RUSLE2 Frequently Asked Questions

Q: What is the policy for adjusting yields in RUSLE2?

A: It has long been Wisconsin NRCS policy, as explained at RUSLE2 training sessions, to use the published yields that are in the Field Office Technical Guide. Section II of the eFOTG will direct users to the Soil Data Mart (http://soildatamart.nrcs.usda.gov/), which is the official source for "current" yield data. Users can generate reports from Soil Data Mart for map unit yields by Soil Survey Area and save or print the .pdf files. Local yields, such as those provided by a producer or agronomist, should be used with caution. These yields must be documented, long-term (i.e. 10 years), and soil map unit specific.

Keep in mind that RUSLE2 is estimating soil loss from a single overland flow path, from the "Dominant Critical Area" within a field, as selected by the conservation planner. So, while the Soil Data Mart yields may be conservative, the average annual yield from the "Dominant Critical Area" will almost certainly be less than the average long-term yield for the soil map unit within a field, and will almost definitely be less than the average long-term yield for the entire field.

Note: Efforts are underway by the Major Land Resource Area (MLRA) Soil Scientists to update the Soil Data Mart yields. These updates may be published, in late 2008, for corn grain yields.

Use of the Soil Data Mart yields for conservation planning in RUSLE2 should not be confused with policy for using yields for nutrient management. These are two separate issues.

Q: How do I build and save *Management* files for future use?

A: The "Building & Saving Management templates" document, on the Wisconsin NRCS RUSLE2 webpage (http://www.wi.nrcs.usda.gov/technical/consplan/rusle.html), demonstrates the process of editing "Single Year/Single Crop Templates," and saving them as "Other Local Mgt Records."

Q: Should we be using the "Rock cover" function if rocks are observed in the field?

A: Wisconsin NRCS guidance is to not use this function for conservation planning on cropland. "Rock cover" shall not be counted as residue when doing residue checks in the field.

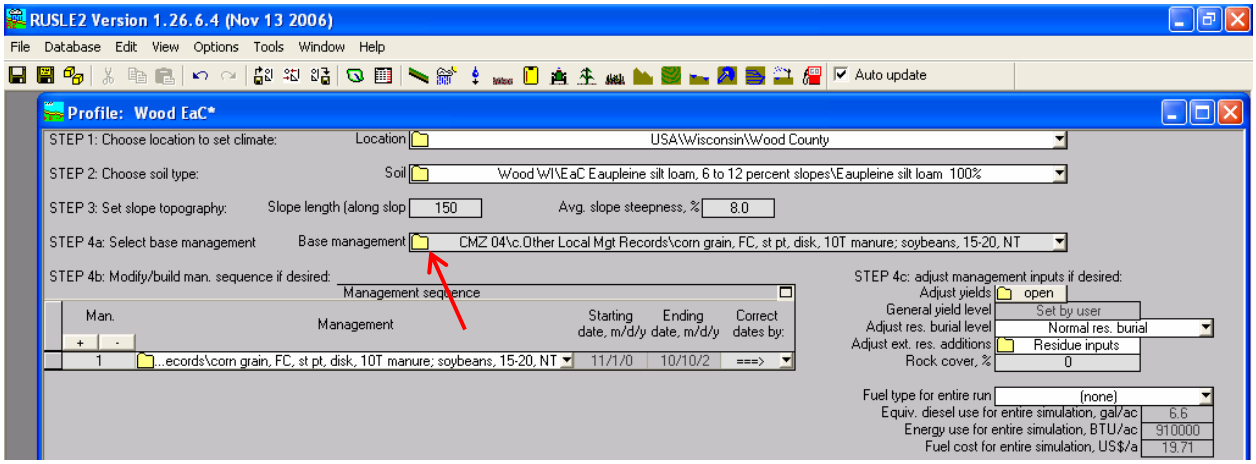
Q: What should be done if there are no yield data in Soil Data Mart for a particular crop or soil map unit?

A: Report the missing data to your Area Resource Soil Scientist and the State Agronomist.

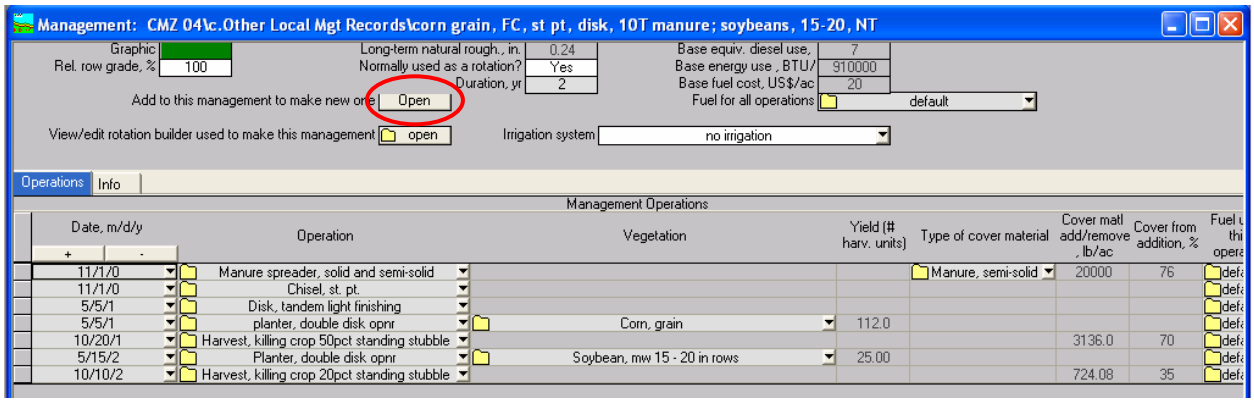
Q: How do we account for the removal of corn residue for animal feed or bedding, or for ethanol production?

A: The suggested approach depends on the amount of residue that will be harvested. Baling corn stalks for feed or bedding will probably result in the removal of less mass than for cellulosic ethanol. So, the short answer to this question is, "It depends." Here are two approaches that vary depending on the extent of residue removal:

Animal Feed/Bedding: Open an existing *Management* from within a *Profile* (as shown below) or *Worksheet*, or directly from the *Open Management* icon (the yellow notepad icon).

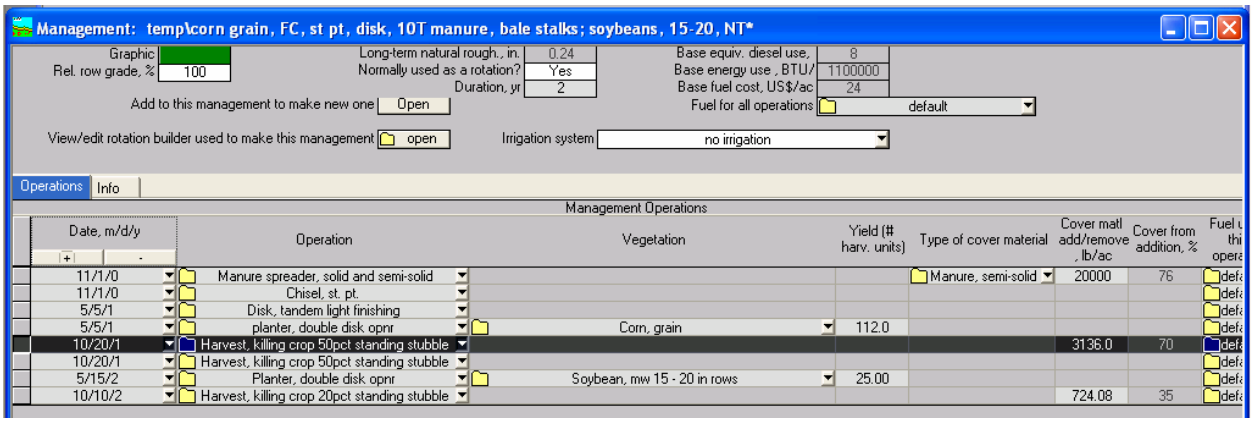


Select the "Open" icon to produce a clone of the original file, and give the cloned file a unique name. This will allow you to edit the temporary, cloned file and then save it as a separate, "Other Local Mgt Record."

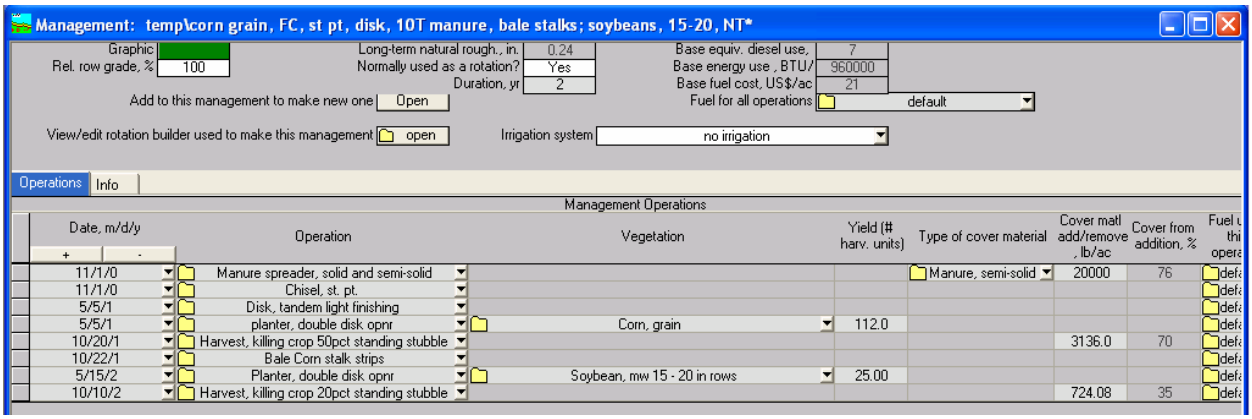


The "Management: rotation builder" screen will pop up. Click "Cancel" to close the rotation builder, since we do not want to add any crops to the rotation.

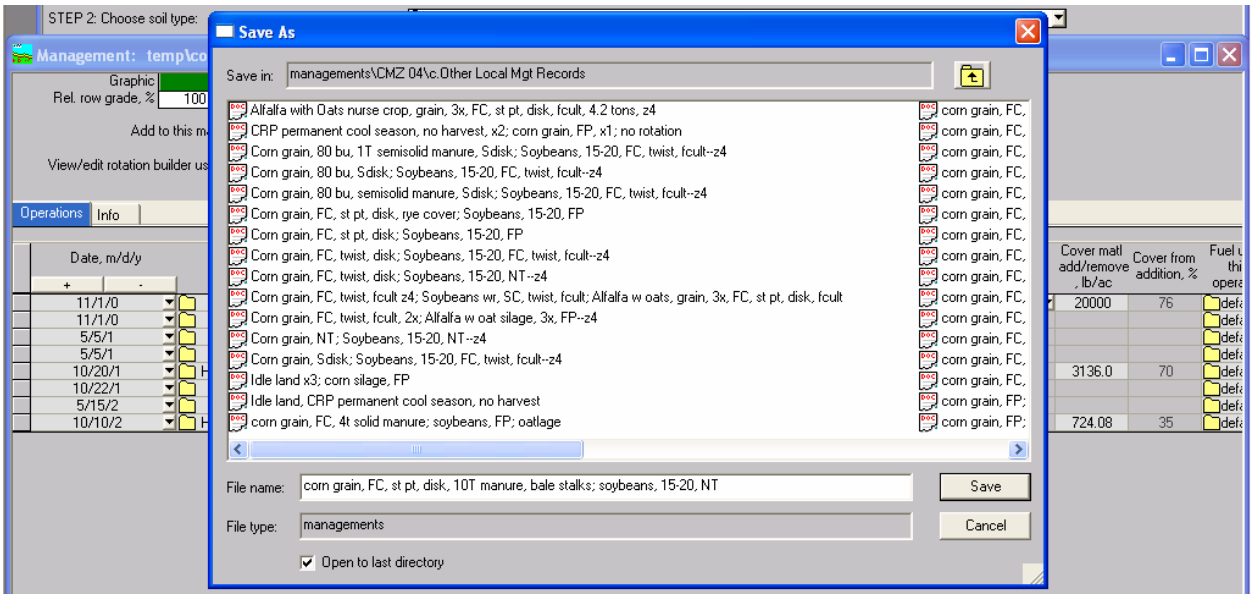
We may simply add a single *Operation* after harvest ("Bale Corn stalk strips"), if we are baling the corn residue left in strips behind the combine. This may be appropriate for baling residue for animal feed or bedding. Highlight the row that includes the corn harvest and click the '+' icon once to make a copy of the harvest row.



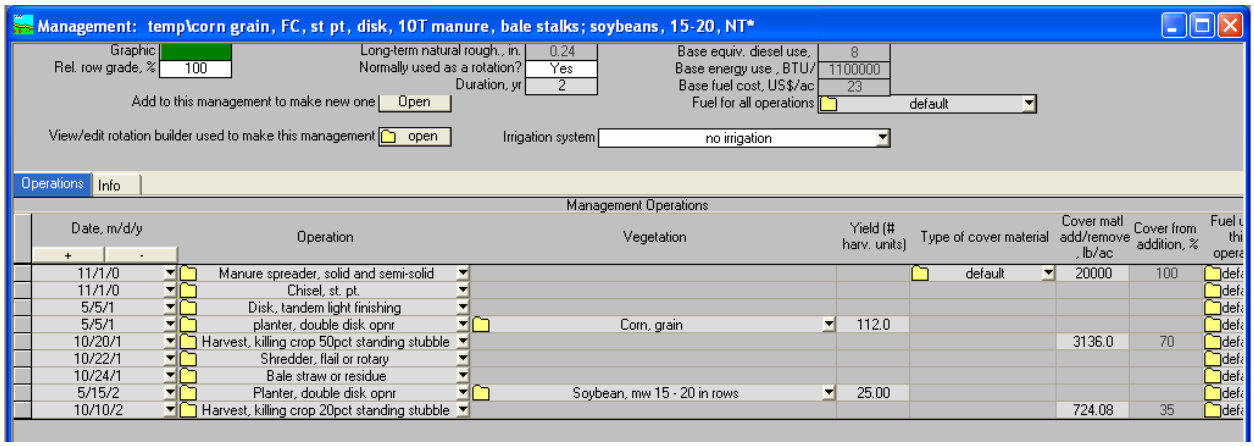
Click on the drop-down arrow on the second harvest row, and select “Bale Corn stalk strips.” [Hint: After clicking on the drop-down arrow, you can start typing the name of the selection that you are looking for to quickly navigate to the selection.] Adjust the dates, as appropriate.



Notice the asterisk at the end of the temporary file name. This indicates that the temporary file has been changed. Select *File* → *Save As* to save the temporary file as an “Other Local Mgt Record.”

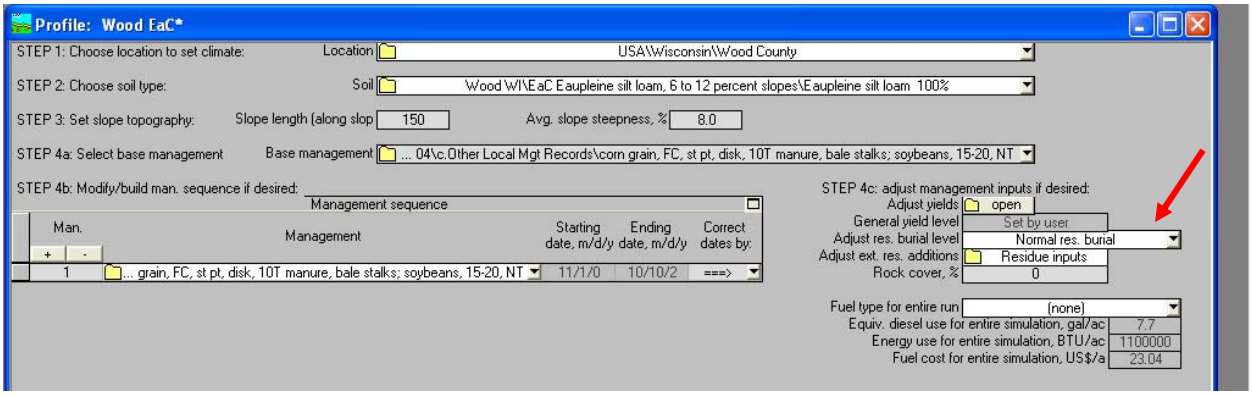


Ethanol Production: A different procedure is probably necessary if aggressive removal of residue is occurring, such as for harvesting residue for the production of cellulosic ethanol. Adding two *Operations* after harvest (one to shred the stalks, and a second to bale them) may be necessary to mimic such activities. [Note: New *Operations* to account for new combines and implements are routinely added to the RUSLE2 base database and crop management files. So, explore the available *Operations*, especially after downloading updated RUSLE2 files.]



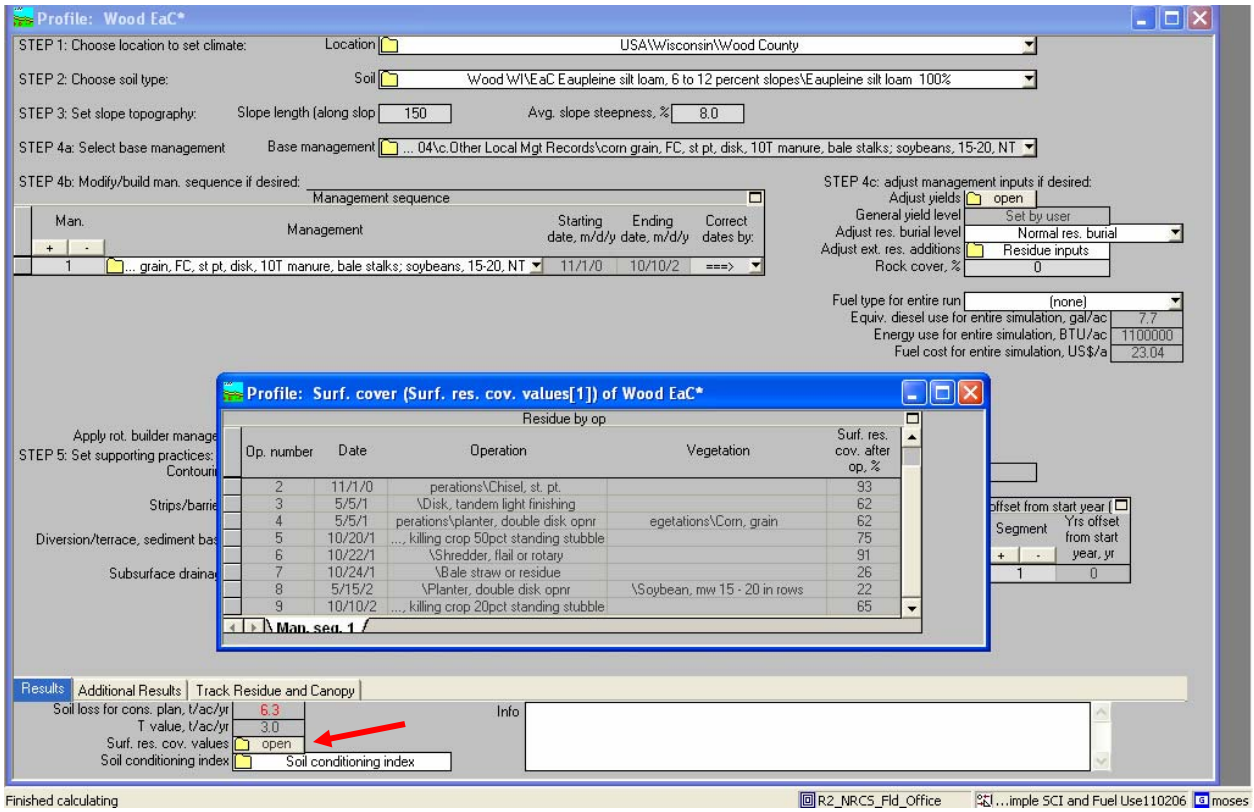
The "Bale straw or residue" *Operation* removes more of the flat residue than the "Bale Corn stalk strips" *Operation* (90% vs. 50%), while removing less of the standing residue (0% vs. 40%). We need the "Shredder, flail or rotary" *Operation* to first cut and flatten the standing residue. This will maximize the effectiveness of the "Bale straw or residue" *Operation*, which removes none of the standing residue.

Q: Is it appropriate to use the "Adjust residue burial level" tool to ensure that the residue levels predicted by RUSLE2 match the expected or measured residue levels in the field (i.e. at planting)?

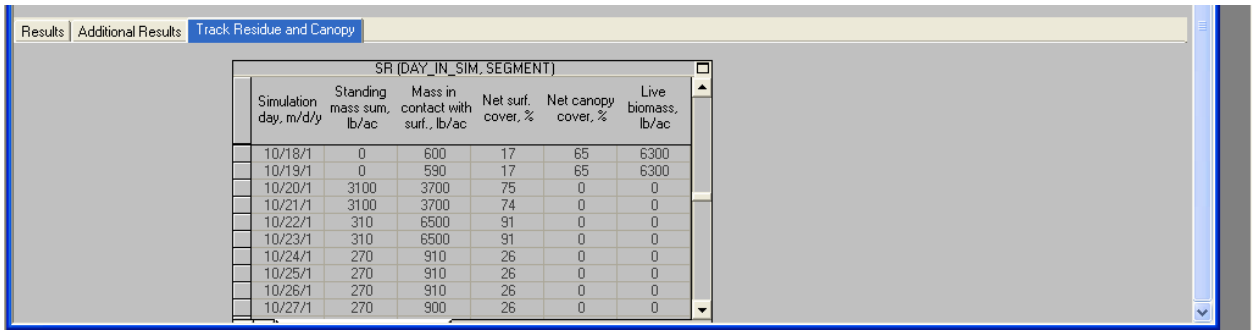


A: The purpose of this function is to account for the aggressiveness of tillage as the result of the use of a more or less powerful tractor or slightly different implement than what is included in a given RUSLE2 "run." Keep in mind that RUSLE2 is modeling soil disturbance, among other things, to generate an estimate of soil loss. The purpose of RUSLE2 is not to estimate residue levels to mimic measurements that a conservation planner might make in the field. If predicted residue levels do not match measured residue levels, it may be an indication that the *Profile* is not a good representation of what was actually done on the field and clarification is needed from the producer.

Let's examine the *Management* that we just built to shred and bale corn stubble for cellulosic ethanol production. We can click on the "Surf. res. cov. values" folder to examine how surface residue changes after each *Operation*.



Close the pop-up window and click on the "Track Residue and Canopy" tab for a more enlightening experience. This will display the average daily standing residue, flat residue, surface cover, canopy cover, and live biomass:



Recall that we harvested corn for grain on 10/20, shredded the stubble (or "standing mass") on 10/22, and baled the residue (or "mass in contact with surface") on 10/24. If we were to scroll up on this residue summary table, we would see that RUSLE2 is decomposing the "mass in contact with surf." throughout the growing season.

Don't forget to share SCI, STIR, and fuel use information with producers. This is especially important for rotations including residue removal.

Q: How can we account for tillage Operations that are not included as options in RUSLE2?

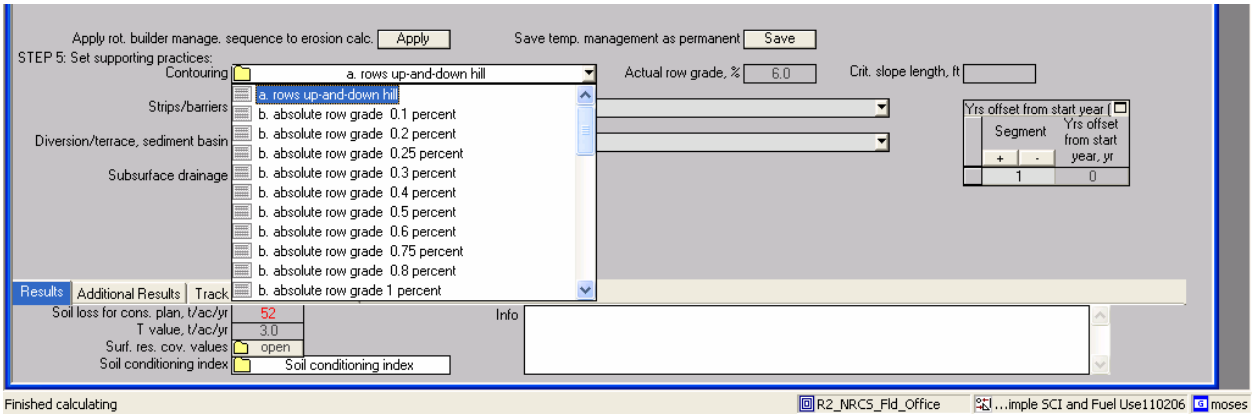
A: In most cases, there is a pre-built *Operation* included in RUSLE2 that is similar to a "new" tillage implement. Search the available *Operations* by clicking on the *Open operation* icon (the green tractor). Open up the individual *Operations* to learn more about them. (Note: There is a lot of information behind yellow folders, in RUSLE2—click on them to reveal what's inside!)

Several questions have been asked about the following implement (http://www.salfordmachine.com/products/rts.asp):

Your RUSLE2 database should include "Seedbed conditioner, coulter caddy, coil tine har, rlng bskt," as an available *Operation*, which should suffice for this implement.

Share your "new" implement with your Area Resource Conservationist or State Agronomist, if you can't find a suitable *Operation*.

Q: What is an appropriate selection for the "row grade," when dealing with Contour Farming, Contour Buffer Strips, Contour Strip Cropping, etc.?



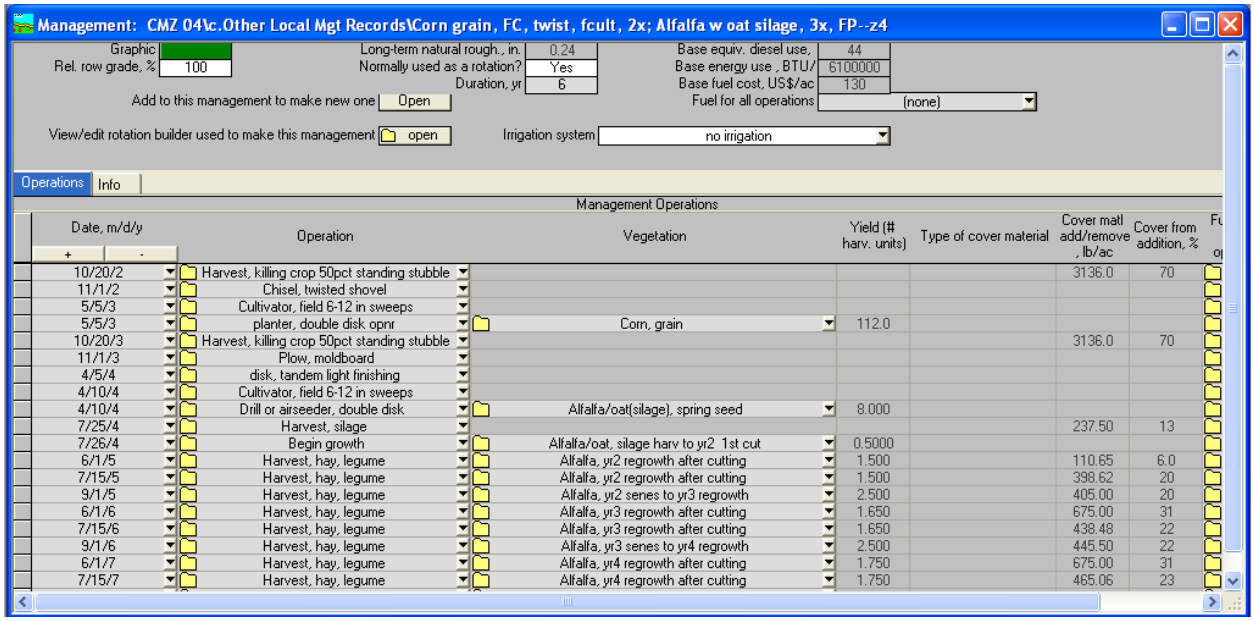
A: Always select an absolute row grade. RUSLE2 assumes that you have been to the field to measure this!!! Keep in mind that the absolute row grade entered here is for the practice as it crosses the overland flow path, within the "Dominant Critical Area," as selected by the conservation planner. Absolute row grades in excess of 1% should not occur, as a practice crosses the overland flow path selected for planning, if the practice is installed correctly.

Q: How many Contour Buffer Strips or Contour Strip Cropping segments should I choose?

A: Choose the amount that will be installed "on the L" (i.e. on the length of slope for the overland flow path selected by the planner). Fitting more than one Contour Buffer Strip (CBS) or more than two Contour Strip Cropping (CSC) segments "on the L" may be unlikely on many Wisconsin cropland slopes. Remember that RUSLE2 is only concerned with the "L" on the selected overland flow path—there are many overland flow paths in a field and there may be more than one CBS or two CSC segments on a field, but less than that "on the L."

Q: Why are alfalfa yields higher for the last cutting of the season?

A: Actually, the alfalfa yields for the following *Management* file show higher yields with the first cutting of the season and lower yields for later cuttings of the same season. The 2.5-ton yields start growing after the Sept. 1st harvests, and are harvested the following June 1st.



Remember, yield data is actually entered into a RUSLE2 *Management* file on the first line for that crop (i.e. the "planter," "begin growth," or "regrowth" line). [Note: The 112 bushel corn yield is entered on the line that includes the planter, in the above example, not the harvest line!] The yield level that is entered beside a hay cutting (or grazing) operation tells the model how fast and how much to grow the next crop and what level of live biomass to deliver at its harvest. The yield you set in September, when you bring in the alfalfa senescence to spring re-growth *Operation*, actually models the growth senescence over winter dormancy and spring growth. This is the yield expected for the first cutting of the following growing season.