IMPLICATIONS OF GENE FLOW ON THE SEED PRODUCTION INDUSTRY. Barry Martin, Director of Seed Technology, Monsanto Company, St. Louis, MO, 63167.

Gene flow in seed production may arise from two possible sources, pollen flow and seed mixture. Pollen flow into a seed crop may come from indigenous relatives of the crop such as Brassica Rapa pollen movement into Canola or from commercial varieties of the same species such as is common in hybrid maize production where pollen movement of the commercial maize is a significant issue. Pollen flow out of the seed crop can happen, however, measures taken to mitigate pollen flow into the crop are equally effective in reducing pollen flow out of the seed crop into commercial crops or indigenous species. Seed mixtures can occur during several steps of breeder, foundation and commercial seed production if care is not taken in cleaning out equipment. The results of such mixtures are varietal and/or trait mixtures which have adverse financial consequences. This impact has resulted in many companies using structured quality management programs such as ISO 9001-2000 to minimize these problems.

Preventing gene flow into seed crops has always been an objective of the seed industry and historically quality assurance programs have used physical examination of seed, grow outs of the seed and biochemical tests such as isozymes to assure customers of purity. **The advent of biotechnology products has made measurement of unwanted gene flow more complex, requiring sophisticated molecular technology and** has resulted in purity standards that are 100 – 600 fold more rigorous than those which were common 10 years ago for some markets. To continue to support seed trade new methods have been developed to test seed such as; ELISA, element, construct, gene and event specific PCR, pooled testing techniques and improved statistical techniques such as SeedCalc to estimate risk of shipping seed which buyers or regulatory officials will find unmarketable.

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