

Conducting a Field Inspection

Part 1 of 3

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Kansas Crop Improvement
Association

This training will provide the basic foundation to begin inspecting certified fields.

An inspector committed to conducting quality inspections will seek to expand knowledge beyond these basics. This, in turn will make field inspection more efficient and more satisfying for the inspector.

Why Inspect Fields?

- The goal of seed certification, or any quality management system (QMS), really, is to ensure that the process of producing seed is conducted in a manner that maintains a variety or cultivar in a pure state and of a quality that enables the purchaser of the seed to successfully produce a crop.
- Field inspection verifies the field production portion of the seed QMS.
- Certified inspections assure adherence to standards and protects both the seller and buyer of seed.

The field inspector must:

- Clearly understand the standards for each crop inspected.

And...

- Apply those standards conscientiously by:
 - Arriving at the correct field
 - Correctly confirming variety
 - Correctly evaluating varietal purity
 - Properly identifying problem weeds
 - Verifying proper separation or isolation
 - Properly reporting findings to KCIA

Definitions

- Off-type – a plant of the same crop type that differs from the cultivar and that is not described as being a part of that cultivar.
- Variant – a plant of the same crop type that, while differing from the cultivar, is described as being part of that cultivar.
- Isolation – the distance required between two fields of the same crop type (i.e. wheat) to minimize cross contamination from pollen.
- Separation – the distance required between two fields of different crop types (i.e. wheat and barley) to prevent accident mechanical contamination at harvest.

Definitions cont.

- Variety or Cultivar – interchangeable terms for our use. A member of a species with unique describable characters, i.e. Jagger wheat, Art wheat, Hutcheson soybean etc.
- Prohibited Weed – a weed which the crop standards list as not allowed in a certified field and that must be controlled or the field is rejected.
- Prohibited Crop – a crop type listed in the crop standards which if found in a certified field leads to field rejection.
- Objectionable Weed – a weed allowed in limited quantity in a certified field but that must be removed from the final cleaned seed.
- Common Weed – any weed not listed in the crop standards as prohibited or objectionable.

Definitions cont.

- Passed/CSI – the field, in the inspector's mind meets the standards and the seed that will be harvested can proceed with certification.
- Rejected – the field does not meet standards and cannot proceed with certification. Depending on why the field was rejected, the grower may correct the problem and request a re-inspection.
- Deferred – additional information is required. The field is neither passed nor rejected.

Definitions cont.

- Quality Assurance (QA) – for inspection purposes, field inspections for quality assurance are generally for field production of seed of cultivars not in the seed certification program but produced under a companies quality management system (QMS).
- PASSED-QA – field inspection to a set of standards, much like seed certification
- REPORT ONLY- QA – field inspection to report field observations but recommendation is not made.

Paper and Electronic Forms

- Historically KCIA used paper field applications completed by the grower/applicant. The grower/applicant completed the upper portion which was the field information and the inspector then took these to the field and completed the lower portion as the inspection report.
- Today field applications are made electronically via the internet through the *myfields* portal. Fields are assigned to inspectors and are accessed via individual inspector accounts. There are videos explaining this on the *Inspector Training* page of www.kscrop.org. Please view these videos.
- Most if not all assignments will be through the myfields portal, but on occasion you may receive a handwritten form for a secondary crop not handled well by *myfields*.
- I've kept the slides with the old form and finding a field using the field's legal description in this slide set as it is important for core knowledge.
- Inspectors will take blank inspection forms to the field, complete the inspection and enter each report through *myfields*.

Locating the Field (paper applications)

- The field inspection report for each field contains the legal description, written directions, and a rough drawing of the field.
- The inspector must be able to locate a field using township maps and written directions.
- Once at the field the inspector double checks the directions, and confirms that the variety matches that on the report form.

The upper portion of the field application contains information on how to find the field, and the variety and class of crop you will be inspecting.

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2000 Kimball Avenue, Manhattan, KS 66502
Ph. (785) 532-6118 Fax (785) 532-6551

APPLICATION FOR FIELD INSPECTION **Application No: A54321**
Small Grains

INSTRUCTIONS TO APPLICANT- Print clearly and legibly

A. Fill out upper portion of this form COMPLETELY and ACCURATELY.
-Complete address, legals, directions and phone numbers of Applicant
-Diagram field on map (map = 1 section, ¼ =160 acres) including ditches, waterways, etc., give legal description of field and clear directions including road names, landmarks, which side of road or lane, etc. "Call for directions" is not acceptable.
-Field name or ID, variety, class being produced, seed source # (certification number), seed class planted, previous crop, acres, planting date. If seed was purchased, attach seed tag or bulk sales certificate.

B. Return original and yellow copy to KCIA before filing deadline to avoid late charges.

APPLICANT:
Sam Seedman
Seedman's Seed Source
13428 Fishing Hole Rd.
Somewhere, KS 66432

Phone 1: 785-111-1111 Phone 2: 785-111-2222

Distance and Direction of residence from nearest town -- 3 S of Somewhere on Fishing Hole

Legal description of residence or business

Qtr. SE Sec. 24 Twp. 11S Range. 1E Co. DK

Field legal description: Qtr. SE ¼ Sec. 25 Twp. 11S Range. 1E Co. DK

Distance and direction of field from nearest town 1 S of store

Field Name or ID: N Back 40
Variety: Armour Acres: 42
Class being produced (circle): Fnd Reg Cert QA
Seed Source #: D12345 (attach seed tag or bulk certificate)
Seed class planted (circle): Fnd Reg Cert QA
Planting Date: 9-24-08
Previous Crop / Variety Sorghum

| | | |
|----|----|--------------|
| NW | NE | Fishing Hole |
| SW | SE | |

Which side of road or lane? W

Does KCIA need to contact the contract grower prior to inspection? NO YES
Contract

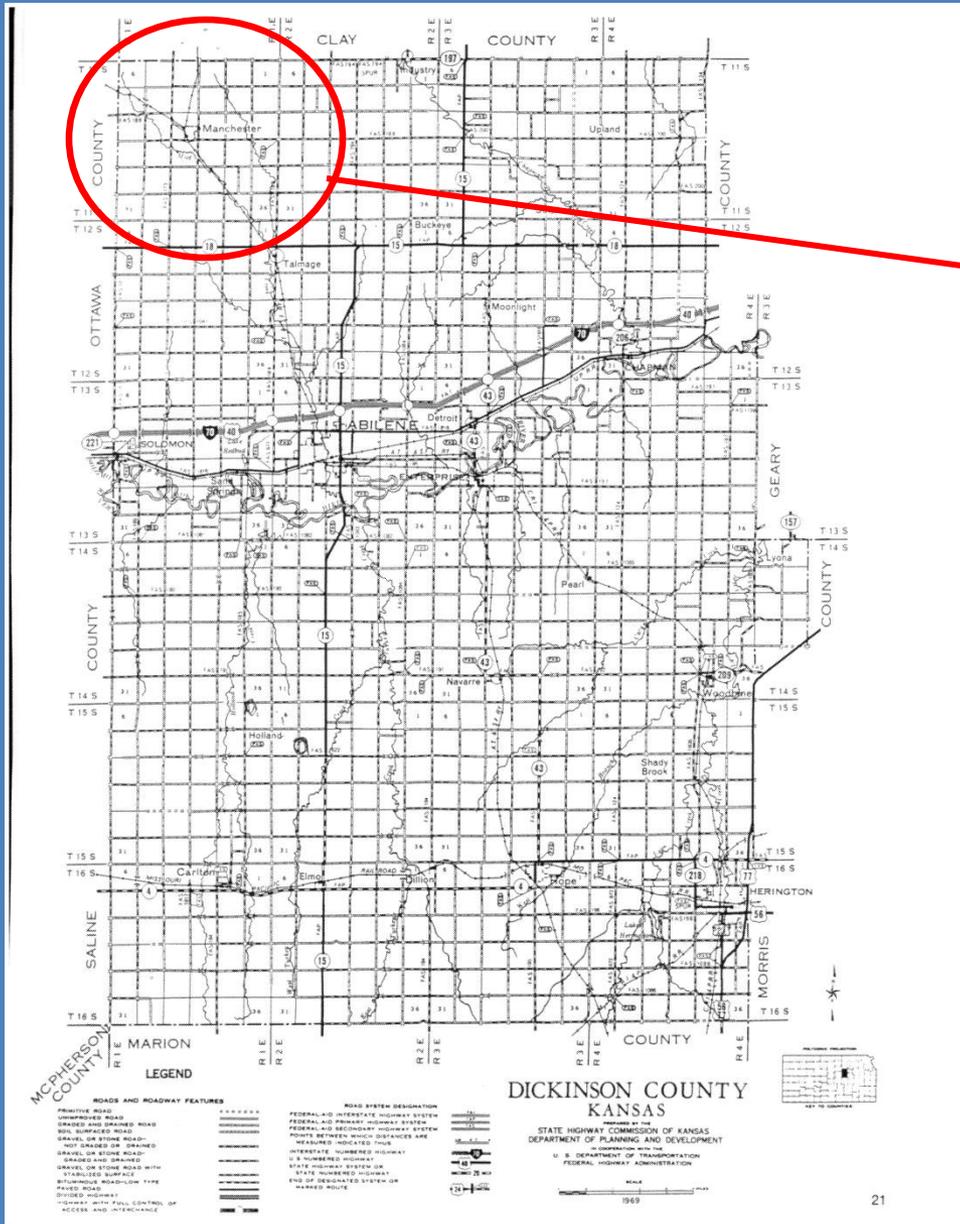
The variety of wheat you will be inspecting is Armour.

The certified class of seed being produced is the certified class

Theoretically, this is a reasonable depiction of the field's location in section 25. It would be nice to have more detail but often it'll be lacking. Confirmation is made by the inspector upon arrival.

The legal description of the field should enable you to arrive at the field. Confirm the legal by checking if the written directions lead you to the same field. If not, call the grower for clarification. Note that "DK" = Dickinson county, so a DK township map would be used to locate the field.

This is a township map of Dickinson (DK) county. The inspector will receive the appropriate county township maps with the field assignment. The next slide will concentrate on the circled area. Township T11S, Range R1E





A **township/range** consists of 36 one-mile square **sections**. Each **section** is equal to 640 acres and is divided into 4 160-acre **quarters**: **NW, NE, SW, SE**.

So if the legal description of a field is: SE1/4, SE1/4, Sec25, T11S, R1E Co. DK

Or the "Southeast quarter of the southeast quarter of section 25 of township 11S Range1E in Dickinson county"

The red line indicates that the sections are numbered 1 to 36 in serpentine fashion.

Locating The Field (electronic applications)

- View the videos *Using your myfields inspector account to prep for and report a field inspection* Parts 1 & 2 on the Inspector Training page of kscrop.org.
- The inspector will use GPS coordinates to locate the field but will also have written pertinent field information on the blank field form to aid in the inspection process as demonstrated in the above-listed videos.

Arriving At The Field

As field is approached by car, get an overview of overall field.

- Does chaff/straw color match variety?
- What's in adjoining fields? Wheat? Are there isolation problems?
- Are there obvious weed problems? Rye?
- Do any drill strips appear to be different?

Use this preliminary information to chart your path through the field.

Two varieties of wheat adjacent to each other, no isolation. Note the difference in appearance between the two. They are obviously two different varieties of wheat. A similar effect occurs in the middle of a field when the drill is inadvertently refilled with the wrong variety.



Isolation

If a certified field of wheat (left) is next to another field of wheat (right) then isolation is required. The grower must have either mowed or otherwise removed the wheat next to the certified field before heading, or must stake off the needed isolation within the certified field prior to the inspector's arrival to indicate that the area will not be harvested with the rest of the field.



Stake off needed isolation and do not harvest with rest of certified field.

OR

Mow or hay this area BEFORE POLLINATION

Confirm Variety

- Is the chaff color correct?
- Do glume characteristics of typical heads match the description provided?
- Are different head types, if any, described as variants in the variant table? Are they off-types?
- Do allowable variants appear to be present in an amount not greater than allowed.
- Does this field look like the last field of the same variety that I inspected?

Spike (head) Characteristics

This tends to be the order in which I view spike characteristics. From most obvious to least obvious:

- Chaff color (white, tan, brown, bronze, red)
- Awnedness (awned, awnletted, awnless)
- Beak length (short, medium, long)
- Glume shoulder (wanting, oblique, rounded, square, elevated, apiculate)
- Glume width (narrow, wide) and length (short, long).

Though these heads have not fully colored up it is possible to distinguish between the two chaff colors.

White-chaffed wheat

Brown-chaffed wheat



Chaff color differences become more apparent at harvest maturity as demonstrated by white (left) and brown (right) chaffed wheat spikes. Chaff color is a varietal characteristic and may be white, white-amber, tan, brown, bronze or red. There is also a chocolate color but it is rarely seen.



Jagger wheat (left) and Overlay wheat may be somewhat similar in glume shoulder shape, head shape and maybe color, but note that the glume beaks differ between the varieties. Overlay has glume beaks much longer than Jagger.

Jagger



Glume beaks



Overlay



Armour variety wheat has square glumes. The typical head in the field should have some spiklets with square glumes. However, not every glume will have a square shoulder as there is variation within the head.

round glume shoulder

Square glume shoulders



Example of bronze chaff, short beak, square shoulder



Example of tan chaff, short beak, wanting
shoulders



Example of white chaff, medium to medium-long beak, round shoulder, long and narrow glume

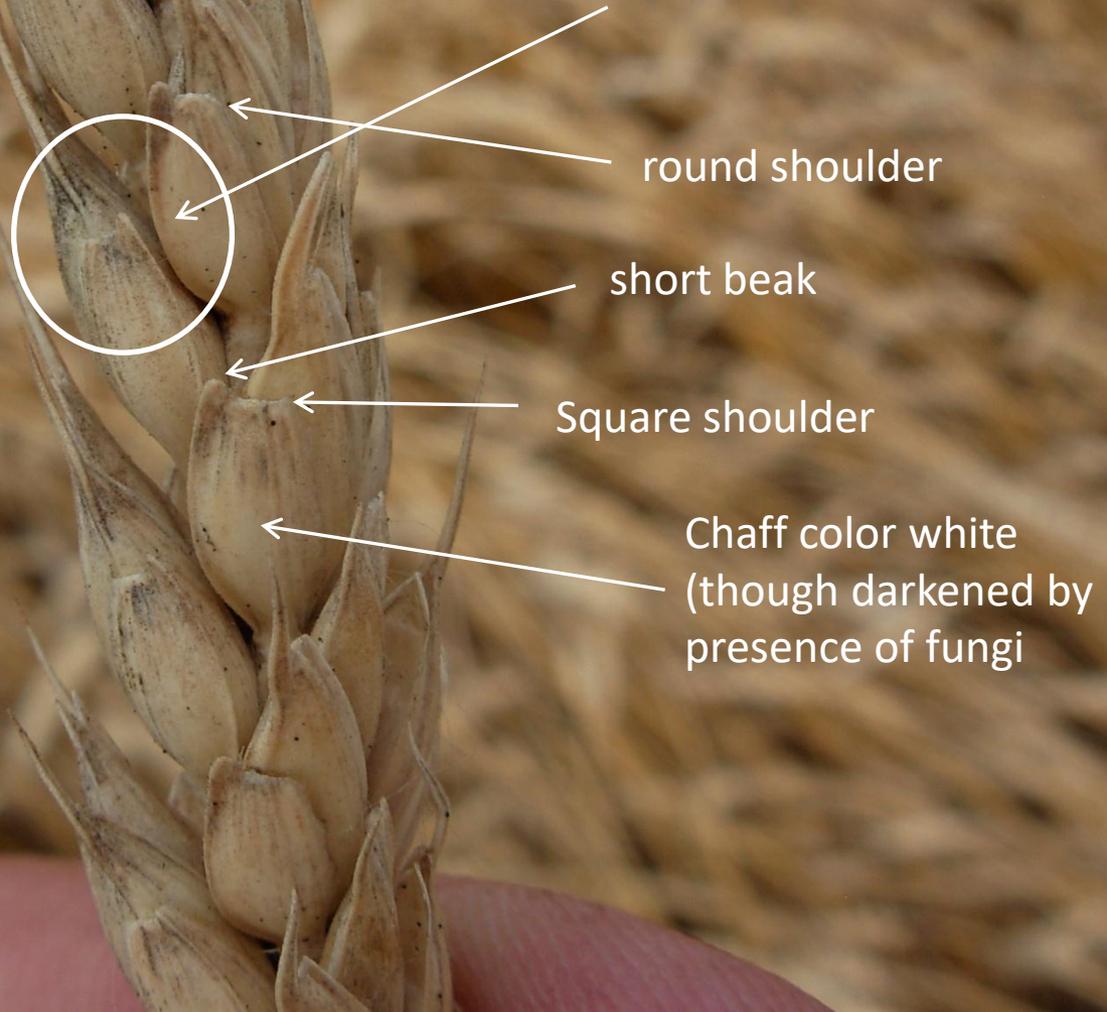


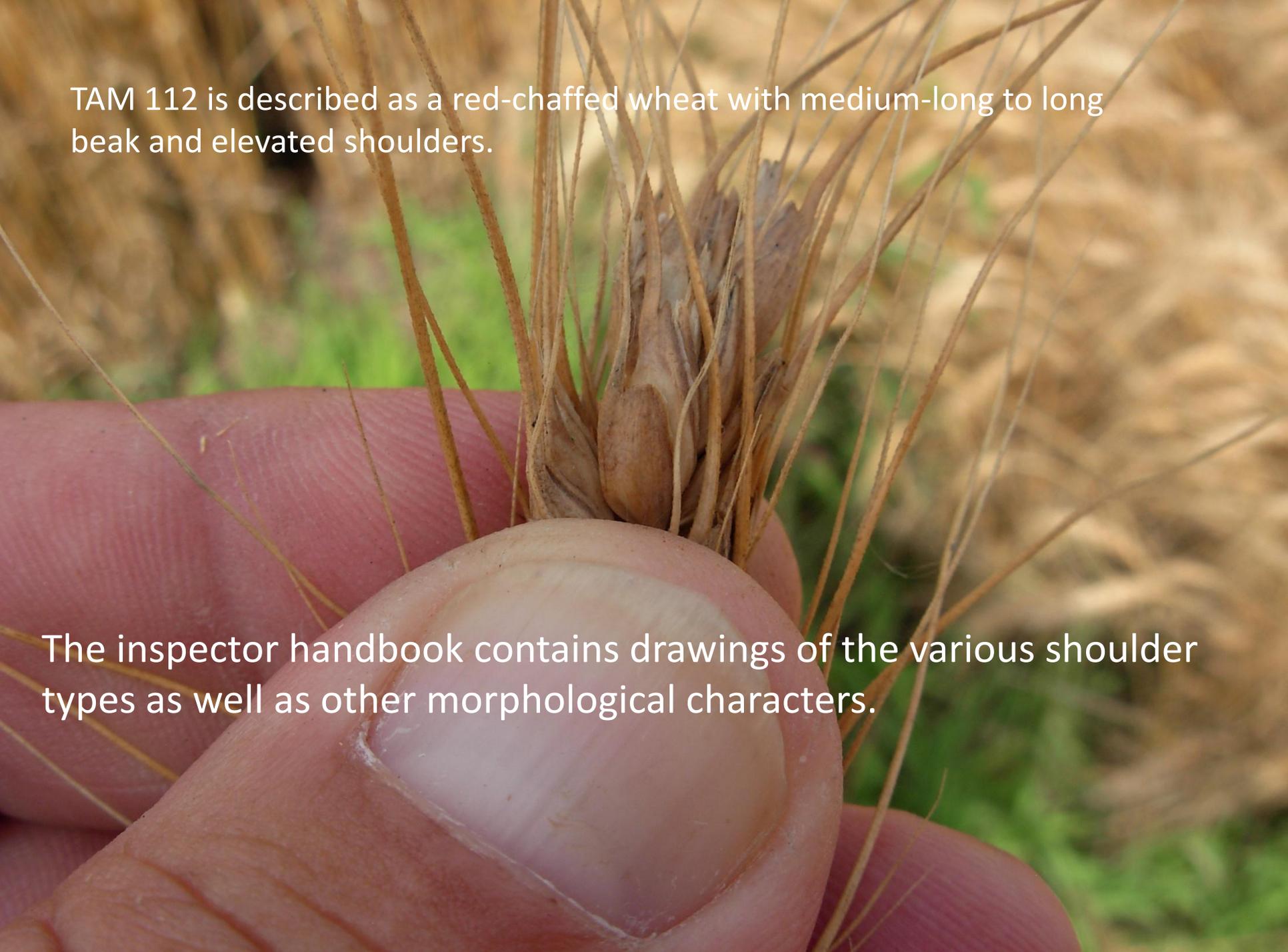
Longhorn is an awnless wheat, although the heads will exhibit some tip awns, or awnlets.

Longhorn is described as an awnless wheat with white chaff, short beak, and round to square shoulders.

Therefore, we verify this variety by noting that indeed it is an awnless wheat with white chaff, and we can confirm that we do find the short beak and round and square shoulders as we would expect.

The black specks that are on the chaff are saprophytic fungi that infects the chaff after the plant material has died. It is harmless and does not affect the seed.





TAM 112 is described as a red-chaffed wheat with medium-long to long beak and elevated shoulders.

The inspector handbook contains drawings of the various shoulder types as well as other morphological characters.

Mix of brown-chaffed wheat variety and white-chaffed wheat variety. Obviously a varietal purity problem.



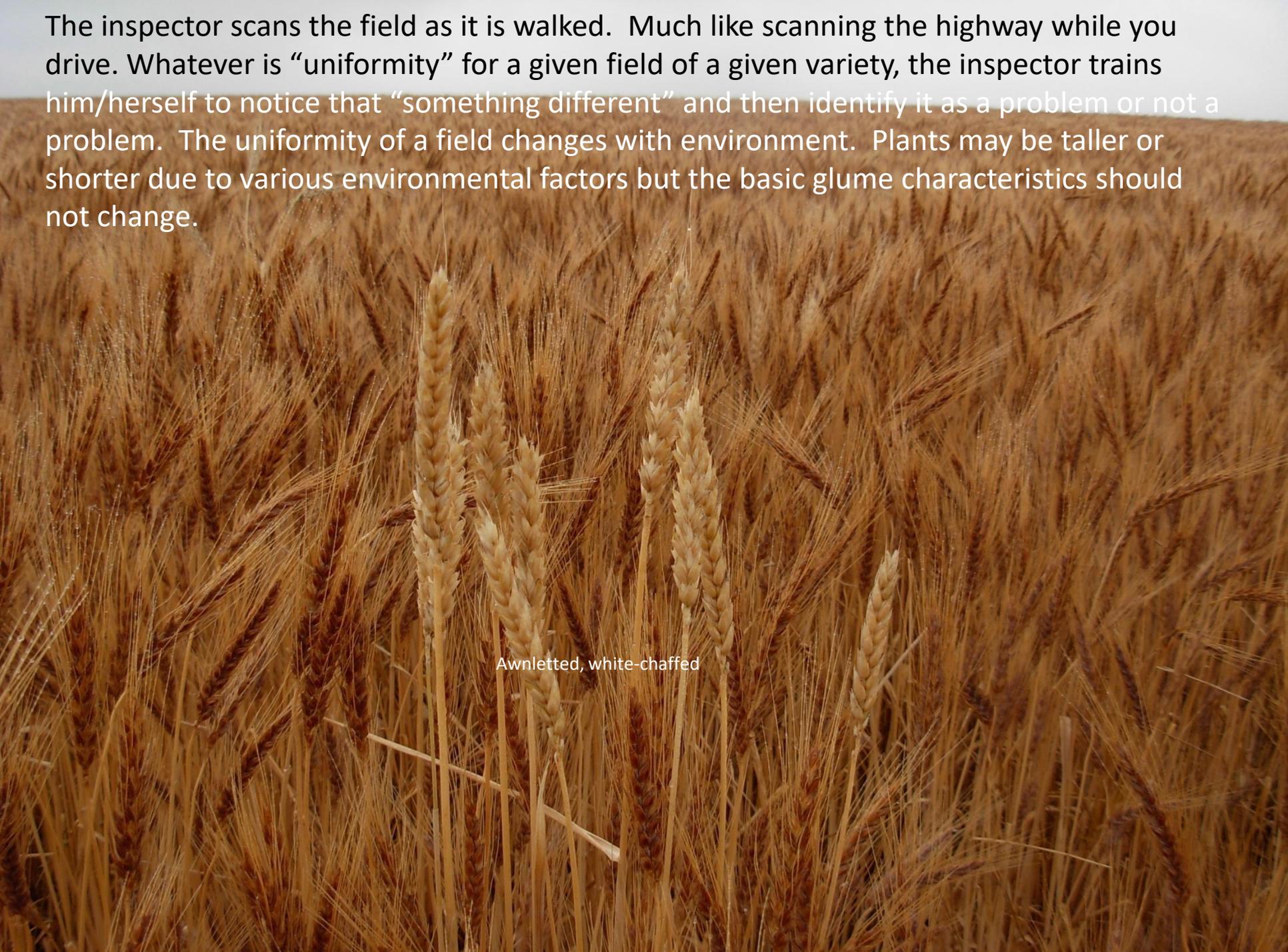
A close-up photograph of a wheat field. The majority of the wheat spikes are golden-brown, indicating they are ripe. In the center-left, one spikelet is notably different, appearing green and less developed. A white arrow points from the text on the left to this green spikelet. The background shows a vast field of similar wheat under a clear sky.

The inspector receives a chart of allowable described variants for each variety and uses that list to decide if plants such as this is a variant or an off-type.

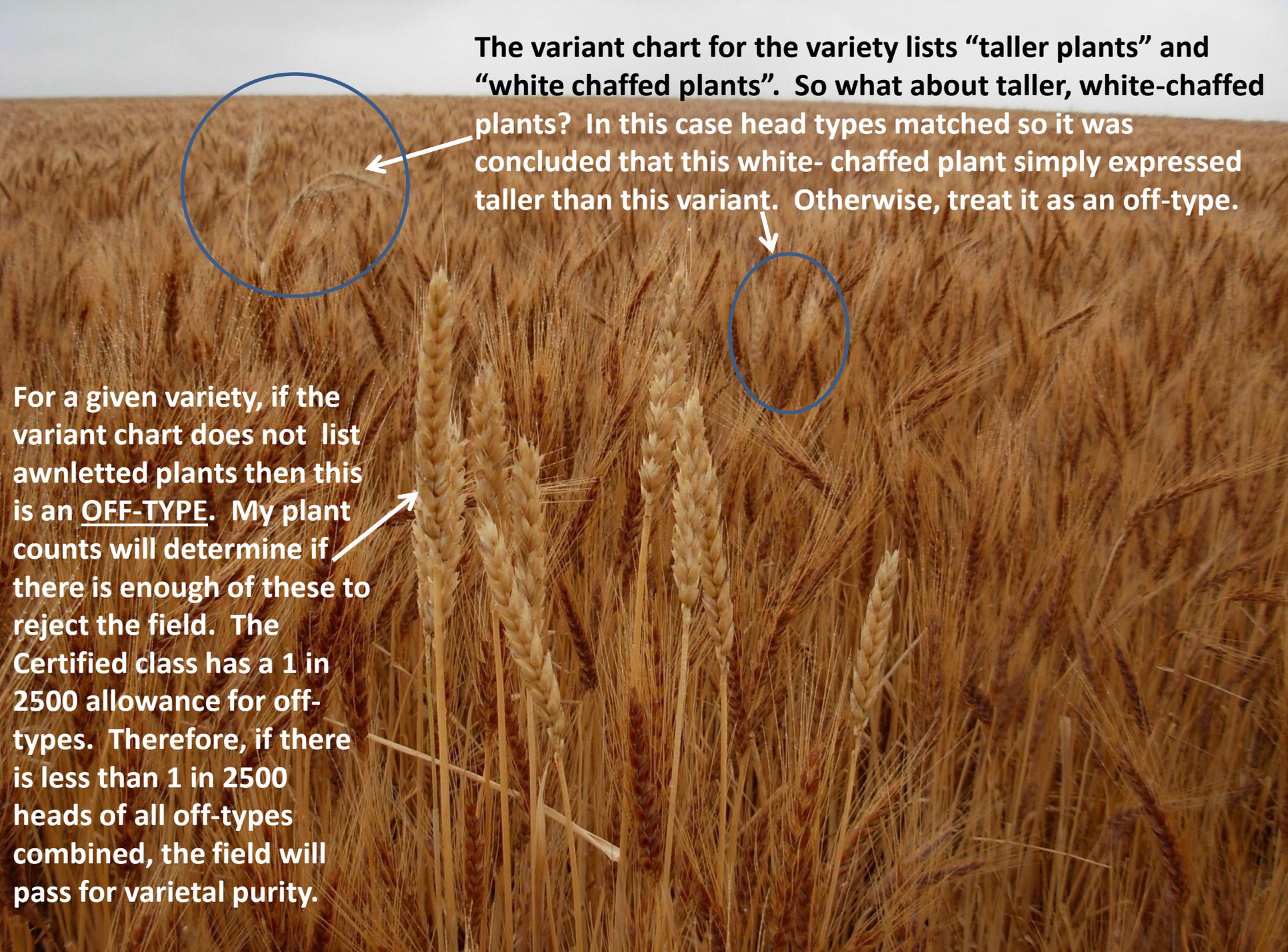
White-chaffed wheat
in a field of brown-
chaffed wheat



The inspector scans the field as it is walked. Much like scanning the highway while you drive. Whatever is “uniformity” for a given field of a given variety, the inspector trains him/herself to notice that “something different” and then identify it as a problem or not a problem. The uniformity of a field changes with environment. Plants may be taller or shorter due to various environmental factors but the basic glume characteristics should not change.



Awnletted, white-chaffed



The variant chart for the variety lists “taller plants” and “white chaffed plants”. So what about taller, white-chaffed plants? In this case head types matched so it was concluded that this white-chaffed plant simply expressed taller than this variant. Otherwise, treat it as an off-type.

For a given variety, if the variant chart does not list awnletted plants then this is an OFF-TYPE. My plant counts will determine if there is enough of these to reject the field. The Certified class has a 1 in 2500 allowance for off-types. Therefore, if there is less than 1 in 2500 heads of all off-types combined, the field will pass for varietal purity.

End of Part 1.
Please go to Part 2.

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