Using RNAi to control disease and insect pests of food, feed and fiber crops.
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Each year billions of dollars’ worth of food, feed and fiber crops are lost to disease and insect pests of plants. RNA interference (RNAi) holds great promise for reducing these losses. We transform plants with gene silencing constructs that target genes essential to the pest, thereby conferring plant resistance to that pest. Using this approach, we have demonstrated disease control in important crops. Remarkably, “cross species resistance” also has been demonstrated where constructs that target essential genes from one species of fungus can control other species. We also have developed an in vitro screening method using double-stranded RNA transcripts to identify and optimize the effectiveness of silencing constructs prior to plant transformation, and to assess their effects on other pathogens. Using this approach, we are beginning to develop disease and insect resistance in avocado, banana, date palm, maize, mango, pineapple, potato, soybeans, sweet potato and wheat. This technology is the subject of a patent portfolio being developed throughout the world (US 2006/0095987 A1, WO 2006/047495 A2 and US 2010/0257634A1).