The Indian herbicide market is experiencing a growth spurt of epic proportions [1]. Between 2005 and 2010 the market doubled and in 2012 increased by 35%. Traditionally, weed control depended on hand weeding. However, in recent years, hand weeding laborers have become expensive and scarce leaving farmers with little choice except to adopt the labor-saving herbicide option. In addition, research has consistently shown that herbicides provide more effective weed control leading to higher crop yields.

To hand weed India’s crop fields adequately, approximately nine billion person-days of labor would be required [2]. In reality, hand weeding in India has been inadequate and crop losses have resulted. In one regional survey, between 15 and 30% of the fields of all major crops were never hand weeded [3]. A little less than half the fields were hand weeded once. More than 40% of the fields were hand weeded for the first time after the critical first 36 days after sowing. Until recently, herbicides were used on only 10% of the wheat hectares to control grass weed species and on 20-25% of the hectares to control broadleaf species [4]. As a result, uncontrolled weeds have been identified as the main cause of low wheat yields in India and have been reported to reduce wheat yields by 25-30% [5].

Recent government mandates such as the National Rural Employment Guarantee Act has created labor shortages for weeding in India because guaranteed employment and wages mandated by the Act have outpaced regular pay, making hand weeding an unsustainable practice [6]. In addition, many young people have lost interest in farm work due to the drudgery of hand weeding and have sought education opportunities and jobs in industry, business and construction [1]. Thus in recent years, a shortage of labor has been occurring on farms. Hand weeding schedules have become impossible due to the high cost and scarcity of labor [7].

Research has shown that for farms using herbicides, labor usage was about 43, 33, and 80 hours lower in paddy rice, maize and sugarcane crops, respectively [8]. Yields in farms using herbicides were also higher by about nine quintals in paddy rice, four quintals in maize and 100 quintals in sugarcane [8]. Increased profits were (Rs.) 3673 in paddy rice, 4326 in maize and 6661 in sugarcane. Herbicide applications in soybeans were determined to provide a cost:benefit ratio of 9.89:1 [9]. The cost of the herbicides was approximately one-third of the cost of two hand weedicings. On an average of three years post-emergence herbicide applications increased wheat grain yield by 59, 64, and 67% as compared to the unweeded control, respectively [10].

References