Calculations and Plans for K, T, I, WEG, HSGs, and Corrosivity

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By: Karl W. Hipple, National Leader for Soil Survey Interpretations, NSSC, Lincoln, NE

I have added three questions to the title to help us understand the long-term project that we have been working on for the past several years. Where are we going? Where are we today? When will be get there? These questions will assist me outline the project's background, the progress made to date, and anticipated implementation of the calculated values. We have accomplished a great deal and we are poised to make a major improvement in National Soil Information System's (NASIS) stored soil interpretation data.

Where are we going?

About 5 years ago in a meeting with scientists from Agriculture Research Service (ARS) and Farmers Home Administration (FSA) held at the National Soil Survey Center (NSSC, the NSSC agreed to begin a long-term project to calculate soil property interpretations that are currently stored in NASIS. The goal was/is to provide FSA science-based, calculated, consistent pedotransfer values for soil property interpretations (K, T, I, WEG, HSG, etc.) that are used directly or indirectly in determining USDA Program eligibility for farmers and ranchers signing up for USDA programs. The NSSC continues to move forward to meet this goal and progress has been substantial.

One of the first tasks was to make sure that the soil property data required for the calculations was populated. National Bulletin 430-5-7 directed those efforts and we then moved on to developing science-based, defensible calculations for the soil property interpretations listed in the title. The next logical step was to complete a thorough testing of the calculations so that both the NSSC and the States were comfortable with the values returned by the calculations. The next step is to update the National Soil Survey Handbook (NSSH) to align current science and policy with the actual modified procedures. Finally we will implement the calculations and use the calculated values to replace the existing inconsistent values in the NASIS database.

Where are we now?

Cathy Seybold is the scientist that has developed the calculations for K, I, WEG and T. K and I Factor and WEG calculations are complete and ready to go. The third iteration of T factor testing was just completed at the end of January 2008 and Cathy indicated that she would like one more test by States to test the adjustments made after the latest round of State's comments. We have received more information and science to use in refining T factors for Histosols and Histic intergrades so those adjustments will be in the next testing request. At present, the National Soil Survey Handbook (NSSH) allows Histosols

and Histic intergrades to be rated with T factors of 1, 2, and 3. We will be making adjustments to these values because the volume of 1, 2, or 3 tons of organic material is dramatically different than the volume of 1, 2, or 3 tons of mineral soil. We anticipate allowing T factors of 0.2, 0.4, 0.6, and 0.8 to be used exclusively for Histosols and Histic intergrades.

Bob Dobos has worked very hard, in conjunction with engineering staff from NHQ, to design and program Hydrologic Soil Group (HSG) criteria and that model is ready to go. We are making some minor corrections to the printed materials to make them easier to use and correct some typos but the calculation is complete. We are currently working with NHQ Engineering staff to reissue National Engineering Manual Chapter 7. The main differences are the corrected typos and instead of having 2 tables for determining HSGs there will be a single table with additional footnotes. This information will assist users to use and understand the rating system.

Version 1.0 of the National Commodity Crop Productivity Index (NCCPI) was designed by Bob Dobos and Ray Sinclair and is ready for use. An *NCCPI Users Guide* is written and Stan Anderson has completed editing it and it will be issued soon as a loose leafed publication. Bob Dobos and Ray Sinclair have presented the NCCPI to NHQ Operations staff, FSA folks and ARS folks. It was well received and it is anticipated it will have utility for use as the new Farm Bill is implemented. One anticipated use is to assist FSA as they strive to update the Soil Rental Rates for their programs.

Paul Finnell is working on a calculation for steel corrosivity that we anticipate releasing for testing late this spring or summer. He has incorporated additional science that has been around awhile but had previously not been used in our soil survey guides. The calculation will dramatically improve corrosivity ratings for steel.

The NSSC will issue a National Bulletin in May or June 2008 with a list of the reports included for States to use in testing and checking data. From our observations at NSSC, it appears that many of the differences that occur in calculated values are caused by inconsistent data. So we hope that States will begin to carefully look at their data so that when we move to calculate and populate the calculated values into NASIS, most of the bugs will be worked out.

When will we get there?

We anticipate that States will begin testing and checking data as soon as they can after the National Bulletin is issued. We realize that it is field season but hopefully by the new Fiscal Year (October 2008) this task can begin. In January 2009, the calculations and models will be turned on and States can begin to upload new datasets to the Soil Data Mart (SDM) if they are ready. The plan is to begin to focus refreshing datasets on SDM beginning in April 2009 with all datasets refreshed on the SDM by January 2010. We are aware of the hardware stresses created when everyone uploads data to the SDM all at once so we hope you will upload datasets as they are ready rather than wait until December 2009 and try to push them up all at once.

We ask states to **MINIMIZE OVER RIDES**! Remember that our goal is to develop nationally consistent, science-based, defensible data for use by all our customers. The NSSC also realizes that the calculations, models, etc. are not bulletproof, or in other words they may not work accurately with all soils. We are asking States that when they identify problem soils, please let the NSSC know so that we can assist either by developing a separate calculation for them or by helping find a consistent national science-based solution for determining values for them. NSSC can assist by acting as a clearing house for solving these "special situations".

In late summer 2008, the NSSC will begin to address the implementation phase of the project by working with Chris Smith (Technical Soil Services) and others in Ecological Sciences and National Headquarters Operations staff to evaluate USDA Program impacts and discuss delivery of the information and data. When we have an Implementation Plan developed, it will be presented to the National Leadership and shared with State Soil Scientists.