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Ryegrass Most Damaging Weed in Winter Wheat

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Ryegrass is the probably the most damaging weed to winter wheat over a large part of the high rainfall area in the central, north and east Texas. Economic losses in wheat occur through reduced grain yield, quality, foreign matter, and harvest efficiency.

Yield loss can exceed 90% in heavy infestations. In addition to yield reduction, reduced harvest efficiency results in lower test weight, high grain moisture content and high foreign matter content.

Because of the great quantity of seed found in infested fields, a relatively wide window of germination, a prolific root system, and the propensity of the clay soils in east Texas to remain wet over a large period of time, mechanical control is impractical.

Herbicides, crop rotation and crop management remain the most effective control measures.

For fields with a history of ryegrass infestation, control programs should be planned well before the fall seeding of winter wheat. Perhaps the best control procedure is crop rotation in conjunction with the use of alternate herbicide families.

Farmers should consider planting a grain crop such as corn or sorghum that is tolerant to atrazine. This will allow land preparation in the fall followed by the application of one pound of atrazine as an over-wintering weed control to suppress broadleaf weeds and ryegrass emergency.

This program should keep fields clean over the winter and allow establishment of the sorghum or corn crop without competition from ryegrass.

A second potential management scheme would include delayed planting to allow a good flush of ryegrass to emerge followed by the use of burndown herbicides such as Roundup or paraquat in a stale seedbed before planting. This technique assumes germinating rainfall will occur before the wheat planting date.

Allow adequate time for these herbicides to control the newly emerged ryegrass, and then sow wheat with a drill equipped with double disk openers to minimize the exposure of new ryegrass seed to the surface.

Any disturbance or inversion of the soil at this time will somewhat negate the efficacy of the burndown treatment rare to the exposure of more ryegrass good from the soil seed bank.

In a recent trial at McGregor, ryegrass control in excess of 90 percent was achieved by a Roundup burndown followed by shallow, late wheat planting. Ryegrass can only emerge from depths of approximately ½ inch or less.

If the major fall flush of ryegrass is controlled without disturbing the seedbed, the overall ryegrass population will be substantially reduced.

A third consideration with respect to mechanical management of ryegrass is fertilizer placement. Farmers using phosphorus fertilizer on winter wheat are encouraged to band phosphorus with the wheat seed at planting, enhancing the competitive ability of winter wheat to utilize this fertilizer compared to

ryegrass.

A fourth consideration is a selection of tall wheat cultivars. Ryegrass is a fall germinator that puts on most of its growth in the spring, while wheat can grow substantially better at the cooler temperatures associated with fall and early winter. If a tall wheat can establish a vigorous stand ahead of the major ryegrass growth period, losses due to ryegrass competition are minimized.

Without a doubt, herbicides are important in the overall control and management of ryegrass in infested wheat fields. Sulfonylurea herbicides including Amber, Glean and Finesse are the most widely used herbicides for ryegrass suppression and control in Texas. Application timing studies with these herbicides have shown that preemergence applications provide the most effective control.

In a test at Thrall, Texas, plots were treated the day of planting with Amber, Glean and Finesse. In this study, rainfall incorporated the herbicides on the same day they were applied. Post-emerge treatments using the same herbicides were applied 14 days later, as wheat and ryegrass were spiking.

Preemerge treatments averaged 22 percent better control on the first rating date than equivalent early post-emergence applications. In February ratings, preemergence plots averaged 88 percent for all three herbicides, with no significant difference between treatments.

Ratings of post-emerge plots with the same herbicides improved somewhat between December and February. This was likely a function of wheat being more competitive than ryegrass suffering from herbicide injury.

In some planting seasons, ryegrass control is greatly delayed by lack of rainfall. Failure to control ryegrass, or delay in control of ryegrass with sulfonylurea herbicides is in many cases caused by a differential in the time of ryegrass emergence and effective herbicide incorporation by rainfall.

Ryegrass may emerge either at the time of planting or slightly ahead of planting, whereas the preemergence herbicide is applied on a dry soil surface. It is not uncommon for this herbicide to remain on the surface without incorporating rainfall for 2 or more weeks.

Ryegrass in the seedbed where there is adequate moisture for germination may continue to grow normally until rainfall incorporates the surface applied herbicide.

At this point, the seedling may take up herbicides, growth is slowed, some of the ryegrass is killed, but control is not comparable to a situation in which the germinating ryegrass seedling is immediately exposed to a lethal dose of herbicide.

This does put wheat at a comparative advantage, and in vigorous growing conditions wheat may shade out most of the ryegrass. In prolonged, wet conditions failure to control ryegrass is common due to this problem.

Grazing management plays a large role in the success of a sulfonylurea ryegrass control herbicide program. When sulfonylurea herbicides are adequately incorporated with rainfall, a relatively thin herbicide barrier exists. When cattle are grazed in wet fields, hoof imprints through the treated barrier expose ryegrass seed to untreated soil, resulting in spotty weed infestations.

Wheat fields should not be considered feedlots. During periods of prolonged wet weather, growers should have permanent grass pasture on which to place cattle and adequate hay and feed supplies to carry cattle through the periods when wet fields reduce the potential for grazing.

This is a sound management practice not only from the aspect of ryegrass control, but will also reduce mechanical injury to the wheat stand.

Post-emerge herbicides are also available to control ryegrass. Hoelon is a material specific for grass control with good activity on ryegrass and wild oats. It does not offer the broadleaf control that sulfonylurea herbicides are known for. Hoelon is best used on small, seedling ryegrass.

Good ryegrass control with Hoelon applications on small ryegrass can be achieved with the 1.33 pints/acre rate. When ryegrass has more than four leaves visible, higher rates are required.

Performance of Hoelon is dependent upon good foliage coverage. Rates of 10 to 20 gallons per acre and spray pressures of 40 pounds per square inch or greater are necessary. Flat fan nozzles are recommended to achieve good droplet size and distribution.

Use of phenoxy herbicides in the tankmix have been shown to reduce the performance of Hoelon. While excellent control can be achieved with Hoelon

under good growing conditions, failures have been observed under stressed conditions induced by either drought or flooding. Therefore, Hoelon should only be applied to actively growing ryegrass for better results.

Metribuzin, sold under the trade names of Lexone and Sencor, can be used to provide acceptable levels of ryegrass suppression if certain precautions are observed. Metribuzin is a triazine herbicide which, if used under stressful growing conditions, can cause injury to wheat.

The use of metribuzin on some wheat varieties not tolerant to it should be avoided entirely. Injury tends to increase on lighter textured soils and at high soil pH. Be sure to observe the minimum labeled wheat size before application of these products.

Metribuzin offers an alternate chemistry providing acceptable levels of ryegrass control under the proper conditions. Lexone received a 24c special local needs label for Texas in 1992 for the use at low rates in sequential or tankmix applications with Finesse herbicide.

Ryegrass that is resistant to sulfonylurea herbicides has been identified in Central and North Texas. The variables that led to the development of resistance in ryegrass include a long-term monoculture wheat with no crop rotations, and the prolonged use of sulfonylurea ALS inhibitors,

This class of herbicides is widely used herbicides in corn, cotton, soybeans, wheat and recently sorghum. Examples of sulfonylureas include: Ally, Amber, Glean, Finesse, Beacon, Classic, Accent, Peak, Staple, Pinnacle, Harmony Extra and others.

Long-term exposure to sublethal rates of herbicide tends to select for herbicide resistant individual plants. Repeated production of wheat on the same field coupled with the use of sulfonylurea herbicide causes a rapid shift in the ryegrass population, resulting in a preponderance of herbicide resistant ryegrass.

As mentioned previously, crop rotations remains one of the best alternatives to control ryegrass, so long as alternate classes of chemistry and mechanical control are used to interrupt the ryegrass life cycle.

Table 1 shows the failure of Amber, Finesse and MON37500 herbicides in a McLennan County ryegrass control study. If a viable preemergence ryegrass control program has been deployed, but large numbers of escapes are observed in the winter, growers should try to determine the cause of escapes, and apply appropriate postemergence treatments to control the problem.

Table 1. Ryegrass control with preemergence and postemergence herbicides, McClennan County, Texas. 1997-98.

Herbicide	Rate oz./acre	Timing[1]	Ryegrass Control (3/31/98)
Amber	0.56	PRE	31
Finesse	0.50	PRE	39
MON 37500	0.05	EPOST	26
MON 37500	0.05	POST	31
MON 37500	0.67	EPOST	23
MON 37500	0.67	POST	23
Hoelon	1.33 (pts)	EPOST	90
Axiom	7.3	EPOST	68
Axiom	10.0	EPOST	84

[1]EPOST refers to ryegrass treated at spiking
POST refers to ryegrass treated at the 3-4 leaf stage

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