8. Herbicide Tolerant Strawberry

Strawberries are grown for direct fresh market (u pick) throughout the Northeastern U. S., including in the states of Connecticut, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, and Vermont. Approximately 20 million pounds of strawberries are produced annually on 5000 acres in these nine states. Matted row culture, in which strawberry plants fill out the length of rows but bare ground is maintained between rows, is the common production system in Northeast strawberries. Maintaining bare ground between rows requires effective weed control. The shallow root system of strawberry plants make them poor competitors with weeds for water and nutrients, and weeds can increase disease problems by reducing canopy air flow. Weeds are the biggest management problem for Northeast strawberry production, causing greater economic losses than insect and disease pests combined. Strawberry acreage in Northeastern states has been declining since 1982, due in part to increasing weed pressure.

Herbicides are applied to approximately 95% of Northeast strawberry acreage, at an estimated aggregate rate of 4.9 pounds active ingredient per acre and cost of $87 per acre. But the herbicides currently registered for use in strawberries do not effectively control the full range of weeds invading Northeastern fields. Consequently, use of cultivation and hand weeding has increased to almost 100% of the acreage, accounting for 75% of the labor hours per year, and costing an estimated $1.7 million annually. Altogether, weed control costs for Northeast strawberry production is estimated to be $500 per acre.

Multiple strawberry varieties have been transformed with a bacterial gene for resistance to the nonselective herbicide glyphosate. Glyphosate effectively controls all the common troublesome weed species in Northeastern strawberry fields. Transformed plants are being screened for vegetative and floral tolerance to commercial application rates of glyphosate. If Northeast strawberry production shifts to a glyphosate-based system for weed control, approximately three applications of glyphosate per acre (2.25 lbs./ A) would replace the combination of three herbicide applications, three hand weedings and two cultivations currently used on average per acre at a savings of $242/ A.

Potential Impacts of Herbicide Tolerant Transgenic Strawberry
Change in Pesticide Use: 14,000 pound/ yr reduction in herbicide use (-54%)
Change in Production Costs: $1.3 million/ yr net savings in weed control

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