Help us help you – Avoiding roadblocks to your soil sample data stream from KSSL

(Do yourself a favor – Help us help you get your data)

Today

- Mostly about sampling & samples (“forms” tomorrow)

- Bagging and tagging soil samples is just the first part of the journey from the ground to useable data on your computer.

Today

- **Common pitfalls, roadblocks, and unintended consequences** that can dramatically delay or prevent harvesting the fruits of your sampling labor.

- **Examples of how to avoid** the most common roadblocks to sample processing and data delivery delays. Issues of sample size, sample integrity, and critical documentation will be covered.

- Representatives from the main sections of the KSSL will briefly cover the most common, avoidable obstacles to you getting your analytical data ASAP.

GIGO

- Details matter.
- Be particular.
- Measure twice, cut once.
- Avoid excessive use of clichés.
- Being rusty is understandable; staying rusty isn’t (we make house-calls).

In the Field *(1)*

- Sample from pit (if possible).
- Horizonate first (agreement before sampling)
- Label all bags & tags before sampling
  - Series, Horizon, User Pedon ID, Depth (cm), Field #.
- Put “Field #” on all bags, tags, clod boxes, etc.

In the Field *(2)*

- Sample from the bottom up.
- Fill bulk bags 2/3rd's full.
- Double fold & staple (*NO desk staples*) Thin section clods in separate box.
- Only put staple in top of thin section clods.

Samples & Shipping

- **Sample volume:** send enough to analyze >1kg (> 1qrt)

- **Clod boxes**:
  - fully label
  - fill all cells

- **Send Descriptions:**
  - With the samples
  - Entered in NASIS

Sampling & Shipping Supplies

- NSSC provides appropriate supplies and equipment
  - Request > 2-3 weeks in advance.

- **Required** shipping boxes and liners included. (**APHIS regs.**)

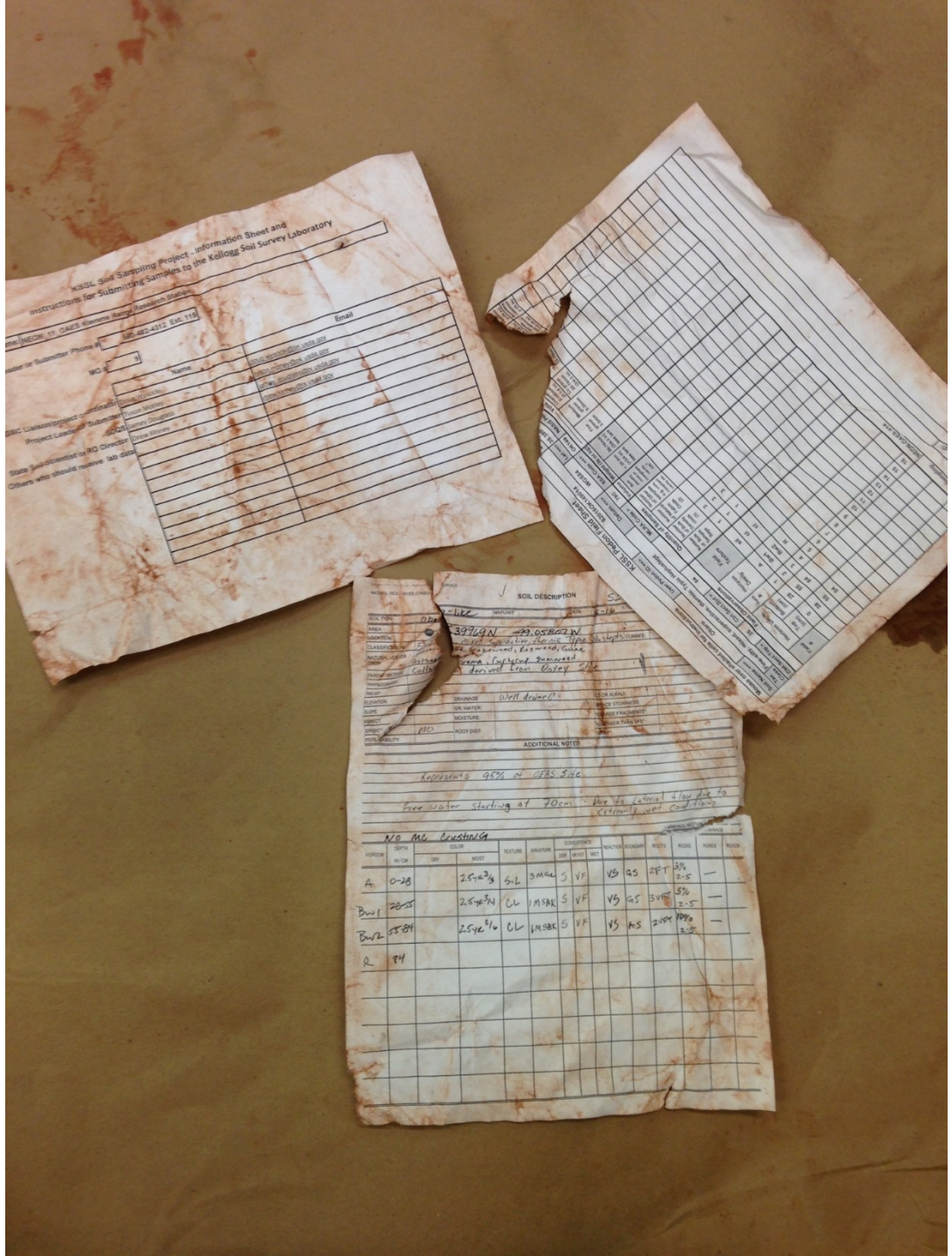
- Consumables supplied *(not a problem).*

- Return hard equipment (*trunks, sieves, etc.*)

- See **"Soil Sample Submission Protocol for the KSSL"** http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/research/guide/?cid=STELPRDB1240058#sample_submission

Legible Paperwork
(includes writing)

- Redo if needed



"Must Have" Accessory Info

(not on the bulk sample tag)

- **Site coordinates**
- MLRA
- Horizonation, Depths, etc.
- Soil description (complete)
- Control Section

- **Field Sample #:** (1st column).

3 Items must agree :

(everything stops – samples go to detention)

Bulk bag label *(writing on bag itself)*
Bulk tag *(stapled to the bag)*
Pedon Spreadsheet

Synchronize <u>before</u> shipping

(Lay out all bags, etc.)

Big ‘ol pile o’ baggies

- note labels,
- non-standard packaging

Don’t send soup:

Why not?

Drain / mod. dry samples before shipment.
(avoids shipping failures).

e.g. :
Hydric,
Saturated (non-hydric),
Subaqueous,
Permafrost.

Chemistry

- **Avoid Small Samples**: Minimum 1kg soil (loaf of bread) is needed for full characterization. If < kg, request specific analyses (in order) that you consider essential. *(Impossible for us to predict what analyses you might have wanted with limited sample size.)*

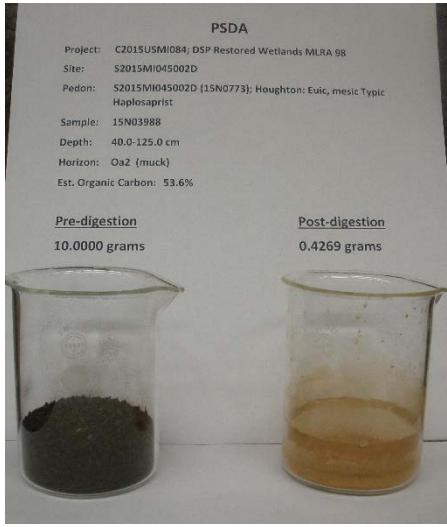
- **New Zealand Phosphorus Retention** is NOT appropriate request for “O “ horizons.


You can go down this road,
but do you really want to?
Think
Twice

Other Analytical Requests

Field Moist Water Content: generally not needed.

PSDA: NOT for O horizons



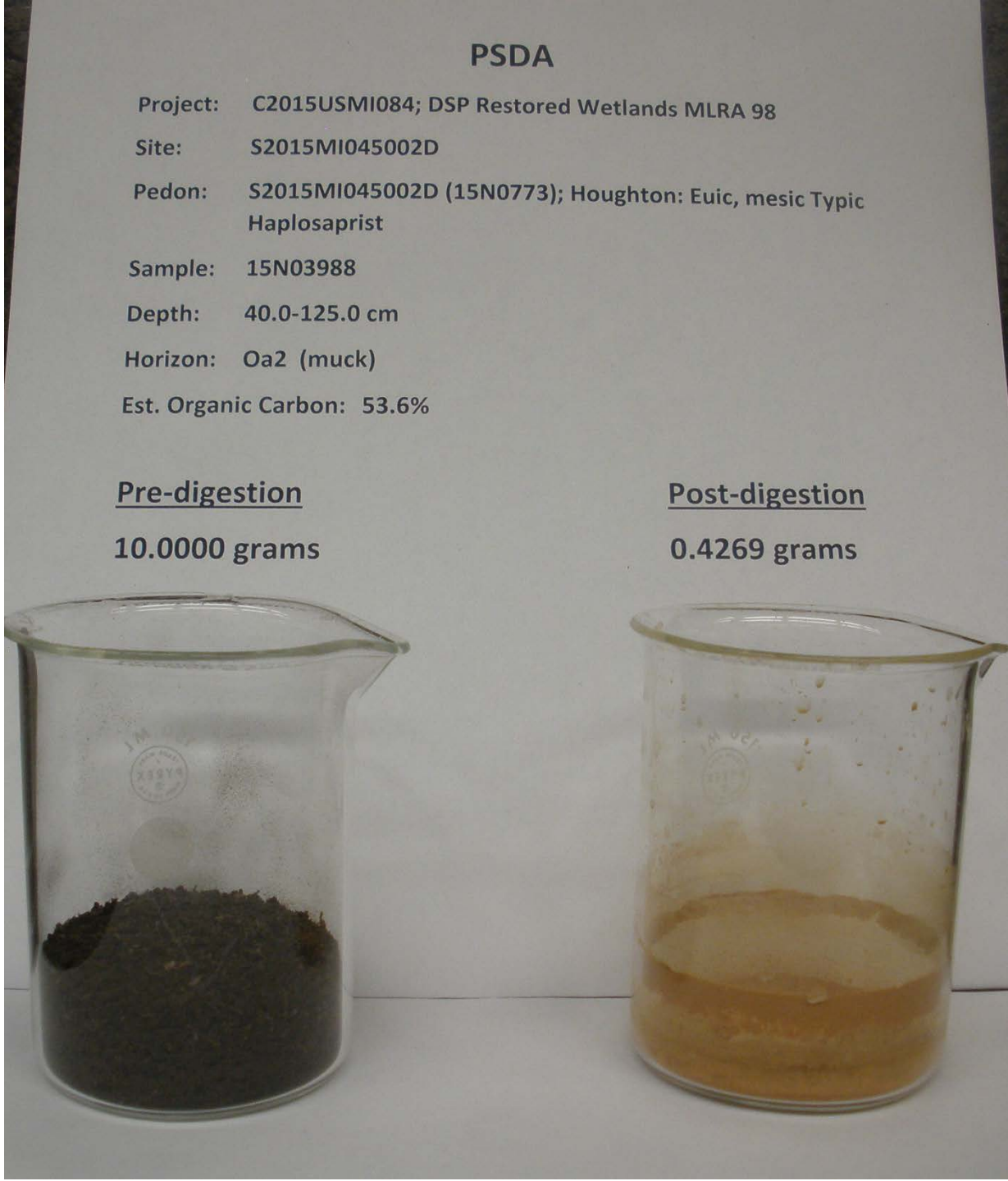
Moist PSDA: generally not needed.

Grain Counts: NOT for O horizons

Clay Mineralogy: NOT for O or A horizons

Organic Horizon

PSDA doesn’t apply :



Physical Analyses

Coarse Fragments:

If Field Sieved, <u>requires :</u>

- Both weights *("< 20mm", & "20-75mm")*

- Must add up *(non-frags must = fine earth);* *Co. Frags + fine earth = 100%*

- Enter only recognized Co. Frag Size Classes *(no free-form ranges)*

Bulk Density

- Major importance (1 of the big 3: texture, Bd, Ksat)
- Key to many lab calculations & soil intepretations.
- See “How to sample bulk density in the field”
  https://www.youtube.com/watch?v=E7BSZrJ-TDw

Bulk Density Clods

Bulk Density (Bd, Db) Clods:

- Clods Rule (standard); RaCA Bd not the standard (dropped scoop). Cores are more variable than clods.

- All "non-clod" methods are analyzed as "compliant cavity".
  - Compliant cavity **requires** accurate **volume** measurements (cc's, or length & diameter **on sample bag**)

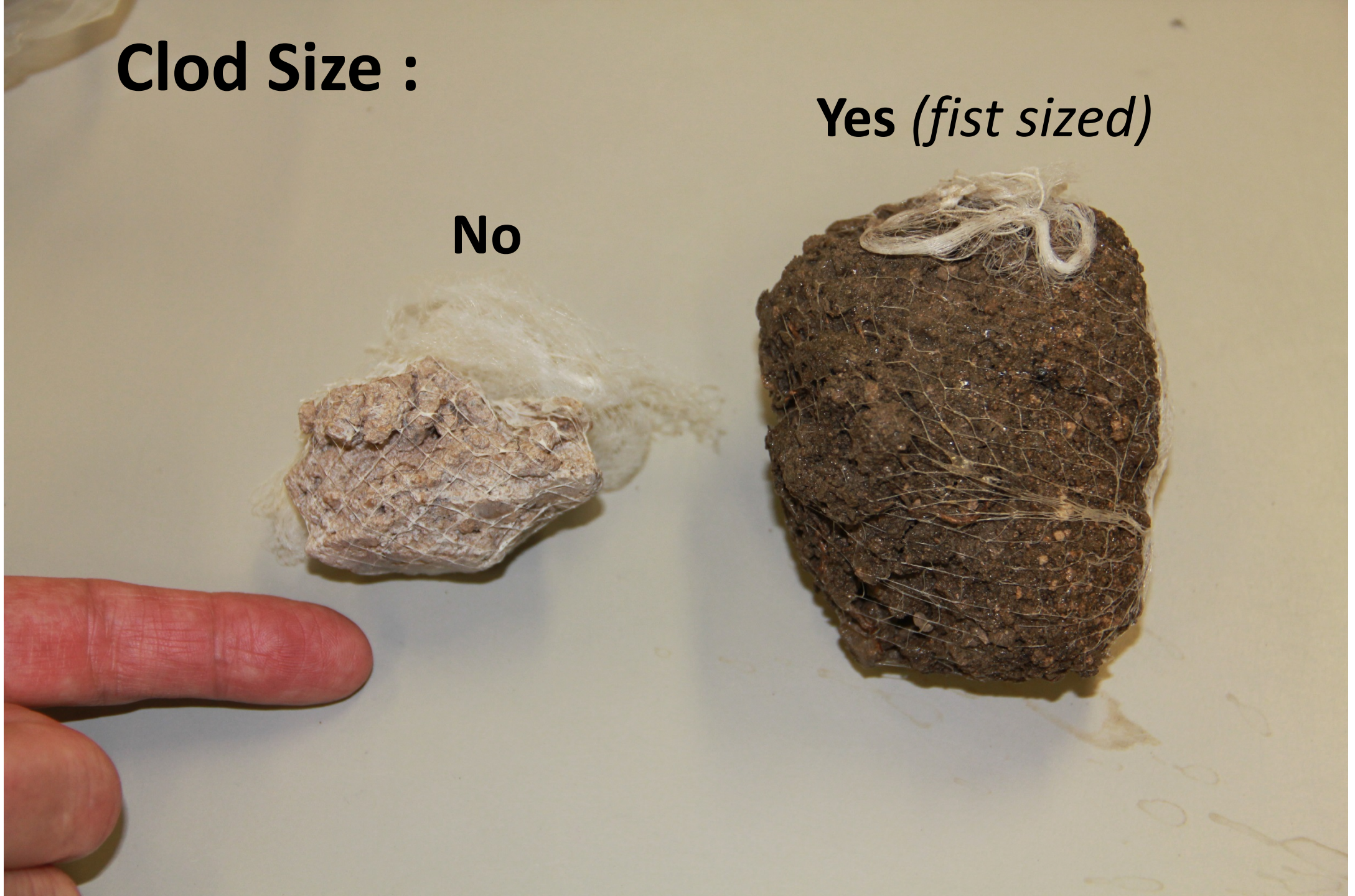
- Clods give Bd data a constant H_20 tension.
- Soil structure is intact
- Clod size, integrity.


Too broken
Too small
Too thin

Clod Size :

Yes *(fist sized)*

No



How Common?

Recent Ex:
7 of 15 (47 %)
too small

Unfilled box cells

Ex.

Good size,

Empty cells (bad)

Label the bags

Clods: Problem Materials

- **Sands** (clods possible; alternative canister sample method (for ls, s)
- **Dry, strong structure** (e.g. slickenside horizons; sample when moderately moist)
- **Heavy Clay** (sample when moderately moist)
- **High Co. Frags** (look for soil-filled pockets)
- **Many Roots** (look for clear area)
- **Saturated** (sample when dry; drain / dry samples prior to shipment)

Conclusion :

Our Goal - Get you your data ASAP so it can get to work.