How to take plant counts during a field inspection.

Taking plant counts while conducting a field inspection is required to determine if the field meets the varietal purity requirement of certification. The location of the counts must be determined at random throughout the field. This document is meant to assist field inspectors as to how to take a correct plant count. Wheat is the example crop referred to in the document, but the process can be used for any other crop.

In plant counts, you are looking for two things:

- **Off-type:** any wheat plant of a different variety. Does not match the variety characteristics.
- **Variant**: any wheat plant that is distinct from the variety but is stable and predictable within the variety. Variants are listed in the variety description within a certain tolerance.

Here is an example of how to make a plant count in a wheat field:

The goal of this method is to look at 1,000 heads per count with 10 total counts.

1. Measure one foot of row and count the number of heads present. Do this in 2-3 locations and find the average heads per foot of row.
2. Divide 1,000 by the number of heads per foot of row. This determines the number of feet that will need to be viewed to see 1,000 heads.
3. Use a measuring tape or step carefully heel-to-toe along the row to view the total number of feet of row needed to see 1,000 heads. (Once you are comfortable with the process, you can speed things up here by figuring out how many feet you walk per step, then just take that number of steps along the row to make your count.)
4. Take 10 counts to determine the number of off-types or variants in 10,000 heads.
5. Refer to the crop standards for number of allowed off-types in that class.
6. Refer to the varietal description for number of allowed variants.

Example:

1. Counted 40 heads per foot of row.
2. 1,000/40 = 25 ft. (you will need to look at 25 ft. of row to see 1,000 heads)
3. Stepping heel-to-toe I walk along 25 ft. of row to see the 1,000 heads. (Once I'm comfortable with the process, I figure out that I move about 3 feet per step, so I take about 8-9 steps along the row to complete my count).
4. Take 10 counts gives me a sample size of 10,000 heads.
5. In my 10 counts, I find 2 heads of a white chaff off-type:
    a. The tolerance for Certified fields is 4/10,000. If the field is certified class, it meets requirements to pass for varietal purity.
    b. The tolerance for Registered fields is 2/10,000. If the field is Registered class, the counts show it is right on the line for tolerance. The field can pass at exact tolerance, but the best practice here is to take a few more counts in the field to see if the average becomes a more accurate representation of the field.
6. In my 10 counts I found 8 talls. The variety description lists a tolerance for talls at 10/10,000. Field meets requirements to pass for varietal purity.

Important notes:

Don’t wait till you see a problem plant to begin your counts. Also, don’t deliberately include a problem plant in your counts. It is meant to be random example of the field in general.

When you total up your counts of either variants or off-types, make SURE you check the standards and allowed variants. I’ve had some confusion in the past about passing or rejecting fields over counts. If the variety description allows 10 talls in 10,000 and you find 20 talls total in your counts. Don’t put those counts down on your report and mark it passing. Pause. Look at the field overall. Take more counts. See if anything averages out. Then make your decision whether to pass or reject the field for varietal purity. And as always, if you have questions, ask.