37. Herbicide Tolerant Wheat

Spring wheat varieties are planted from late-April to the end of May and are harvested in the fall from early August to late September. Spring wheats are planted in states where winters are severe which would result in the freezing and death of wheat planted in the fall. Four states account for 92% of US spring wheat acreage: Montana, Minnesota, North Dakota, and South Dakota. The types of spring wheat grown in these four states are classified as hard red spring wheat and durum wheat. Hard red spring wheat has the highest protein content of all US wheats, usually 13 to 16%. Durum is the hardest of all wheats. Its density, combined with its high protein content and gluten strength, make durum the wheat of choice for producing premium pasta products.

Annual broadleaf weeds (kochia, wild mustard), annual grassy weeds (foxtails, wild oat) and perennial broadleaves (Canada thistle, field bindweed) infest wheat fields throughout the four northern plains states. Left unchecked, ten wild oat or wild mustard plants per square foot will reduce wheat yields by 35%. Two to three kochia plants per square foot can reduce yields 30%. Canada thistle patches often reduce yields by 60% and green foxtail can reduce yields 10-15% when wheat is planted late.

Most acreage receives 1 to 2 herbicide active ingredients for control of broadleaf weeds. Approximately 60% of the acreage receives an herbicide treatment for grass control. These herbicide combinations provide good to excellent control of the major weed species infesting spring wheat in the northern plains states. The cost for broadleaf plus grass or Canada thistle control is approximately $20/A. It has recently been estimated that approximately 33% of the spring wheat acreage is untreated for Canada thistle and is incurring a 4-bushel per acre loss as a result.

Beginning in 1994, Monsanto has conducted field trials with wheat cultivars that have been transformed through the insertion of a gene from a soil microorganism. This transformation makes it possible to spray wheat with glyphosate herbicide (Roundup) without crop injury. Research in North Dakota has shown that two applications of 12 oz/A of Roundup provide season long control of wild oats, Canada thistle and wild mustard. Extension Service weed control guides for the Northern Plains states rate the effectiveness of glyphosate as good to excellent on all the key weeds in spring wheat, which is equivalent to the standard herbicides.

The projected cost of the glyphosate tolerant spring wheat weed control program ($17/A) would be equivalent to the current cost for combinations of broadleaf plus grass herbicides. With equivalent control and cost, the Roundup Ready system would not be expected to displace current programs which combine broadleaf control with grass control. However, on acreage where Canada thistle is currently uncontrolled because of the additional costs, the glyphosate system would offer a potential yield increase of 4 bushels an acre or $12/A in additional income. It is estimated that the glyphosate weed control system would be adopted on one-third of the spring wheat acres in MN, ND, SD, and MT (5.8 million acres) at no additional production cost or increase in herbicide use amounts but with an increase in income of $12/A.

| Impacts of Herbicide Tolerant Transgenic Wheat  | $71 million/yr. Increase |

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