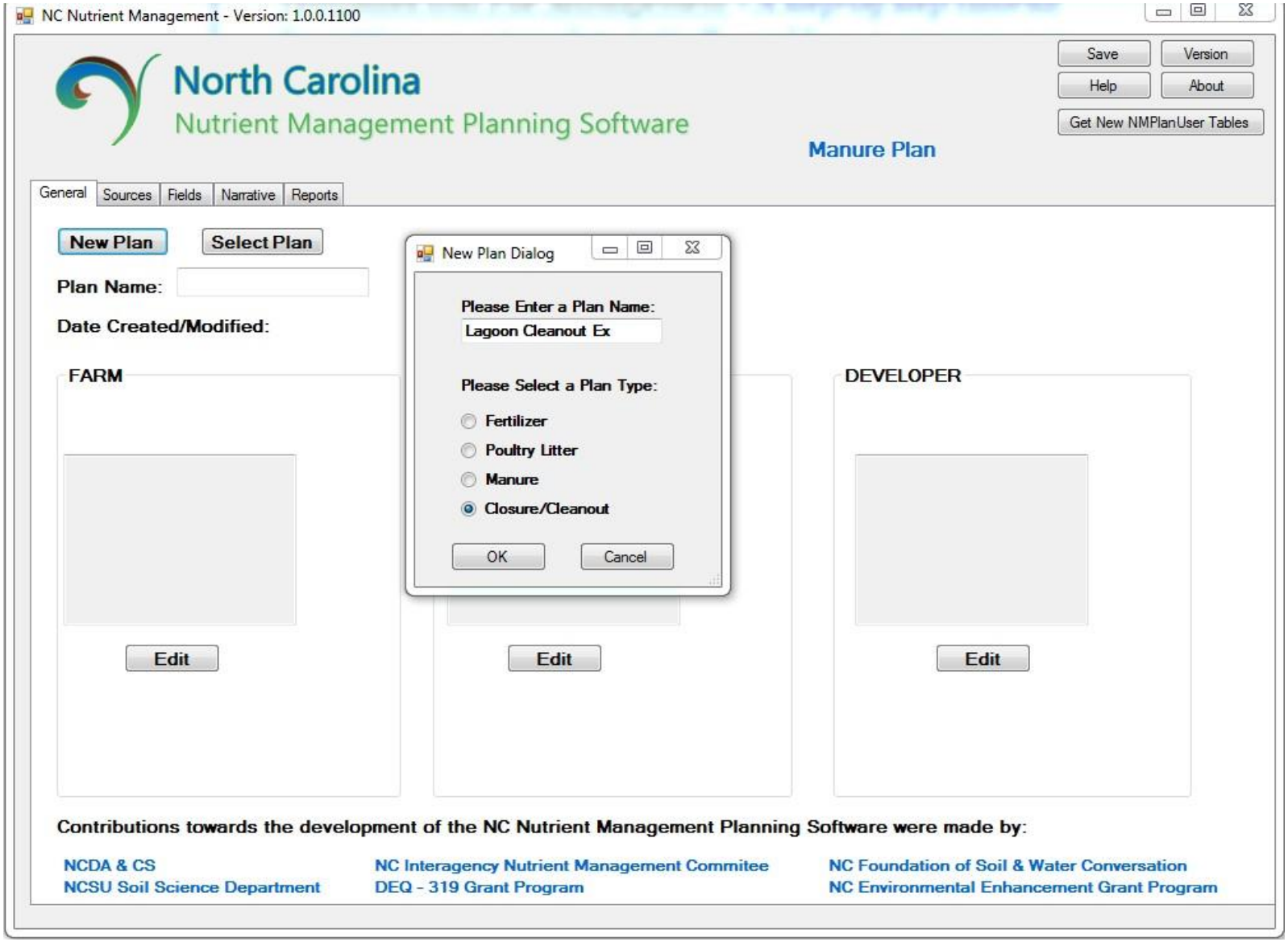
- Provisions must be taken to **prevent damage** to lagoon dikes and liner.

- If sludge is applied on **conventionally tilled bare soil**, the waste shall be **soil-incorporated within 2 days** after application or before the next rainfall event, whichever is first.

- Permittee is to document sludge applications to all fields (owned/leased) in the sludge plan and balance priority nutrients using a current waste analysis (within 60 days), on SLUR-1/SLUR-2 forms, or other DWR-approved forms.

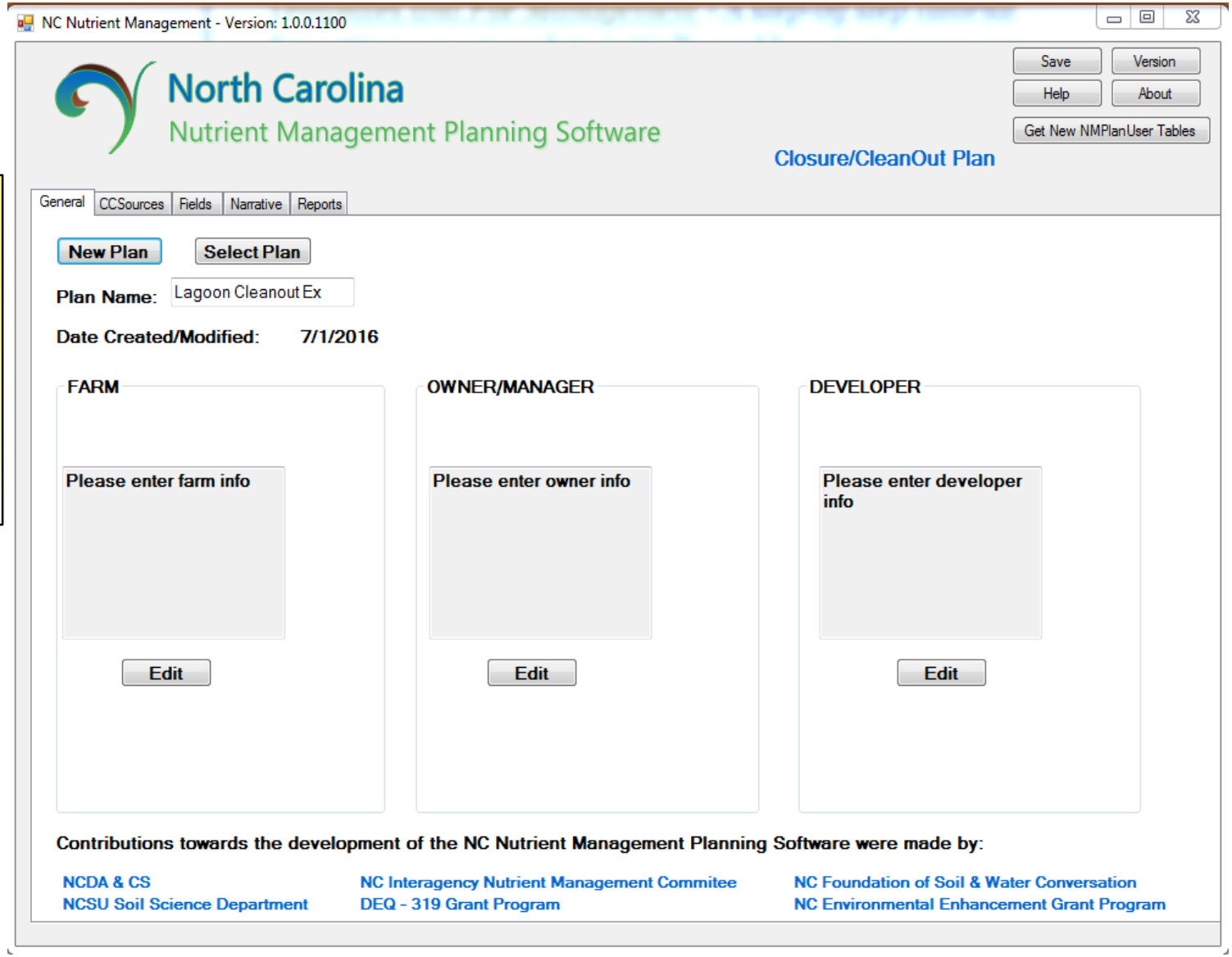
- For sludge transfers, the Permittee must document the name and address of the recipient, and volume of sludge removed from the farm. The third party receiver is to be provided with a current sludge/liquid waste analyses and information for proper land application as required by the farm's permit.

2. Create New Plan:



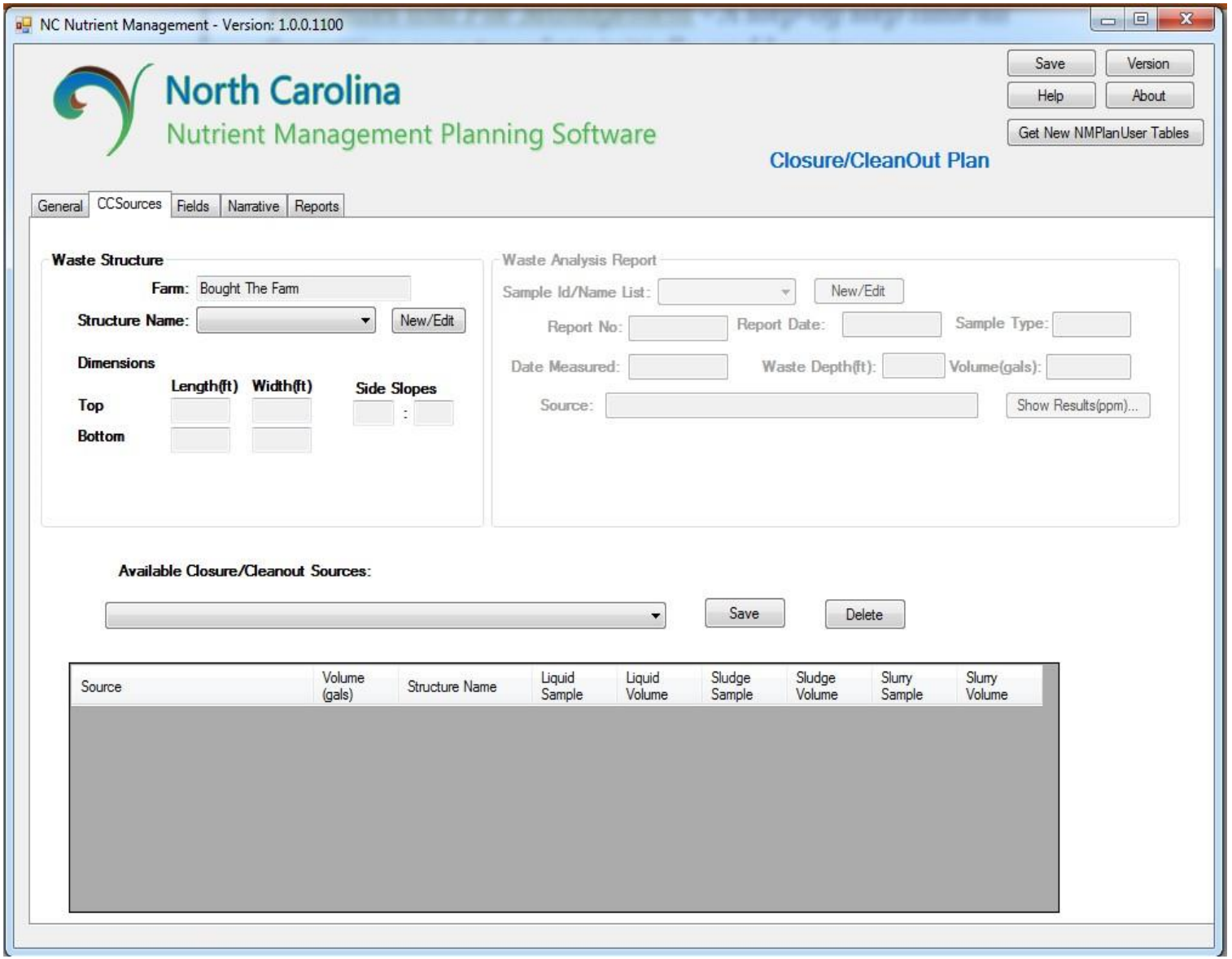
3. Farm, Owner, Developer:

Select Farm Owner/Manager and Developer information from prior plans or enter as a new entry.



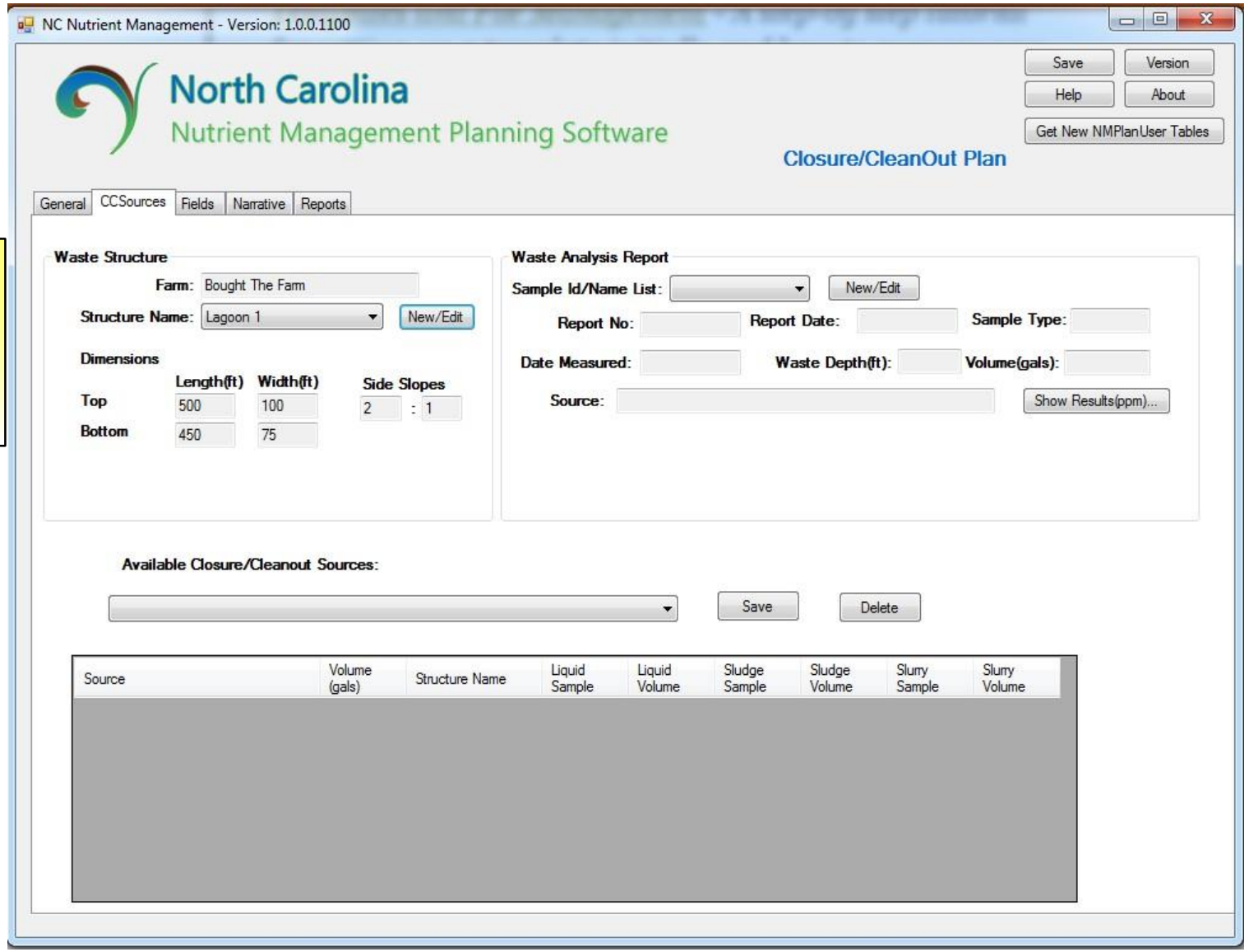
4. Sources:

First click new/edit to create a new waste storage structure and enter the dimensions of the waste structure



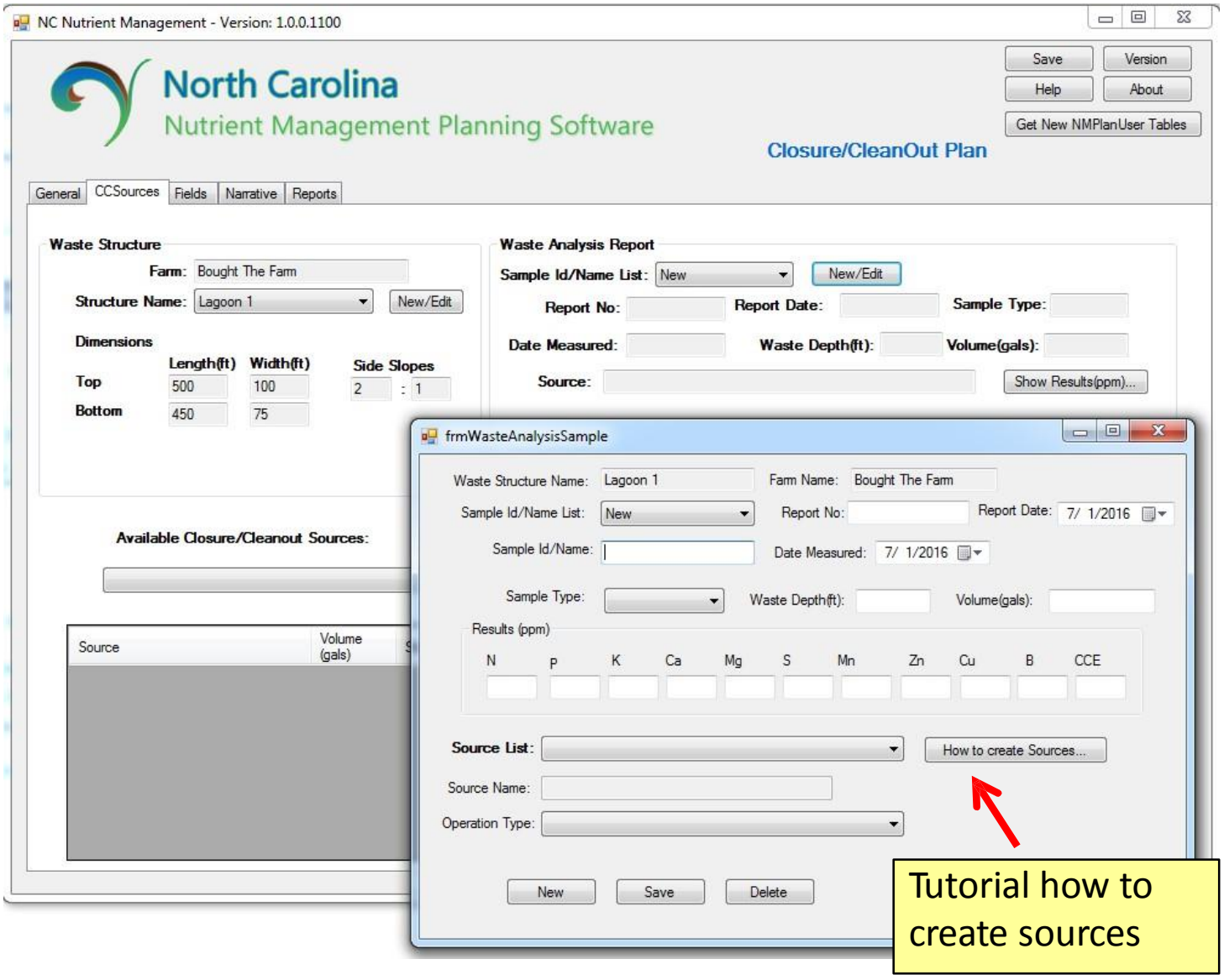
4. Sources:

Next Enter Waste Analysis Report Information



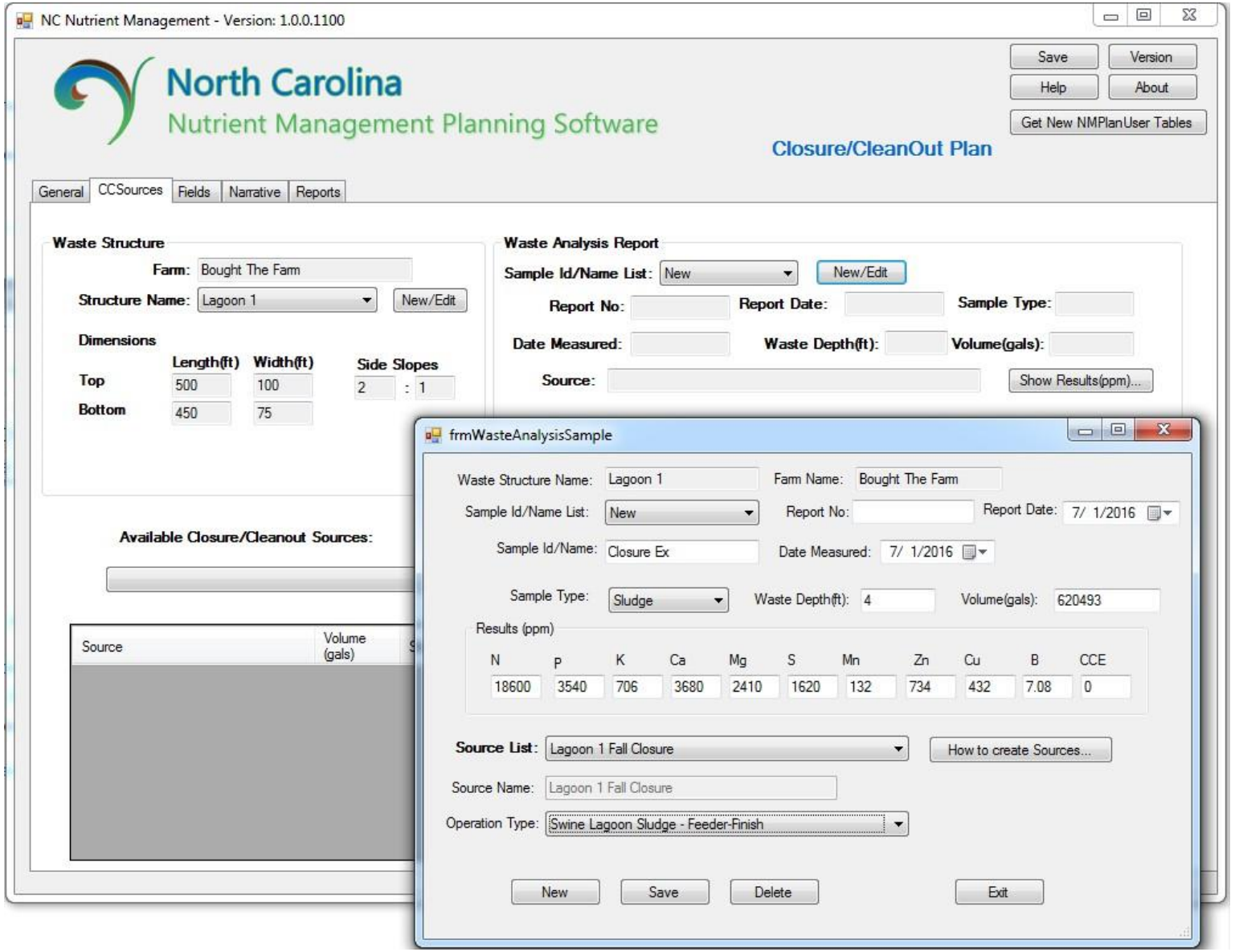
4. Sources:

Next click on New/Edit for the Waste Analysis Report. Here you will enter information from the waste analysis and sludge survey



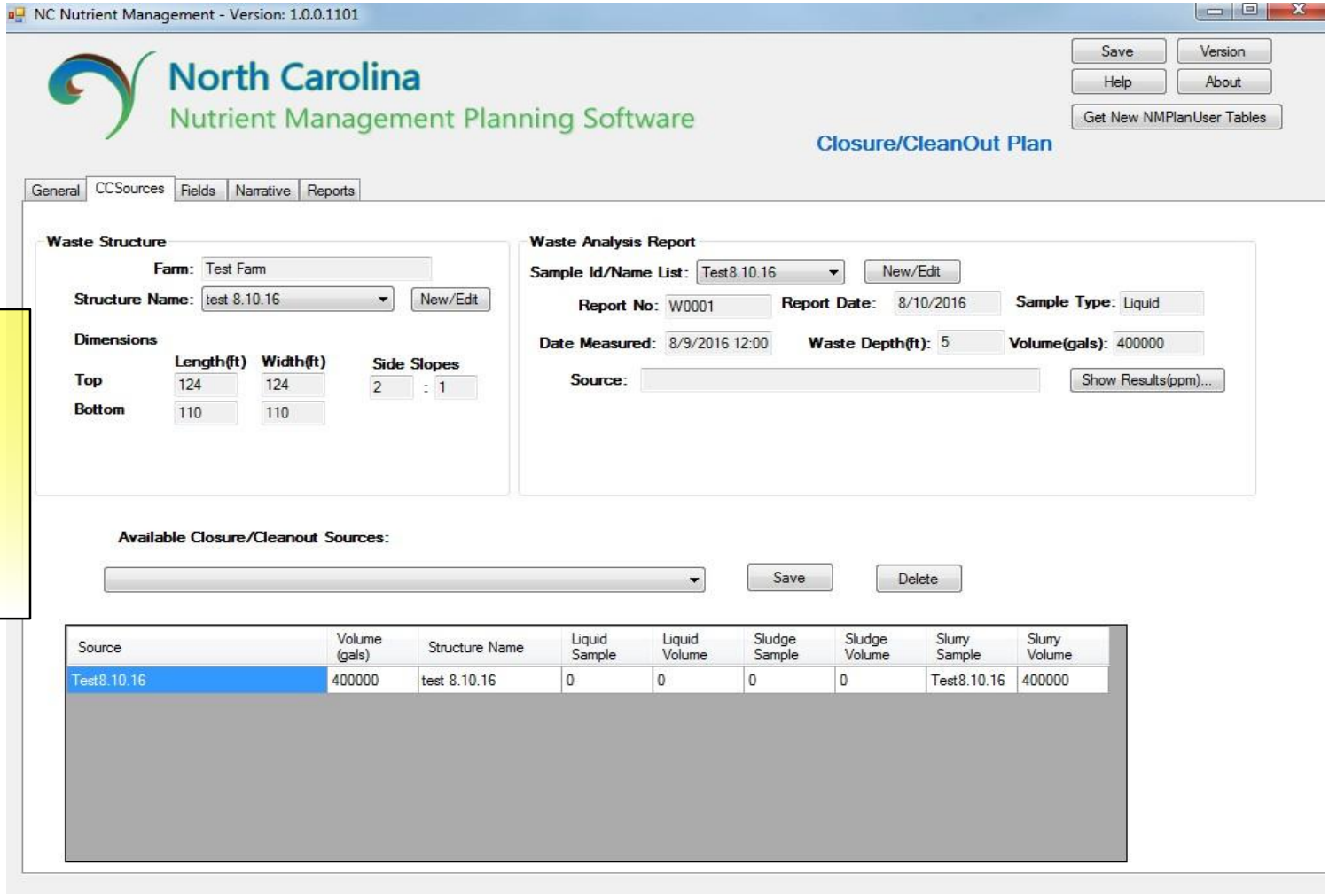
4. Sources:

Enter all Waste Analysis Information and click Save

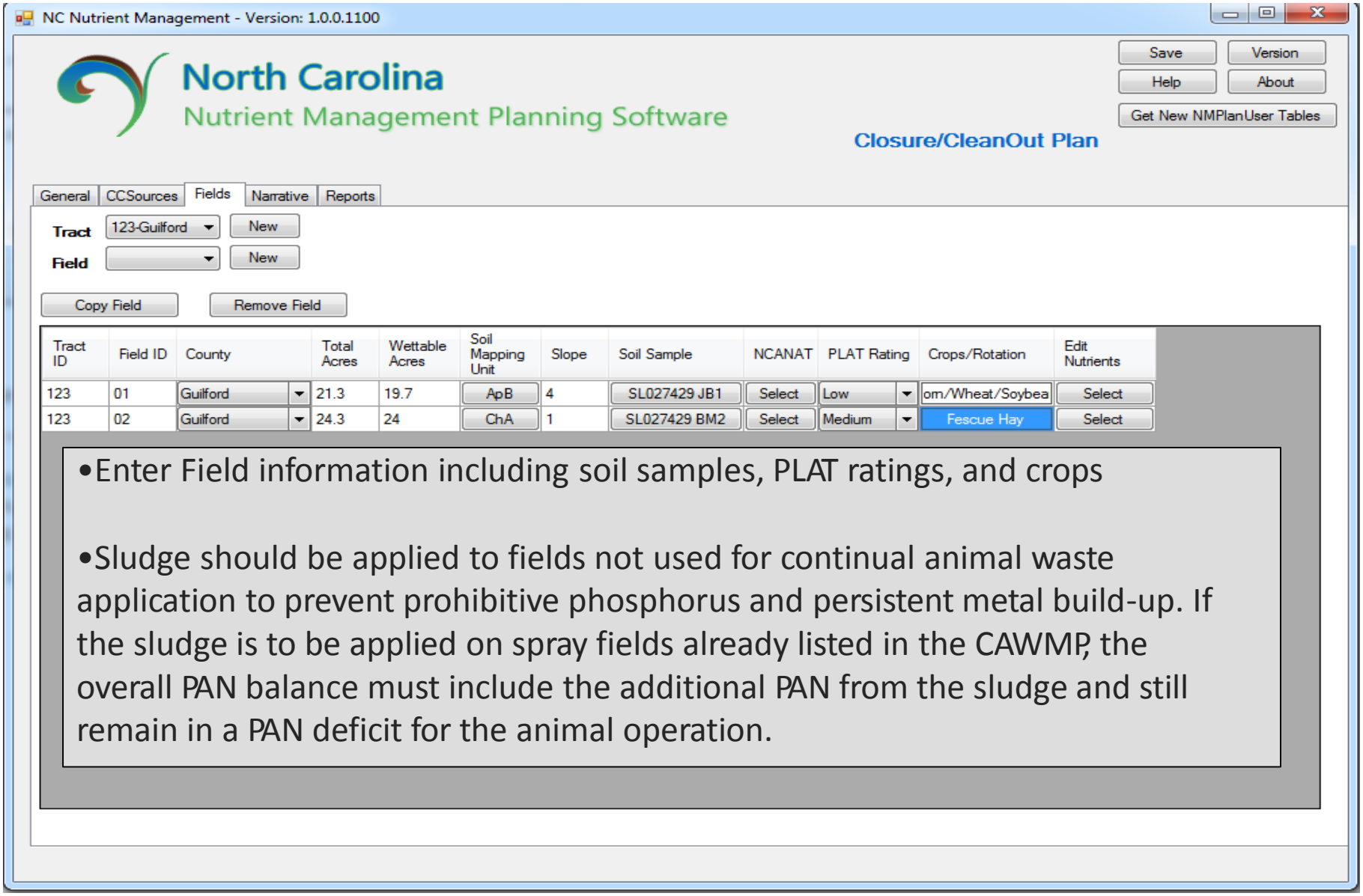


4. Sources:

Select your Available Closure Source from your Waste Report



5. Fields:


NC Nutrient Management - Version: 1.0.0.1100
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Soil Sample
NCANAT
PLAT Rating
Crops/Rotation
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Select
123
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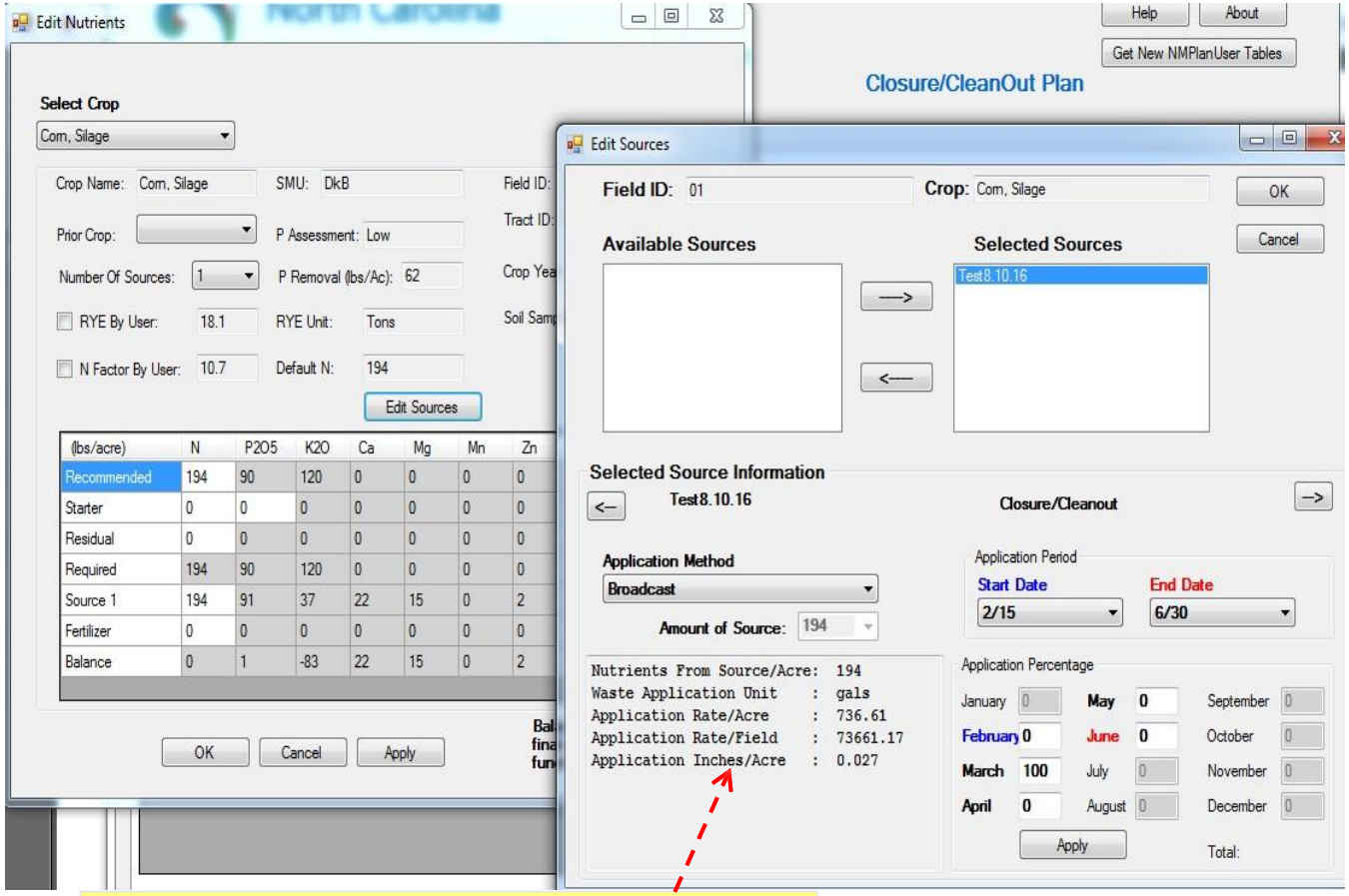
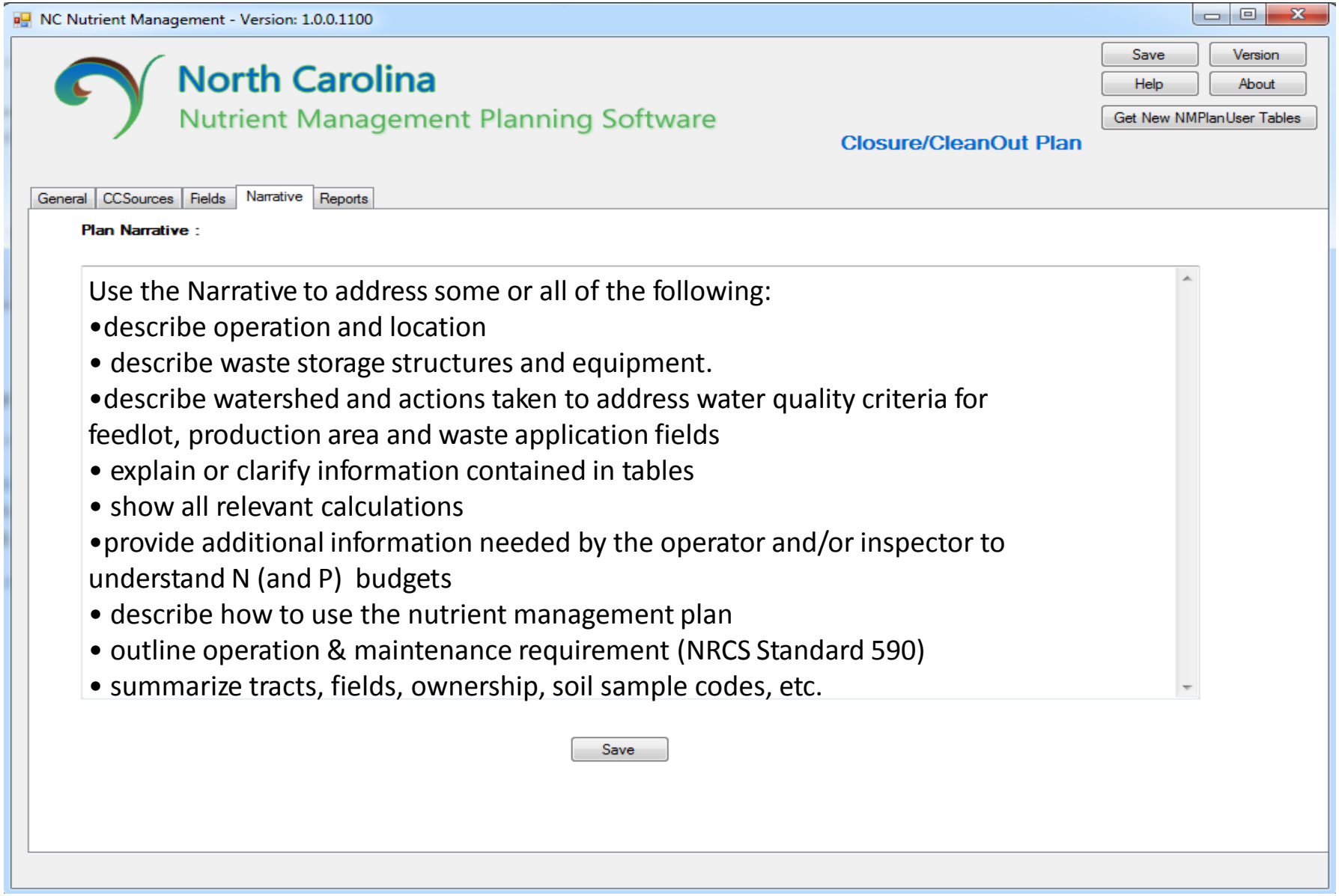
Guilford
24.3
24
ChA
1
SL027429 BM2
Select
Medium
Fescue Hay
Select
•Enter Field information including soil samples, PLAT ratings, and crops
•Sludge should be applied to fields not used for continual animal waste application to prevent prohibitive phosphorus and persistent metal build-up. If the sludge is to be applied on spray fields already listed in the CAWMP, the overall PAN balance must include the additional PAN from the sludge and still remain in a PAN deficit for the animal operation.

5. Fields - Edit Sources



Verify Application Rate/Field and Inches/Acre.

6. Narrative: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Get New NMPlanUser Tables
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Fields
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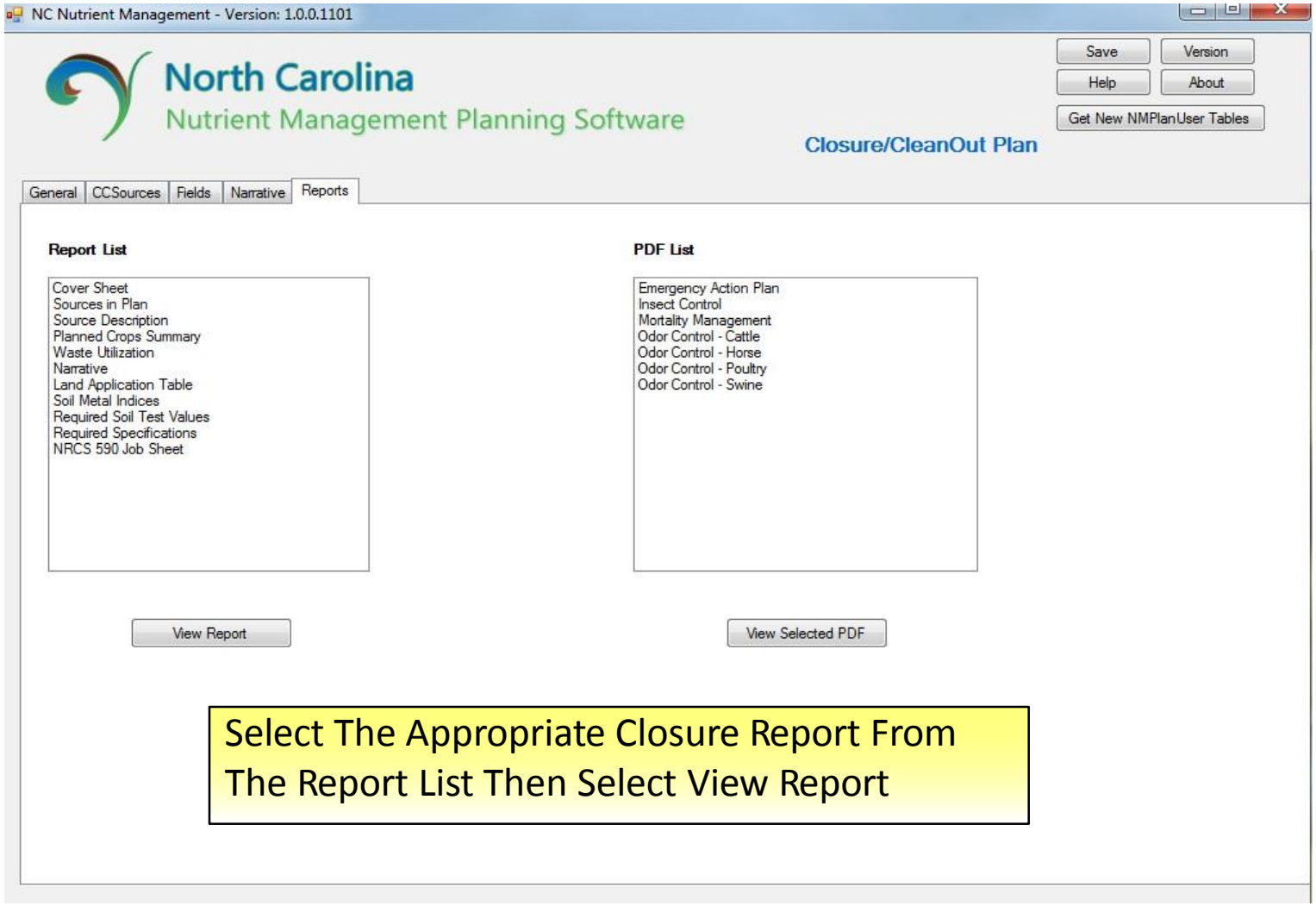
Reports
Plan Narrative :
Use the Narrative to address some or all of the following:
•describe operation and location
• describe waste storage structures and equipment.
•describe watershed and actions taken to address water quality criteria for feedlot, production area and waste application fields
• explain or clarify information contained in tables
• show all relevant calculations
•provide additional information needed by the operator and/or inspector to understand N (and P) budgets
• describe how to use the nutrient management plan
• outline operation & maintenance requirement (NRCS Standard 590)
• summarize tracts, fields, ownership, soil sample codes, etc.
Save

7. Reports: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Reports
Report List
Cover Sheet
Sources in Plan
Source Description
Planned Crops Summary
Waste Utilization
Narrative
Land Application Table
Soil Metal Indices
Required Soil Test Values
Required Specifications
NRCS 590 Job Sheet
PDF List
Emergency Action Plan
Insect Control
Mortality Management
Odor Control - Cattle
Odor Control - Horse
Odor Control - Poultry
Odor Control - Swine
View Report
View Selected PDF
Select The Appropriate Closure Report From The Report List Then Select View Report

North Carolina
Nutrient Management Planning Software

User Manual

NCANAT

NC Agricultural Nutrient Assessment Tool (NCANAT) -User Manual

Introduction

North Carolina Nutrient Assessment Tool, Version 2.0 contains two field-scale assessment tools: Nitrogen Loss Estimation Worksheet (NLEW) and Phosphorus Loss Assessment Tool (PLAT) and this tool has been integrated into the NC Nutrient Management Software.

NLEW was developed in response to the Neuse Rules. In August of 1998, the Neuse Rules became law. These rules represented a series of regulations that control point and nonpoint source discharges of nitrogen into the Neuse. As a result of the Local Option that was added to the agricultural best management practice (BMP) rules, producers can join a local strategy rather than implementing mandatory BMPs. The local strategy allows a county to determine where the approved BMPs can be installed to obtain the 30% nitrogen reduction. In addition, the local option provides a few more alternatives to the list of BMPs, such as unfertilized cereal cover crops and no-till corn in the Piedmont, than the standard BMPs. In exchange for this flexibility, however, the rules mandated accountability. The accounting and tracking tool that has been developed to meet the requirements of the Neuse Rules is the Nitrogen Loss Estimation Worksheet (NLEW). In addition, NLEW was adopted by the NC Division of Soil and Water Conservation in 1996 as the method to estimate BMP effects on relative nutrient dynamics for projects funded with Agriculture Cost- Share Program funds. It is also being used in the Tar-Pamlico River Basin.

PLAT was developed in response to the new USDA-Natural Resource Conservation Service (NRCS) nutrient management standard (590). The charge was given that each state must assess phosphorus (P) status during nutrient management planning if animal waste is involved or the field is within an impaired watershed. Three selection strategies were allowed (soil test, environmental test and P index). The North Carolina Phosphorus Loss Assessment Committee chose to use a modified P index assessment method; a unique P assessment method was designed for North Carolina conditions. This P assessment is known as the NC Phosphorus Loss Assessment Tool or PLAT.

How to Use NCANAT

The program allows users to run NLEW alone, PLAT alone or both NLEW and PLAT simultaneously. In the Nutrient Management Software – Fields tab, you may select the following options:

1. NLEW
2. PLAT, and
3. NLEW And PLAT

Simply click the button that corresponds to the program(s) you want to run and the necessary input boxes will be displayed.

Identification

Calendar Year

- The current calendar year will automatically display in the calendar year box. Should you want another year, use the pull-down menu to enter the calendar year. For crops that span two calendar years, such as wheat, count the crop in the calendar year during which it is harvest. For example, if your wheat crop is planted during the fall of 1999 but harvested the spring of 2000, you would count your wheat crop for the 2000 calendar year.

Tract number

- Populated based on input data from Nutrient Management Software.

Producer ID

- User can be identified numerically or alphabetically.

Field number

- Populated based on input data from Nutrient Management Software.

Location

County

- Populated based on input data from Nutrient Management Software.

Soil mapping unit

- Populated based on input data from Nutrient Management Software.

Cropping System

Current Crop (NLEW only)

- Use the pull-down menu to enter the crop for the current year.

Most Erosive Crop (PLAT only)

- Use the pull-down menu to enter the crop in the rotation that is the most erosive.

Field Slope (NLEW only)

- Populated with the average slope for soil type selected in the Nutrient Management Software.

Field Acres (NLEW only)

- Populated based on input data from Nutrient Management Software.

Nutrient Scavenger Crop (NLEW only)

- Select the cover crop type that was used. (Cover crop must be seeded by November 30 and killed no sooner than April 1 in the Coastal Plain and April 10 in the Piedmont to receive credit as a cover crop.)

BMP

- Select the BMP and then click the arrow pointing to the right. If the BMP is a buffer, a new input box will popup. Use the pull-down menu to select the minimum buffer width (in increments of 5 feet). When NLEW is being used you will also be asked for the number of acres affected by the buffer. Please enter this number. Continue to add as many BMPs as appropriate. Press "OK" when all the appropriate information has been added.

Nutrient Application

RYE (Producer Derived – NLEW only)

If the producer knows the crop RYE (average best 3 out of 5 years) for the soil series of the soil mapping unit, enter the value in units/acre.

Phosphorus Application Source and Rate (for PLAT)

- Select Source
- Enter the amount of the material that you are applying into the "Yearly_App_Amount" column, unless you are applying a fertilizer and you know the actual amount of P205 that you are applying. The application units of the material are in the next column (Application_units).
- The amount of P205 is listed in the column "lb_ P205". If the material is animal waste, this column represents the pounds of P205 per unit applied. The column to the right, "Content_Unit", lists the units of the material. If you have your own waste analysis, change the value in the "lb_ P205" to reflect your value. If you are working with fertilizers, you have two choices:1) if you know the amount of P205 that you are applying, simply enter this value in the column that reads "lb_ P205". 2) Otherwise enter the amount of fertilizer that you are apply in the "Yearly_App_Amount" column and then enter the phosphorus analysis of the fertilizer in the "%_P205" column.
- Double click on the line "AppMethod". Then use the pull down menu to select the application method of the nutrients.

Nitrogen Application Rate (for NLEW)

- Enter the amount of material you are applying in units lbs N/acre

Soil (PLAT only)

Soil Loss (t/ac/yr)

- Enter the amount of erosion in tons/acre/year, calculated from RUSLE.

Receiving Slope Distance (feet)

- Enter the receiving slope distance. The receiving slope is the concave slope extending from the base of the RUSLE slope to the field edge or to a source of concentrated runoff flow in a defined channel.

Soil Test (P-I)

- If soil tests were uploaded for the specific field within the Nutrient Management Software, then this information will be populated.
- If you did not, then enter your agronomic soil test value.

Weight:Volume (W/V) Ratio

- If soil tests were uploaded for the specific field within the Nutrient Management Software, then this information will be populated.
- If you did not, then enter your weight:volume ratio value.
- A second soil test box may be visible for the 28-32” depth. If the box is visible, you will need to take a deep soil sample at the 28-32” depth. Enter the weight:volume ratio value for this sample.

Drainage (PLAT only)

Artificial Drainage

- This box will only be viewable if the soil is a poorly drained soil, otherwise this box will not be viewable, but you will have the option to enter information in the Hydrologic Condition box. If the field is drained, even if the drainage is irregular, this should be considered a drained soil. Click “yes” to denote a drained field.
- For regularly spaced drainage ditches or tile drainage, simply enter the required spacing and depth information. To compute the drainage spacing for irregularly drained soils, calculate the area drained and divide by the total length of the drainage (which may include streams, ditches, or tiled drainage). Enter this number as your drain spacing. Determine the average depth of the drainage devises and enter this as your drain depth.
- If the field is not drained, and you click “NO”, then proceed to Hydrologic Condition.

Hydrologic Condition (PLAT only)

- If there is artificial drainage, the drainage input box is not viewable.

- If there is only one hydrologic condition, that condition will already be checked. If there is more than one hydrologic condition, you will need to check the appropriate condition. Hydrologic condition is based on factors that affect infiltration and runoff, including density and percent canopy of vegetation, amount of year round cover, amount of grass or close seeded legumes in rotation, percent of surface residue cover, and surface roughness.
- Cropland choices are Good or Poor. A poor condition is a finely prepared seedbed, not drilled, with a low plant population, and not in rotation with a sod. A good condition is rough seedbed, high plant population, and in rotation with sod, high residue-producing crop, or conservation tillage.
- Pasture choices are Good, Fair, or Poor. A poor condition is over-stocked, under fertilized, low year-round plant population and poor plant condition. A good condition is properly stocked, adequate nutrient management, and a full plant population (nearly 100% cover). A fair condition is represented by factors less than “Good” and better than “Poor”, and is determined at the planner ’s discretion.

Calculate

- Press the "Calculate" button at the top right of the screen. The output will be calculated and the value will be displayed under the calculate button.
- If PLAT has been run, each P loss pathway is expressed in terms of an index and the total assessment is stated both verbally (low, medium, high, or very high) and numerically.
- If NLEW is run, the total N loss is stated.

View/Print Results

- Press the "Print Results" button to look at a detail of the inputs and outputs. Inputs for the current run can be viewed on this page as well as the outputs. For a listing of the inputs and outputs see Appendix 1.
- Click "Print" to obtain a printed copy or click "Print to file" in order to save the output as a text file.
- Comments can be appended to the output by pressing the “Add Comments” button.

Record Buttons

Save Button

- Press the "Save Record" button to save the file. You will need to name the file. All files will be saved consecutively. The files are saved under the name you gave the file and are saved in the following path: Program Files/USI/NCANAT/UserTables/UserInputs.DBF. Once you have saved the record, it can then be imported into data bases or spreadsheets.

Importing Save Records into Access

- Open Access. A box will come up for you to choose: Blank Database, Database Wizard, or Open an Existing Database. Choose 'Blank Database' and click OK.

- Once you click OK another box will come up titled, 'File New Database'. In the 'File name' box at the bottom will be a file called 'db1.mdb.' This is the default file that you can change to any name you want (the extension still has to be .mdb though). Once you are satisfied with the name click the 'Create' Button to the right.
- A window will come up with multi-tabs on it. The first tab is 'Tables' which is what you want. Click the 'New' button to the right.
- In the next window that appears, choose 'Import Table' and click 'OK'.
- In the next window that appears, go to 'Files of type' on the bottom and choose 'dBase IV (*.dbf)'. There are many different dbase tables so make sure you select the right one.
- Then browse through your directories and select whatever DBF File you want to view and click the 'Import' button.
- Any table or tables that you selected will be put into the .mdb file that you named earlier.

Importing Save Records into Excel of Dbase

- To import the contents of the table into a data base or spreadsheet program, such as Excel or DBase, start the pr2.
- Open the program you want to use. Then use "open a file" option and find the following path: Program Files\USI\NCANAT\UserTables\UserInputs.DBF. When you get to user tables, select "all files". (Selecting "all files" will allow all the data base files to be visible.) This brings all stored records into your data base.

New Record Button

- Click the "New Record" button to start a new run. All records will clear.

Find Record Button

- To find a record, click “Find Record” button. You will be asked for the name under which the record is save. Type in the name of the record information will appear in the input boxes.

Record View

- This table allows you to see each input you have made to a record. To move through the records, either use the scroll bar on the far right-hand side or the scroll bar on the bottom. You can select a record by clicking on the gray box on the far left-hand side next to the record you are interested in.
- Once you have clicked on a record, the information for the record you have indicated will be in the input boxes when you return to the input table.

Symbols at the Top

Reset

- This button will reset all field entry not associated with the Nutrient Management Software inputs.

Exit

- This button will exit the program. The record details will not be saved; however, the PLAT rating results will be populated within the Nutrient Management Software.

INPUTS and OUTPUTS for NCANAT

Inputs for NLEW consist of

- Tract Number
- Field Number
- County
- Mapping Unit (Soil Series)
- Crop (Current Crop) & Tillage
- Field Slope
- Field Acres
- Nutrient Scavenger Crop
- Crop NUE (nitrogen use efficiency which is pulled from a data table)
- RYE (either producer supplied or determined from the data base table using the appropriate RYE based on soil mapping unit, field slope and crop)
- NFactor (N factor taken from the data base and used to determine total N needs)
- N Application Rate. This information is derived from the Application Source And Rate table. In NLEW, this is the amount of N fertilizer supplied to the crop.
- Recommended N Application Rate. This nitrogen recommendation is based on the RYE and N factor.
- BMPs (best management practices that reduce N losses)
- BMP Acres Affected (the number of acres that are affected by the BMP)

The outputs for NLEW are as defined below:

1. N_Applied = the amount of N applied by the producer.
2. N_Needed = the appropriate N fertilization rate as determined by RYEs and N factors.
3. Excess_N (Field acres) = if the total amount of nitrogen applied to a field is greater than the recommended application amount, then there will be excess N.
4. Excess_N_Surface = of the excess nitrogen that is applied, this is the amount that is lost through surface processes.
5. Excess_N_Subsurface = of the excess nitrogen that is applied, this is the amount that is lost through subsurface processes.
6. N_Needed_Field = amount of N recommended on a field-basis. This amount is determined either from the user-supplied RYE or the database supplied RYE and multiplied by the size of the field.
7. Utilized_N_Crop = the amount of nitrogen used by the crop. This is determined by the recommended N amount multiplied by the nitrogen use efficiency factor (NUE).
8. N_Lost After Crop = the amount of nitrogen not used by the crop. It is the N_Needed – Utilized_N_Crop.

9. N_Lost Before BMPs = the amount of nitrogen not absorbed by the crop + the excess N in the subsurface due to excess N application. This N can be lost to the shallow ground water. To obtain N_Lost Before BMPs, N_Lost After Crop and Excess_N_Subsurface are added.
10. N_Lost_After_Cover_Crops = the amount of nitrogen remaining in the soil that can be lost to the shallow ground water after a cover crop has been utilized.
11. N_Lost_After_BMP = the amount of nitrogen remaining in the soil that can be lost to the shallow ground water after a BMP has been utilized.
12. Total_N_Lost = both the N lost through surface and subsurface processes.

Some of the inputs for PLAT are identical to NLEW:

- Tract Number
- Field Number
- County
- Soil Mapping Unit
- Crop and Tillage
- BMPs.

Some of the inputs, however, are different. These unique inputs may include:

- Soil Loss
- Receiving Slope Distance
- Soil Test (agronomic depth)
- Soil Test (at the 28" - 32" depth), if it is used
- Weight:Volume (optional)
- Hydrologic Condition or Drainage Spacing and Depth.
- Phosphorus Application Source and Rate

The outputs for PLAT are simply the indexed ratings for each of the four loss pathways and the total rating.

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Department of Soil Science, Raleigh, NC.
June 2003