Managing Soil Compaction

Chris Lawrence, USDA-NRCS Cropland Agronomist, 804/287-1680 or chris.lawrence@va.usda.gov

Compaction Core Concepts:

- The principles are ***simple***, but putting them into practice is ***not***.
- There are ***no silver bullets*** or miracle cures, but a long-term commitment to ***doing many little things can make a huge difference***!

Compaction Management Recommendations

1. **PREVENTION**
    - ***a. Soil factors***
        - i. Stay off wet ground - ***TRUMP CARD***
        - ii. Make your soil a stable, living sponge (see back of this page)
    - ***b. Equipment factors***
        - i. Minimize axle tonnage:
            - Under 5 keeps you alive; 5 to 10 – you'll know where you've been; Over 10 – never again!
        - ii. Minimize tire-to-soil contact pressure
            - Duals/triples; taller/wider tires; minimize inflation pressures
        - iii. Minimize percent of field tracked
2. **IDENTIFICATION / DIAGNOSIS**
    - ***a. DIG and observe crop, soil, and roots***
    - ***b. Consider field history***
    - ***c. Use penetrometer***
        - i. Use it correctly – See Penn State fact sheet
        - ii. Remember the confounding factors
            - Rocks/gravel; long-term no-till/perennials; ***soil moisture***
3. **ALLEVIATION / REMEDIATION**
    - ***a. Target your mechanical tillage…***
        - i. Location – Only the fields and spots that need it
        - ii. Spatially – In-row is the way to go!
        - iii. Vertically – Just below the "pan"
        - iv. Timing – After all traffic & when soil dry enough to shatter
        - v. Method – Minimize surface disturbance
    - ***b. Maximize your biological tillage…***
        - i. Make your soil a stable, living sponge (see back of this page)

10 steps for making your soil a living, stable sponge

1. Less (zero) erosion
2. Less (zero) tillage
3. Less (zero) fallow
4. *More residue*
5. *More roots*
6. *More yield*
7. *More diversity*
8. *More perennials*
9. *More cover crops*
10. *More manure*