

## Recommendations from the WSU CSANR Soil Quality Task Force

Fall 2014

The WSU Center for Sustaining Agriculture and Natural Resources (CSANR) Advisory Committee (AC), composed of producers and professionals across the State, participated in a workshop in Jan 2014 to identify specific priority areas within the context of soil quality. The AC's top two priorities were: 1) Identifying the economic value of soil quality; and 2) understanding the relationship between soil biological activity and disease pressure (see <http://csanr.wsu.edu/prioritizing-soil-quality>). Other topics that were also identified as priorities included soil-water relations, soil organic matter, indicators of soil quality, the relationship between soil and nutrient density in food, and soil physical attributes.

After this workshop, a Task Force of faculty and a representative of the AC were charged with developing a set of specific recommendations for how CSANR could most effectively and efficiently invest in research, extension and teaching capacities in soil quality. The following are the recommendations of specific activities and general strategies from the CSANR Soil Quality Task Force:

### **Research**

1. Support or fund research projects that address the net economic effect of soil improvement practices. To that end, research trials should document costs associated with soil improvement activities as well as value the benefits. The net impact on grower's time, amendment and chemical expenses, and value and quantity of saleable product should all be accounted for. This could include original research as well as meta-analyses or data mining of previously published work.
2. Increase investment in evaluating soil testing methods that go beyond conventional soil fertility analysis.
3. Define and measure public value of soil quality improvement programs and possible economic benefits (credits) for the farm, including: a) carbon sequestration / credit; b) Conservation Reserve Programs (which take highly erodible lands out of production); c) Environmental Quality Incentive Program (EQIP) (which incentivize growers to adopt new practices with environmental benefits (e.g. cover cropping for 3 years)); d) Conservation Stewardship Program (which pay for working lands where beneficial practices are on-going).
4. Support research projects that examine alternatives to fumigation for control of soil-borne diseases. Non-organic growers will need alternative practices and alternative fumigants because fumigants such as methyl bromide are targeted for phase out. Also, organic growers (e.g. potatoes and onions) need alternatives to fumigation. Example research projects could include: a) What is the effect of fumigation on beneficial organisms; b) What is the effect of fumigation on soil tilth (i.e. soil physical properties); c) Biofumigation with mustard seed meals; d) biological control; e) pre-plant treatment in perennial plants; e) cover crops
5. Survey growers in different sectors to ascertain what amendments or practices they employ that are known to improve soil quality? Follow-up round table from Snohomish County compost project with growers and composters. What are growers and industry's needs?
6. Support research of soil building practices that allow intensification of crop rotations (increasing the frequency of high-value crops, such as potatoes or onions). In the irrigated Columbia Basin, this seems to be a primary motivation of growers using mustard green manure crops preceding potatoes.

7. Support documentation of on-farm soil improvement by growers by contrasting fields with practices in place for an extended period versus a comparable field without those practices.

### ***Adoption***

1. Work with partners such as NRCS to direct funding from Conservation Innovation Grant projects, for example, to validate existing research and build grower confidence. Soil quality is a priority for NRCS at the national level, but translation of this priority at the state level is variable.
2. Work with partner organizations to encourage grower use of compost. This work is underway in Snohomish County and ideas to enhance and extend this work, include: a) subsidize compost purchases; b) support equipment rental or loans for purchases, especially loaders & spreaders; c) reduce plastic contamination of commercial compost through extra screening; d) produce compost registered for Organic use (residential food waste is now a prohibited use due to the compostable plastics)
3. Encourage adoption of cover crops. For example, compile results of cover crop trials and develop a variety selection tool. Beware of complicating interactions; for example, brassica cover crops are being used extensively and they may introduce black leg (esp. Willamette valley). Growers should plant certified disease-free seeds

### ***Education***

1. Support producer-to-producer education activities; for example: listen to growers and find out what has worked for them and encourage growers seen as leaders to adopt soil quality improvement practices.
2. Support grower education that addresses both principles of soil quality and use of specific products that may or may not improve soil quality. Examples include workshops or forums such as recent Soil Quality Network in Mount Vernon, Soil Quality Symposium in Moses Lake, Horticulture meeting in Wenatchee.
3. Produce more publications to make the data that exists more available in layman's terms. For example: a) how to evaluate soil quality (e.g. measuring certain parameters over time; measure at the same time of year; use the same lab); b) cover crop guidelines for different industries; c) cost/benefit analysis of soil improvement practices; d) use of organic amendments in production agriculture (e.g. what are important attributes of amendments that should be scrutinized); e) use of reduced tillage; e) specific problems that can be solved with improved soil quality, such as poor infiltration, low water holding capacity, and surface crusting.
4. Support field days and strategic demonstration plots that encourage observation of the effects on soil properties from "ideal" practices. What is possible for soil quality; what does improved soil quality look like? One strategy could be to bring back BIOAg demonstration sites. The advent of GPS equipment and GIS approaches could make the original concept of BIOAg demonstration sites more easily accomplished.
5. It is also important to connect and coordinate with other soil quality efforts such as the Soil Renaissance project of the Noble Foundation, the Soil Quality Network based in Oregon, SARE program regional and national efforts, and similar initiatives.