

## CROPS SCORING

### I Sections of the Contest and Scoring

Pasture and Range.....	30% - 20 points	x 30 =	600
Crops and Weeds .....	40% - 20 points	x 40 =	800
Seed Analysis.....	30% - 100 points	x 6 =	600
Points per contestant .....	—————		= 2,000

### II Identification

To receive credit for a specimen in Pasture and Range, Crops or Weeds, the contestant must identify it correctly.

Each correct answer will count twenty (20) points.

### III Seed Analysis

Seed analysis will include a base sample with certain admixtures.

Contestants will analyze quality factors (discoloration, maturity, mechanical damage, sprout damage, disease, moldy kernels, heat damage, and frost damage) which affect germination. The analyses will be indicated on the "Seed Analysis Form." Quality factors which affect germination will count forty percent (40%) of the score in seed analysis.

Contestants will analyze quality factors which affect purity and/or planting rate (inert matter and admixtures). Quality factors which affect purity will count sixty percent (60%) of the score in seed analysis and these analyses will be indicated on the "Seed Analysis Form."

I. SECTIONS OF THE CONTEST AND SCORING:

Pasture and Range	30%-----20 points x 30=600
Crops and Weeds	40%-----20 points x 40=800
Seed Analysis	30%----- 6 points x 100=600
Total Per Contestant	2,000

II. IDENTIFICATION:

For full credit for a specimen under either Pasture and Range or Crops and Weeds, the contestant must correctly identify it and name it exactly as on the identification list in the addendum.

III. SEED ANALYSIS:

This section involves those factors that influence the quality of seed for planting purposes. Base samples may be White or Red oats, Hegari, White grain sorghum, Yellow grain sorghum, Barley, Hard red winter wheat, Soft red winter wheat, Hard red spring wheat, Purple hull cowpea, Blackeye cowpea, Yellow soybean and Pinto field bean. Factors are determined by mixtures and damage.

A. Mixtures:

1. Inert Matter--any substance not recognized as a whole seed, such as stems, glumes, rocks, clods, trash and small pieces of seed.
2. Weed Seed--noxious and common –
  - a) Noxious weeds are weeds that are difficult to control by ordinary means or which may be poisonous or harmful to man. The noxious weed list is established by the New Mexico Department of Agriculture and is divided into prohibited and restricted weeds. Those prohibited are seeds that have no tolerance limits in commercial seed sold in New Mexico (see identification list). Those restricted are weeds that have a tolerance limit for each specie and may be sold commercially (see identification list).
  - b) Common weeds are all those not listed as noxious (see identification list).

B. Description of Mixtures:

1. Sorghum: Hegari and Atlas sorgo will not be used as mixtures in White grain sorghum. White grain sorghum will not be used as a mixture in Hegari. Any other sorghum on the identification list may be used as an admixture in any seed analysis sample and will be named as on the identification list.
2. Wheat: The three red wheats will not be mixed in any combination. In seed analysis

samples of Hard red winter wheat, Soft red winter wheat and Hard red spring wheat, White wheat may be used as an admixture and will be identified as White wheat. None of the wheats will be mixed together and used as admixtures in other crops. When any one of the four wheats is used as an admixture in other crops, it shall be identified only as Wheat.

3. Barley: Six-rowed barley and Two-rowed barley will not be mixed together. Either used as an admixture in other crops shall be identified only as Barley.
4. Oats: Only White oats, whether white or yellow in color, and Red oats will be used as admixtures of cultivated oats in other crops. White oats and Red oats will not be mixed together. Either used as an admixture in other crops shall be identified only as Oats. Wild oats, if used as an admixture in classes of oats and other crops, will contain some gray and/or black color.
5. Yellow Soybean: When the class name for a base sample is a variety name, any variety mixture of Yellow soybeans should be recognized by the contestant and he should show recognition of this factor by stating "other varieties" on the seed analysis form.
6. Other Admixtures: All crops and weed seed (except for the exceptions noted above) shall be named exactly as they are listed on the identification list when used as admixtures. The only admixtures that will be used are those listed in the Crop and Weed Section.
7. Number of Seeds used as an Admixture: There shall be a minimum of 5 mature seeds of each admixture in seed analysis samples.

### C. Descriptions of Quality Factors:

These are factors that could influence the germination of seeds and include:

1. The factor Immature is caused by green and/or shrunken kernels in barley, wheat, grain sorghum and large seeded legumes. The factor Immature oats is caused by green kernels and /or thin oats. Thin oats are very slender oats having a small kernel to no kernel inside the lemma and palea (the husk). When these are present in any amount reasonable for the contestant to find, the sample is Immature. If they are present in a large enough amount to cause a definitely lower test weight and to cause the sample to be light and fluffy, they cause the factor Light Weight. A sample cannot be Light Weight, therefore, without also being Immature. Thin oats is never a factor but causes these two factors. For the benefit of the contestant, a sample should have a minimum of approximately 20% thin oats to cause the factor Light Weight. This does not rule out the fact that small amounts can cause the factor Immature. Large seeded legumes are also Immature if the seeds are large and puffy and have slightly wrinkled seed coats.
2. The factor Mechanical Damage is due to broken kernels in wheat and grain sorghum. It is due to broken kernels and/or splits, and/or cracked seed coats in large seeded legumes.

In oats, it is due to skinned and/or broken kernels with skinned kernels often being called hulled oats, naked oats or oat groats. In barley, it is due to skinned and/or broken kernels. Skinned kernels will often have one-half (1/2) of the husk remaining, being naked on the lemma side of the seed. Insect Damage may be germ eaten, insect bored (holes bored into the kernels) and in rare instances, the insects will chew on portions of the kernels without boring holes or eating the germ.

3. Sprout Damage is characterized by very small to large sprouts protruding from the germ of the seed. These sprouts may show only the tip of the young embryo or may also show small roots.
4. Discoloration in seed must also be distinct. One seldom finds a sample of perfect color. Color should be determined by visual inspection of the seed without "raking into them." In most cases, the factor Discolored is caused by weathering and/or staining and is apparent throughout the sample. An exception is where the factor Discolored is usually due to bleaching. Other adverse quality factors may also cause the factor Discolored if the discoloration is apparent throughout the sample without raking to find it. The factors Heat Damage in wheat or (Disease) Purple Seed Stain in soybeans, for example, would be called if only a few seeds are present which are seen by careful examination of the sample, but unless they are readily visible throughout the sample, the factor Discolored would not be called. All diseases and Moldy Kernels may cause a sample to be Discolored if apparent throughout the sample.
5. Moldy Kernels will have white, blue, gray or black fuzzy growth on the kernels. Although mold is often associated with weathered kernels, especially in grain sorghum, the two should not be confused. The weathering process does not cause the fuzzy growth.
6. Heat Damage in wheat and soybeans is characterized by a brown or black burned effect due to the seed heating in storage.
7. Frost Damage in wheat is characterized by a rough seed coat that may be peeling off in places. To be Frost Damaged, the seed coat must have a shiny, candied appearance.
8. Yellow Berry is found only in Hard red winter wheat and Hard red spring wheat. These two wheats normally have a hard translucent starch under the seed coat. Yellow berry causes the starch to be white and causes the wheat to have a soft appearance that shows through the seed coat, sometimes only in spots in the kernel, while at times, most if not all the kernel is affected. Soft red winter wheat has soft starch by nature and does not have the factor Yellow berry. Yellow berry in wheat is not a cause for the factor Discolored, but bleached wheat, which causes the factor. Discolored and in or on the same kernel. It is seldom that a kernel is 100% affected by Yellow berry, since careful inspection will often show some hard starch on the germ end or the brush end of the kernel, one or both.
9. Diseases:

- a) Barley (Disease) - Covered Smut is characterized by the seed being replaced by black bodies. In some cases, these bodies break up into powdery black spores and cause the sample to be Discolored. (Disease) Black Lemma Base has a shiny, slick, black appearance and although it may be on any part or all of the lemma, it is more often found near the base. (Disease) Pink Lemmas causes a distinct pink discoloration of the Lemmas. This is sometimes difficult for the contestant to distinguish from staining due to age and/or weather conditions. Staining is more yellow in appearance.
- b) Grain Sorghum (Disease) - Smut is characterized by smut bodies of various sizes and shapes. The unbroken bodies usually have a white to tan covering. These bodies break easily and cover the seed with greasy black spores. This black color will often cause the sample to be discolored and will blacken the seed container and the contestant's hands. There are times when all of the smut bodies have broken up, and one can recognize (disease) smut only by the greasy covering on the seed.
- c) Wheat (Disease) - Scab is found in two forms. The most common is referred to as tombstone scab in which the kernels have a dull white, lifeless appearance with the seed coat often peeling off. The worst affected kernels will be completely void of color. This is not to be confused with bleached kernels, since these will show some natural color. The other kind of (disease) scab causes a pink discoloration to the kernel with the seed coat peeling off. Bunt (disease) is characterized by the kernel being replaced with a smut ball that has a gray to black covering. This body is soft and is easily broken, liberating black, greasy live spores which may discolor the seed, the seed container or the hands of the contestant. Since this disease is easily controlled by seed treatment, it is not found in commercial seed samples very often. Blacktip (disease) is characterized by a shiny black, slick appearance and may also be found in the crease of the seed. Some people in the seed and grain trade call it "black point."
- d) Large Seeded Legumes (Disease) - Purple Seed Stain is found only in soybeans and is recognized as a distinct purple discoloration to the seed coat. This purple discoloration usually covers only a portion of a given seed. Bean Blight (Disease) may be found on cowpeas, fieldbeans or soybeans. It is recognized by the fact that black colored or more often iron colored spots are etched into the seeds. Yellow to iron colored staining may accompany these spots. Samples which have staining without any etched spots should just be called Discolored due to staining. When the two are found together, both are likely caused by the disease. The disease may be prevalent enough in a sample to cause the factor Discolored.

## 10. Inert Matter:

This factor, previously defined, covers anything not recognized as a seed. Rules for seed analysis require any broken seed larger than one-half (1/2) of the original size shall be called a seed even though it may not contain an embryo. In the case of large seeded legumes, one cotyledon plus attached seed coat plus an embryo constitutes a seed. Anything less is Inert Matter. It is rather obvious that unless the sample is hand picked, it is virtually impossible to have the factor Mechanical Damage without also having the factor Inert Matter.

### D. Grading Factors:

1. Grading Contestants Seed Analysis Papers--A list of Visible Adverse Quality Factors which may affect germination is included in the addendum together with a sample form to be used in the contest. The quality factor portion of this form is worth 40 points. To determine the value of any one quality factor, divide the number present on the official key into 40 to the nearest whole number. Examples:  $40/.5 = 8$ ,  $40/.7 = 6$ ,  $40/.9 = 4$ , etc. In case of less than 4 quality factors, a maximum of 10 points will be deducted for each factor missed. When the contestant lists a quality factor not present on the official key, deduct one-half (1/2) the value (to the nearest whole number) of an actual quality factor in that sample.

If a contestant calls a quality factor when the official key shows none, 10 points shall be deducted for a score of 30. Two quality factors called when the official key shows none will result in a loss of 20 points for a score of 20, etc.

It is possible for a contestant to miss more than 40 points by this grading system, however, a score of zero (0) is the lowest score which may be given.

The remaining 60 points of the 100 points for each seed analysis sample will be allotted to listing and classification of things which affect purity and/or planting rate. Divide 60 by the total number of impurities present to the nearest whole number. When 4 or less are present, 15 points (total for classification and identification) shall be allotted to each. This allows a maximum deduction of 15 points for an impurity not called.

The contestant who calls an impurity which is not present shall be penalized one-half (1/2) of the points allotted to the proper identification of an impurity present to the nearest whole number. If a contestant calls an impurity in a sample which contains none, 15 points shall be deducted for a score of 45 points. Two impurities called in a pure sample will cause a loss of 30 points, etc.

In cases of incorrect identification of impurities by the contestant, such as mistaking Yellow foxtail for Barnyard grass, the above rules allow two penalties on the total score; one for not calling Barnyard grass and another for calling Yellow foxtail.

It is possible for a contestant to miss more than 60 points by this grading system;

however, a score of zero (0) is the lowest score which may be given.

The quality factor section of the seed analysis form is worth 40 points and the impurity section is worth 60 points. Even though the scores of the two are added for the total score on a given sample, the two are to be graded separately. Points may not be deducted from the purity section of the form for quality factor points missed and vice versa.

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**VISIBLE ADVERSE QUALITY FACTORS**

(These factors may affect germination unless otherwise noted)

WHEAT

Discolored  
Immature  
Mechanical Damage  
Insect Damage  
Sprout Damage  
Moldy Kernels  
Heat Damage  
(Disease) Scab  
(Disease) Bunt  
(Disease) Blacktip

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\*Inert Matter

GRAIN SORGHUM

Discolored  
Immature  
Mechanical Damage  
Insect Damage  
Sprout Damage  
Moldy Kernels  
(Disease) Smut

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\*Inert Matter

OATS

Discolored  
Immature  
LightWeight  
Mechanical Damage  
Insect Damage  
Moldy Kernels  
Sprout Damage

\*Inert Matter

BARLEY

Discolored  
Immature  
Mechanical Damage  
Moldy Kernels  
Sprout Damage  
Insect Damage  
(Disease) Covered Smut  
(Disease) Black Lemma Base  
(Disease) Pink Lemmas

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\*Inert Matter

LARGE SEEDED LEGUMES

Discolored  
Immature  
Mechanical Damage  
Insect Damage  
Sprout Damage  
Moldy Kernels  
Heat Damage  
(Disease) Purple Seed Stain  
(Disease) Bean Blight

\*Inert Matter

\*Inert Matter--  
Does not affect germination,  
but affects purity and may  
affect planting rate.