

## **Monsanto's Roundup®**

Written August 2001, Revised July 14, 2003

When Pharmacia merged with troubled Monsanto in 1999, investors complained that Monsanto would weigh down Pharmacia's profits. Pharmacia apparently felt the same way, keeping Monsanto's drug unit, Searle, but selling 15% of the remaining company as a precursor to dumping it altogether.

Investors couldn't have been more wrong. Between Monsanto's IPO in October 2000 and August 2001, its share price jumped 80%. Shares of Pharmacia (which still owns 85 percent of Monsanto) fell almost 20%.

How did Monsanto do it?

### **Monsanto**

St Louis-based Monsanto was founded in 1901 to manufacture Saccharine. It soon added vanilla, phenol, and aspirin. By 1990, Monsanto was a large diversified chemical company producing nylon, plastics, films, hydraulic fluids, aspartame (NutraSweet), and pharmaceuticals (the last two through its Searle unit, acquired in 1985).

In the mid-1990s, Monsanto positioned itself as a high-growth "life sciences" company, focusing on agriculture, food ingredients, and pharmaceuticals. When Robert Shapiro took over as CEO in 1995, he pursued a vision of using cutting-edge science to generate profits, raise living standards in developing countries, and produce a cleaner environment. He added seed and genomics companies and spun off the basic chemicals business. The strategy was to use the revenue generated by its hugely profitable Roundup to finance research and development. Uncertainties associated with biotechnology research and consumer fears of genetically modified foods, particularly in Europe, led to the departure of Shapiro and the merger with Pharmacia.

### **Roundup**

Monsanto's leading product was Roundup, the trademarked name of glyphosate, a chemical herbicide developed and patented by Monsanto in the 1970s. Roundup is referred to as a nonselective herbicide, meaning it kills most plants. In the late 1990s, it became the best-selling agricultural chemical of all time and an enormously profitable product for Monsanto. This success was the result of several factors. One was a conscious strategy to reduce price in the US, where patent protection gave it an effective monopoly until September 2000. (Prices were lower outside the US, where patents expired earlier.) Between 1995 and 2000, Monsanto reduced the price by an average of 9% a year. When volume increased by an average of 22% a year, revenue and profits

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exploded. See Exhibits 1 and 2. Glyphosate-based herbicides produced net sales for Monsanto of \$2.4b in 2001 alone, nearly half the company's total.

Another factor in Roundup's success was the increasing popularity of conservation tillage, an environmentally friendly method of farming in which crops are planted without first plowing the fields. With less plowing, there is less loss of topsoil and moisture. The problem is weeds. Instead of plowing them under, farmers eliminate weeds before planting by applying a nonselective herbicide such as Roundup. Analysts suggest that conservation tillage is sensitive to the price of herbicides, an important element in its cost.

A third factor was the development of herbicide-tolerant crops. Monsanto's Roundup Ready corn was approved in 1998, and soybeans followed shortly thereafter. Monsanto argued that Roundup and Roundup Ready seeds were complementary products, with price reductions in one increasing demand for the other.

Even as patents expired, Monsanto was able to maintain high market shares. In Brazil, for example, Monsanto's patent expired in 1981, yet its 2001 market share was 81%. See Exhibit 3. High market share, in turn, allowed Monsanto to exploit economies of scale and work its way down the learning curve.

### **Postscript**

Monsanto remains a high-risk company with strong upside potential. When the US patent expired, Roundup revenue dropped sharply, leaving Monsanto increasingly reliant on biotechnology. With exposure to Latin America compounding the fall in Roundup revenue, the share price fell 50% in mid-2002, leading to the December resignation of CEO Hendrik Verfaillie.

### **Questions**

- (a) How do you know that cutting the price of Roundup was a good idea for Monsanto?
- (b) How might you estimate the elasticity of demand and the profit-maximizing price for 1995. Do you think Monsanto set the right price?
- (c) If cutting price was a good idea, why didn't Monsanto do it earlier?

### **Additional Information**

- Monsanto's web site: <http://www.monsanto.com>
- Bear Stearns Equity Research, "Monsanto: Yet another time of transition," January 9, 2003.
- Salomon Smith Barney Equity Research, "Monsanto: A near-term catalyst is lacking," December 9, 2002.

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## Notes

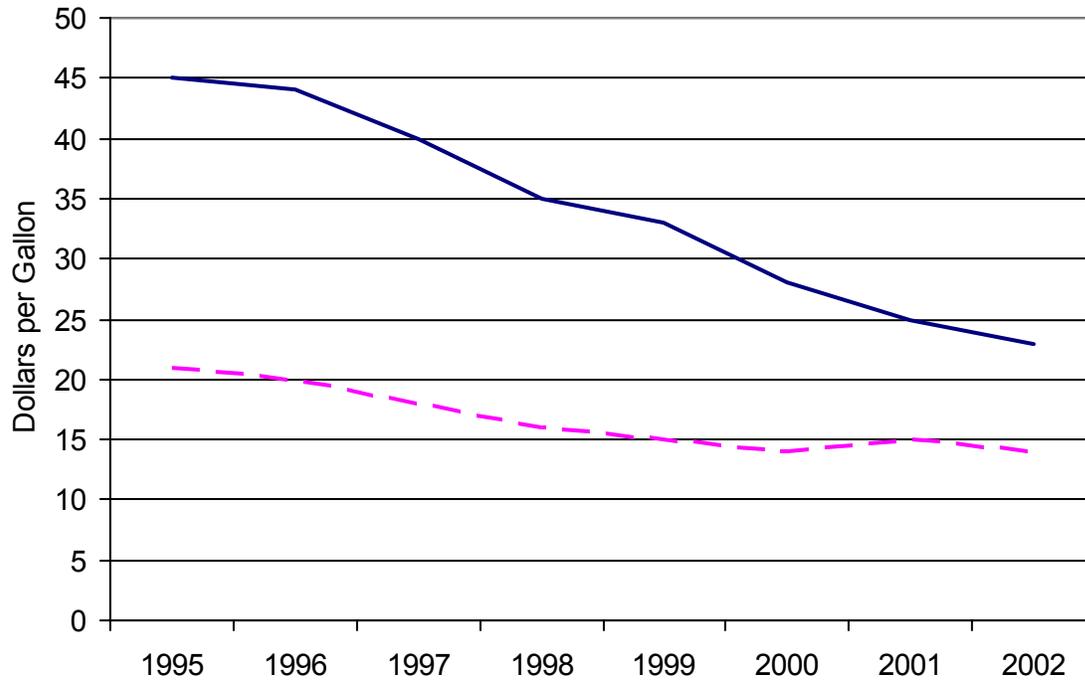
*This case was prepared by Mariagiovanna Baccara, David Backus, Heski Bar-Isaac, Luís Cabral, and Lawrence White for the purpose of class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. The case was motivated by the article “A weed killer is a block to build on,” by David Barboza, New York Times, August 2, 2001. The authors thank Frank Mitsch at Bear Stearns for supplying the data in Exhibits 1 and 2. © 2003 NYU Stern School of Business.*

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**Exhibit 1**

**Average Domestic and International Prices of Roundup, 1995-2002**

(Solid line is US, dashed line is International.)



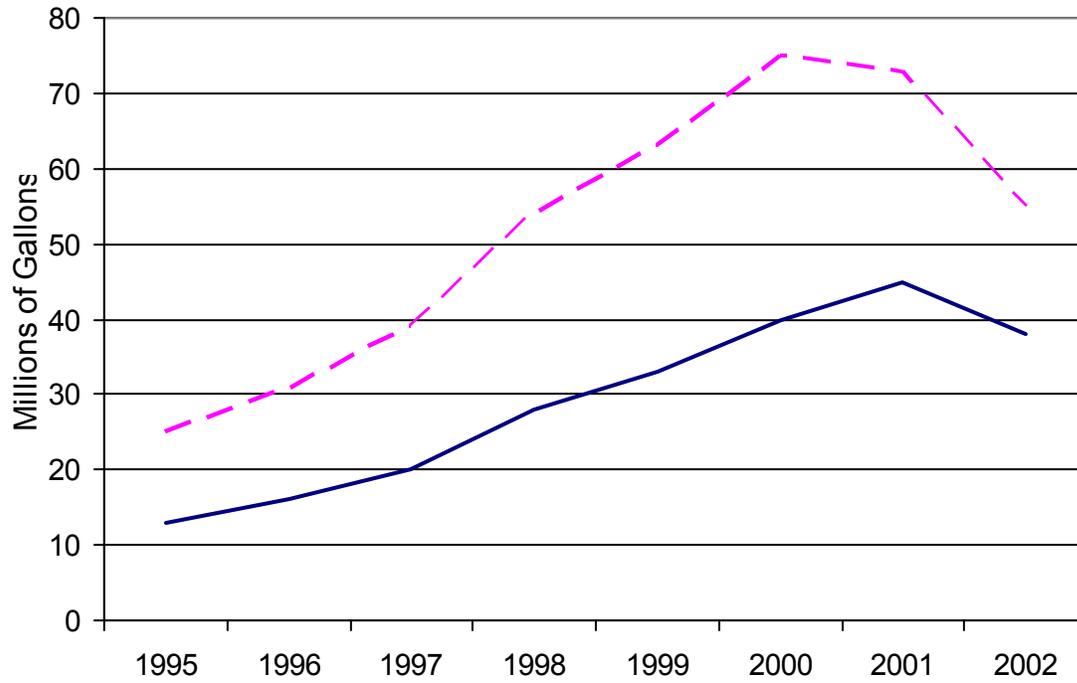
Source: Bear Stearns proprietary data.

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**Exhibit 2**

**Average Domestic and International Volumes of Roundup, 1995-2002**

(Solid line is US, dashed line is International.)



Source: Bear Stearns proprietary data.

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**Exhibit 3**  
**National Market Shares After Patent Expiration**

<b>Country</b>	<b>Patent Expiration</b>	<b>2001 Market Share</b>
Argentina	1984	75%
Australia	1988	91%
Brazil	1983	82%
Canada	1990	95%
France	1991	85%
United States	2000	98%

Source: Salomon Smith Barney.