



WHEAT “CHEAT SHEET” FOR 2007 – 2008 SEASON



Variety selection is critical to profitability because in South Carolina we are highly dependent on varietal resistance for disease and insect management. No variety is perfect, but the ideal variety would have: consistently high yield potential, high test weight, Hessian fly resistance, powdery mildew and leaf rust resistance, and straw strength. Moderate height is also desirable (except for straw production) to reduce lodging risk and residue for double-cropping.

New Variety Notes (all of the following are in very limited supply in 2007):

AGS 2031 is a beardless, short-med. height wheat with medium maturity, high yield, and high test weight. It is probably best adapted to the southern coastal plain. In the most recent Georgia tests AGS 2031 had the highest 3-yr yield average. It is fly susceptible but has resistance to mildew, leaf rust, stripe rust, and soil-borne mosaic virus.

Coker 9700 is a beardless, medium height, medium maturity wheat with high yield and excellent test weight. It has fair tolerance of Hessian fly, but is susceptible to leaf rust.

S. States 8641 is a beardless, medium maturity wheat with high yield and excellent test weight. It is medium/tall, about the same height as AGS 2000. SS 8641 has resistance to Hessian fly, leaf rust, stripe rust, mildew, and soil-borne mosaic.

Diversify: Unless only a small acreage is involved, it is always a good idea to plant more than one variety to spread risk. Try 2 - 3 of the top varieties for your area depending on your acreage. Variations in pest severity and weather conditions will favor one variety over another in any given year. When trying a new variety for the first time, you should usually keep the majority of your acreage in a proven performer.

Certified Seed: Use of certified seed provides a level of insurance against poor germination, seedborne diseases, and weeds. Since we are dependent on the continued development and release of specialized varieties adapted to our climate and pest complex, it benefits everyone to obey all seed laws.

VARIETAL CHARACTERISTICS

Maturity: Maturity can be defined in different ways, and depending on the growing season, a medium maturity variety might be ready to harvest within two - three days of an early variety planted on the same date. An important consideration is that early varieties will joint and head earlier. Therefore, early varieties are more susceptible to stem freeze in March and head freeze in April if planted too early.

Hessian Fly Resistance: Varietal resistance has worked well in controlling Hessian fly in S. C., but Hessian fly is a moving target. We rate for it every year because varietal resistance can decrease with prolonged exposure. A “poor” rating indicates susceptibility throughout the state; “fair” indicates some resistance which may be inadequate under heavy pressure; “good” indicates resistance throughout the state, including the more virulent race “L” Hessian fly found in the northern Coastal Plain (above Lake Marion). Race L is also showing up with increased frequency in the lower part of the state. If a previously resistant variety fails on your farm you will need to protect it with insecticide or change varieties in the future.

Disease Resistance: Rust and mildew resistance can change even more rapidly than insect resistance, and disease ratings are always relative. The ratings used in the table are based on our latest observations at Blackville, when available, and neighboring states. Even varieties given only a “fair” rating exhibit a significant level of resistance when compared with highly susceptible varieties.

SELECTED WHEAT VARIETY CHARACTERISTICS AND PERFORMANCE - 2007

VARIETY	AWNS	MAT-a URITY	H. ^b FLY	POWDERY MILDEW ^c	LEAF RUST ^c	STRIPE RUST ^c	SBM ^c	HEIGHT ^d	STRAW STREN.	TEST WT.	TEST ^e WT. INDEX		YIELD (BU/AC)						YIELD ^f INDEX
											02	03	04	05	06	07			
*AGS 2000	Y	E/M	Good	Fair	Good	Poor	Poor	Med/Tall	Good	Good	+ 0.6 ⁸	50	62	70	90	93	90	+ 5.3 ⁸	
AGS 2010	N	E	Good	Good	Good	Good	Good	Med	Good	Good	+ 0.0 ¹	--	--	--	--	77	75	- 14 ¹	
AGS 2031	N	M	Poor	Fair	Good	Good	Good	Short	Good	Good	--	--	--	--	--	--	76	--	
AGS 2485	Y	E/M	F-G	Good	Good	Poor	Poor	Med/Tall	Good	Ex	+ 2.5 ⁴	--	67	70	82	91	--	+ 1.7 ⁴	
AgriPro Magnolia	Y	M	Good	?	?	?	?	Med/Tall	?	Good	--	--	--	--	--	--	78	--	
AgriPro Panola	Y	M	P-F	Good	Fair	Good	Good	Med/Tall	Good	Fair	- 1.9 ³	--	--	71	91	97	78	+ 6.6 ³	
Coker 9375	N	M	?	Fair	Fair	Fair	Fair	Tall	?	Fair	- 3.9 ²	--	--	73	87	--	--	+ 5.0 ²	
Coker 9436	N	M	?	Fair	Fair	Poor	Fair	Short/Med	F/G	Fair	- 5.5 ¹	--	--	--	81	--	--	- 5.5 ¹	
Coker 9511	N	M	Poor	Fair	Fair	Poor	Fair	Med	Good	Ex	+ 2.5 ¹	--	--	--	82	--	--	- 4.0 ¹	
Coker 9553	Y	M	Poor	Poor	Fair	Good	Fair	Med	Good	Good	+ 1.4 ²	--	--	--	84	80	75	- 7.1 ²	
Coker 9700	N	M	Fair	Good	Poor	?	?	Med	Good	Good	--	--	--	--	--	--	78	--	
*Pioneer 26R12	Y	M/L	F-G	Good	Good	Good	Fair	Med/Tall	Ex	Ex	+ 1.8 ⁴	--	68	64	90	98	67	+ 4.6 ⁴	
Pioneer 26R31	N	E/M	Good	Good	Good	Poor	F-P	Short/Med	Ex	Fair	- 3.4 ³	--	--	71	83	89	--	+ 0.3 ³	
*Pioneer 26R61	Y	E/M	Good	Fair	Good	Good	Good	Med/Tall	Ex	Ex	+ 2.3 ⁸	46	72	60	88	91	77	+ 1.6 ⁸	
S. States 520	N	E/M	P-F	Good	Poor	Poor	Fair	Med/Tall	Good	Fair	- 4.1 ²	47	--	--	--	84	81	- 2.2 ²	
*S. States 8308	Y	M	F-G	Good	Fair	Fair	Poor	Med	Good	G/E	+ 1.7 ¹	--	--	--	--	96	77	+ 6.0 ¹	
S. States 8404	Y	M	Poor	Poor	Good	Fair	Good	Short	Good	G/E	+ 2.0 ¹	--	--	--	--	93	--	+ 3.4 ¹	
S. States 8641	N	M	Good	Good	Good	Good	Good	Med/Tall	Good	Good	--	--	--	--	--	--	73	--	
*USG 3209	N	M	Fair	Good	Fair	Good	Good	Med	Good	Good	- 0.5 ⁷	51	63	71	94	97	76	+ 8.3 ⁷	
USG 3592	N	M	F-G	Good	Good	Poor	Good	Med/Tall	Fair	Good	+ 0.2 ²	--	--	68	--	91	71	+ 0.2 ²	
Vigoro Dominion	N	M	Poor	?	?	?	Good	Short	Good	Good	- 0.9 ¹	--	--	--	--	88	73	- 2.2 ¹	
*Vigoro McIntosh	N	M	Poor	Good	Good	Good	F-P	Tall	Fair	Good	+ 1.2 ²	--	--	--	92	91	72	+ 3.7 ²	
Vigoro Tribute	N	M/L	Poor	Good	Good	Poor	Poor	Short /Med	G-Ex	Ex	+ 4.2 ³	--	62	65	79	--	--	- 3.7 ³	

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LSD (P= 0.05) The “least significant difference” indicates the yield difference that is statistically meaningful:

* These varieties may have the most consistent potential across the broadest area of the S. C. coastal plain.

a. Maturity based on jointing / heading dates and harvest maturity. Plant early varieties last to reduce freeze risk.

b. Hessian fly resistance: Good = Resistant to all known HF races in S.C.; Fair = Moderately Resistant, significant potential loss under race L pressure; Poor = not resistant anywhere in S.C.

c. Powdery mildew, leaf rust, stripe rust resistance varies by region and can change rapidly; SBM = soilborne mosaic virus; ratings based on observations at Blackville if available, or other states.

d. Tall = over 41" (105 cm); short less than 37" (95 cm) under high yield conditions.

e. Test Weight Index shows in one number the percent above or below average test weight in a series of tests (not all tested varieties shown). The superscript shows the number of years compared.

f. Yield Index shows you in one number the percent above or below average yield in a series of tests (not all tested varieties are shown). The superscript shows the number of years compared. **The best varieties have consistently high yield and test weight indexes plus good disease and fly resistance. 2007 RESULTS NOT INCLUDED IN YIELD INDEX DUE TO COLD INJURY.**

Test Weight and Test Weight Index: Test weight ratings are based on performance over a period of years, but this is one characteristic that is very stable. That is, test weights may vary greatly depending on field conditions, but high test weight varieties maintain consistently better test weights over many years. The test weight index shows the percent above or below average test weight in a series of trials. The superscript number shows how many years the variety was evaluated. For example, a TW index of 2.8³ means that over a 3-year period the variety's test weight was 2.8 % above the average of other varieties tested. This would be exceptional out-performance.

Yield Index: The yield index indicates the percent above or below test average yield and the superscript shows the number of years compared. Consistent yielders have a positive index over several years. A high number based on only one year's information is less meaningful.

Height: A value over 41" (105 cm) is a tall wheat for our area and under 35" (90 cm) is relatively short. These heights are taken under high yield conditions. Keep in mind that some tall varieties have excellent straw strength and standability.

Straw Strength: Is based on lodging comparisons at N rates of 90 - 120 lbs / ac.

AGRONOMIC CONSIDERATIONS

Seeding Rate: Plant seed per foot, not bu. per acre. There can easily be a 30% difference in seed size dependent on variety and lot; but typically it takes 120-130 lb seed/ac to hit our maximum seeding rate targets. Calibrate drill on hard ground where you can count seed. Shoot for 21-22 seed per row ft. on 7" rows (12/ft. on 4", 18/ft. on 6", 24/ft. on 8"). For broadcast seeding, shoot for 36 - 40 seed/ft². **These are high management seeding rates. Wheat compensates well for reduced seed rates and even skips in plant stands. Equivalent yields have been obtained with half seeding rates (18/ft²) and even 18-inch row skips on 15 % of the field area. Don't give up on reduced stands.** Maximum seeding rates can reduce barley yellow dwarf yield loss and provides some insurance against poor emergence.

Many seed companies now list seed size (seed/lb) on the bag. The following table is useful for determining how much seed to purchase, checking whether the drill is putting out the correct rate, and for calibrating broadcast seeding. If no information is available on seed size, a good mid-range guess for the amount of seed to purchase is 120 lb per acre.

Maximum Wheat Seeding Rates (Lbs per Acre)

Seed Size (seed/lb)	% Germination		
	90 %	80 %	70 %
10,000	157	177	202
11,000	142	160	182
12,000	131	147	168
13,000	121	136	155
14,000	112	126	144
15,000	104	117	134
16,000	98	110	126
17,000	92	103	118
18,000	87	98	112
19,000	82	92	105
20,000	78	88	100

*Rates for 90 % germination are equivalent to 36 seed/ft² or: 18 seed/row ft (6" rows); 21 seed/ft (7" rows); 24 seed/row ft (8" rows).

Consider increasing seeding rate 10 % for reduced tillage or broadcast (40 seed/ft).

For grazing wheat, increase seeding rate 25%.

Seeding Depth: It matters. A good target is 1" to 1.5" deep. Over 2" can reduce tiller vigor, particularly if heavy rain prior to emergence washes more soil over the seed.

Planting Date: Planting date is always a compromise between yield potential and frost / pest risks. Early planting can raise yield potential by increasing productive tiller count, promoting a larger plant, and prolonging the grain fill period; but early planting also exposes you to greater risk from spring freezes, Hessian fly, and aphid-transmitted barley yellow dwarf virus. For example, at Blackville it is risky to plant before Nov. 15, and we should try to finish by Dec. 1. In the northern coastal plain of S.C. the optimal planting date is about two weeks earlier (Nov. 1). Plant earlier-maturing varieties last to reduce freeze risk.

Fertility: A soil test is fundamental. pH 5.8 - 6.4. Over liming causes Mn deficiency and potential winter kill.

Nitrogen: 20 - 30 lbs at-plant + 60 - 80 topdress (80 to 100 lbs total) is a good starting point for dryland wheat, you must know your soil and rotation. N application is critical prior to jointing. Splitting spring N applications can reduce leaching, but usually does not increase yield. Excessive N can increase disease, lodging and drought stress during head fill. Apply 10 - 15 lb sulfur; ideally about 1/3 at planting and the rest at topdress. Fall-apply P and K to the high range by soil test (apply 80 lb/ac P or K if soil test is low; 40 lb/ac P or K if soil test is medium). K can be split fall and early spring on sandy soil. Breaking the hardpan greatly reduces S and N deficiency risk.

Growth Regulator: Cerone (ethephon 4lb/gal) is labeled at 0.5-0.75 pt/ac (applied from flag leaf emergence to early boot) to prevent lodging. This product should only be considered on irrigated wheat because drought stress during headfill will result in severe yield loss.

Head Population: Our target head population is 60 heads per ft² (4" rows = 20 heads/row ft, 6" rows = 30 heads/row ft, 7" rows = 35 heads/row ft, 8" rows = 40 heads/row ft. The typical reasons for falling short on head count include N deficiency due to rate, timing, leaching, or hardpan; and poor seedling vigor from deep planting. Water-logged soils during tillering also reduce stem count by depriving the roots of oxygen.

Land Preparation: **Broadcast deep tillage is a key to high yield wheat in the S. C. coastal plain.** Breaking the hardpan improves winter drainage and allows roots to reach nutrients and water held by the subsoil. Chiselplows often can't reach hardpan. A Terramax or Paratill provides near broadcast deep tillage; V-ripper with 20" spacing is another option. Ripping between previous subsoil furrows after corn harvest is efficient and results in a firmer seedbed when done in advance. A firm seedbed is needed to control planting depth. Deep-tillage implements can also be used with a roller to firm and level the seedbed. Deep tillage operations are more effective when soils are dry.

Irrigation: Avoid drought stress during early kernel formation. Apply 1" at early boot. Make a second application about 10-14 days later if no rainfall occurs. Avoid frequent irrigation during early bloom to reduce the risk of scab.

Weed Response¹ to Herbicides for Wheat

	PRE		POST					
	Hoelon 2.0-2.6 pt	Achieve ¹ .44-.46 lb	Buctril ² .75-1.0 pt	Express ³ 0.17-0.33 oz	Harmony Extra ⁴ 0.4-0.6 oz	Hoelon ⁵ 1.3-2.6 pt	Osprey ⁶ 4.75 oz	2,4-D ⁷ 11-32 oz
Broadleaf weeds								
Buttercup	0	0	6	9	9	0	7	9
Chickweed	0	0	5	8	8	0	6	3
Curly dock	0	0	7	9	9	0	0	7
Cutleaf eveningprimrose	0	0	3	5	5	0	0	8
Henbit	0	0	5	7	7	0	5	1
Horseweed	0	0	8	6	6	0	0	9
Wild garlic	0	0	5		9	0	0	7
Wild mustard	0	0	8	9	9	0	5	8
Wild onion	0	0	4	9	9	0	0	6
Wild radish	0	0	7	8	8	0	4	8
Vetch	0	0	7	7	7	0	7	8
Grass weeds								
Annual bluegrass	0	0	0	0	0	0	8	0
Little barley	0	0	0	0	0	0	---	0
Cheat	2	0	0	0	0	2	3	0
Italian ryegrass	9	8	0	0	0	9	9	0
*Hoelon resistant	0	8	0	0	0	0	9	0

¹**KEY TO RESPONSE RATINGS:** 0=No control; 10=100% control; ----=Data not available. Ratings are based on application of labeled rates of each herbicide, applied at the optimum timing for each weed.

1. Apply to 1 – 4 leaf stage wheat.
2. Apply from emergence to boot stage; labeled on wheat, oats, barley, rye, triticale.
3. Apply from 2-leaf to pre-flag leaf wheat. Not labeled on oats.
4. Apply from 2-leaf to pre-flag leaf wheat. Also labeled on oats & barley; 0.4 oz maximum oat rate.
5. Apply to 1 to 5-leaf ryegrass prior to wheat jointing.
6. Apply to 2-tiller stage ryegrass and follow labeled adjuvant guidelines; labeled only on wheat.
7. Apply when small grains are well-tillered (4 tillers per plant including mainstem) and before jointing.

SMALL GRAIN DISEASE CONTROL

Jay W. Chapin, Extension Specialist

Diseases	Product	Rate	PHI	Comments
Powdery Mildew, Leaf Rust, Leaf and Glume Blotch, Tan Spot, Stripe Rust*	Headline 2.1	6-9 oz	Apply Headline up to beginning of flowering.	Treat powdery mildew if 20 % of leaf area infected on leaf below flag leaf, and cool (high < 75 F), wet weather predicted.
	Quadris 2.1 F	6.2-10.8 oz	Apply Quadris up to beginning of flowering.	NOTE: Treating mildew before the flag leaf is fully emerged will reduce residual control of rust, glume blotch, and tan spot.
	Quilt	10-14 oz	Apply Quilt up to beginning of flowering.	Rust susceptible varieties usually must be treated preventatively or at the first sign of rust because fungicides can't be applied later than fully emerged flag leaf (Tilt, Stratego) or prebloom (Headline, Quadris). Rust usually develops later than this.
	Stratego 1.0 lb	10 oz	Apply Stratego prior to heading.	Treat for leaf/glume blotch or tan spot if 25 % of stems have a lesion on leaf below flag leaf.
	Tilt PropriMax EC	4 oz 4 oz	Apply Tilt or PropriMax up to beginning of flowering.	Wheat with at least 60 bu/ac yield potential is most likely to respond to fungicide treatment.
				Tilt (PropriMax) labeled on wheat, barley, rye, oats. Stratego labeled on wheat. Headline labeled on wheat, rye, barley. Quadris labeled on wheat, barley. Quilt labeled on barley, wheat, and triticale.

*Stripe rust is a very aggressive disease which responds best to preventative treatment of the emerged flag leaf. We do not yet know whether stripe rust will become an economic problem in S.C. For rescue treatment of stripe rust use Tilt.

Smuts, Seedling blights	Baytan 30 RTU Baytan-Thiram	0.75-1.5 oz/100# 4.5-9.0 oz	Seed treatment	Wheat, oats, barley, rye
	Dividend XL Dividend XL RTA Dividend Extreme	1.0-2.0 oz/100 # 5.0-10.0 oz/100# 0.5-1.0 oz/100 #	Seed treatment	Dividend labeled for wheat only. Grower and commercially applied available.
	Raxil (in various combinations with other fungicides, insecticides)	3.5-4.6 fl oz/100	Seed treatment	Wheat, oats, barley. Commercially applied and drill box formulations available. Gaucho XT and Raxil MD-W also control aphids and Hessian fly.
	Raxil MD-W Gaucho XT	5 fl oz/100 # 3.4 fl oz/100#	Seed treatment Seed Treatment	Wheat, oats, barley, rye Wheat, oats, barley, rye
	Vitavax 200 RTU Vitavax-Thiram	2.0 oz/100 # 2.0-4.0 oz/100 #	Seed treatment	Wheat, oats, barley, rye Note: Seed treatments provide relatively cheap stand insurance and smut protection.

Note: Seed treatment recommendations from Dr. Alfredo Martinez, Extension Plant Pathologist, Univ. of Georgia.

SMALL GRAIN INSECT CONTROL

Jay W. Chapin, Extension Specialist

Pest	Product	Rate /acre	PHI	Comments
aphids				
	<u>Seed Treatments</u>			
	Gaucho 480 F	1.5 fl oz / 100 lb		
	Gaucho 600	0.8 fl oz / 100 lb		
	Gaucho XT	3.4 fl oz / 100 lb		
	Raxil MD-W	5 fl oz / 100 lb		
	Cruiser 5FS	1.0 fl oz / 100 lb		
	<u>Foliar</u>			
	Karate	1.3 – 1.9 oz (1 gal / 100-66 ac)	30	Karate or Warrior are superior to other aphid treatments for suppression of barley yellow dwarf virus under SC conditions. However, these products are only labeled on wheat and triticale. Baythroid wheat only.
	Warrior T 1EC	2.6 – 3.8 oz (1gal /50-33 ac)	30	
	Baythroid XL 1EC	2.4 fl oz (1 gal / 53 ac)	30	Aphid treatments are most likely to be profitable on early-planted high-yield-potential wheat (60+ bu/ac). The key pest is the oat-bird cherry aphid which is the major vector or carrier of barley yellow dwarf virus. This aphid typically has a dark green body with reddish area on the “rear end”. Treatment is recommended on high yield wheat if you find 8 oat-bird cherry aphids per row foot prior to jointing.
				English grain aphids (light green bodies with long black “exhaust pipes” protruding upward from rear end) increase during jointing and move to heads as they emerge in April. The treatment guideline for English grain aphid is 2-3/stem during jointing; 5/stem at head emergence to blooming; 10/stem at milk; dough stage is too late to spray.
Armyworm				Treat when armyworm population reaches 2 per drill ft. Baythroid wheat only.
	Baythroid XL 1 EC	1.8 – 2.4 fl oz	30	
	Sevin 80S	1.75 lb		
	Sevin XLR	1.5 qt	0 forage	
	Sevin 4F	1.5 qt	21 grain	
	Karate	1.9 oz		
	Warrior T 1EC	3.8 oz	30	Karate or Warrior also provide season-long aphid control. Labeled only for wheat and triticale.
	Lannate LV	1.5 pt		
	Lannate 90 SP	0.5 lb	7	Do not graze within 10 days. Labeled for rye, barley, oats, and wheat.
	Mustang MAX 0.8 EC	3.2 oz	14	Wheat label only.

Pest	Product	Rate /acre	PHI	Comments
Fall Armyworm	Sevin 80S Sevin XLR Sevin 4F Karate Warrior T 1EC Lannate LV Lannate 90 SP	1.75 lb 1.5 qt 1.5 qt 1.9 oz 3.8 oz 1.5 pt 0.5 lb	0 forage 21 grain 30 30 7	Treat if stand is threatened before frost. Do not graze within 10 days. Sevin labeled for wheat and triticale only. Labeled only for wheat and triticale. Labeled for rye, barley, oats, and wheat.
Cereal Leaf Beetle	Baythroid XL Malathion 57 EC Malathion 5EC Malathion 8EC Tracer Karate Warrior T 1EC Mustang MAX 0.8 EC	1.0 – 1.8 fl oz 1.5 pt 1.5 pt 1 pt 2-3 oz 1.3 - 1.9 oz 2.6 - 3.8 oz 2.6 - 3.2 oz	30 7 21 30 30 14	Cereal leaf beetles first hatch out in March and peak feeding occurs in April. Treat if you have 1 larva on every other stem (average of 0.5 larvae / stem). Malathion labeled on oats, rye, barley, wheat. Karate or Warrior also provide season-long aphid control. Labeled only for wheat and triticale. Labeled only on wheat.
Grasshoppers	Baythroid XL Sevin 80S Sevin XLR Sevin 4F Karate Warrior T 1EC Malathion 8 EC Malathion 57 EC Methyl Parathion 4 EC Mustang MAX 0.8 EC	2.4 fl oz 1.25-1.75 lb 1.0-1.5 qt 1.0-1.5 qt 1.9 oz 3.8 oz 1.25 pt 2.0 pt 1 pt 3.2 – 4.0 oz	30 0 forage, 21 grain 30 30 7 15 14	Wheat only. Sevin labeled for wheat and triticale only. Karate and Warrior labeled for wheat and triticale only. Labeled on wheat, oats, rye, barley. Labeled on wheat, oats, rye, barley. Labeled on wheat.
Hessian Fly	Varietal resistance is the most economical way to manage Hessian fly. HF resistance declines over time so check the latest ratings in the Wheat Cheat Sheet. Treat susceptible varieties on farms with a history of economic damage. Proximity to wheat stubble from previous crop increases HF risk.			
	<u>Seed Treatment</u> Gaucho 480 F Gaucho XT Raxil MD-W Cruiser 5FS <u>Foliar</u> Karate Warrior T 1EC	1.5 fl oz/100 lb 3.4 fl oz/100lb 5 fl oz/100 lb 0.75-1.33 fl oz/100 1.9 oz 3.8 oz	At-plant 30 30	Seed treatments suppress Hessian fly and also provide early season control of aphids and barley yellow dwarf. Gaucho XT and Raxil MD-W also controls smut and certain seedling diseases. Foliar treatment at early post emergence (2-4 leaf stage) can significantly reduce fall infestation of susceptible varieties.

STORED SMALL GRAIN INSECT PROTECTION

Treatment	Rate	Comments
Protectant Storcide II	12.5 oz / 5gal / 1000 bu wheat 9.9 oz / 5gal / 1000 bu barley 6.6 oz / 5gal / 1000 bu oats	Apply to grain stream as a course spray.
Surface Treatment Dipel 2X	0.5 lb / 5-10 gal / 500 ft ²	Mix into top 4". Moth pest control only

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