THE DELTA AND PINE LAND COMPANY COTTON BREEDING STRATEGY

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Delta and Pine Land Company is pleased to participate in the 2005 Brazilian Cotton Conference and is keen to supply Brazilian growers with varieties meeting their requirements for cotton production. Our company conducts 11 cotton-breeding programs spread around the globe, including one in the state of Minas Gerais, Brazil, headed by Dr. Paulo Canci. In markets where we do not have breeding programs, we conduct variety testing to determine the best local varieties to provide to growers. One of the many strengths of our company is a cadre of trained agronomists charged with comprehensively evaluating candidate varieties and comparing them with our own and competitor commercial varieties. These agronomists also respond to customer inquiries, allowing our breeders to focus on development of new elite breeding lines rather than pre-commercial testing of many candidate varieties.

Our breeding strategy hinges on conducting numerous, independent breeding programs in which development of elite lines is the focus. This approach permits more breeders to apply their experience to variety development in more environments than is possible with a few large breeding programs. After several years of local testing, each breeder submits lines for advance to broader testing by all 11 breeding programs located around the globe. Throughout this process, our company always complies with the quarantine requirements of each country with respect to shipping seed. Sharing of germplasm provides each breeding program a new set of parents for the annual cross-pollination effort, the foundation of the next cycle of breeding. Beyond this degree of testing, lines are chosen by the Director of Germplasm Development and company management for testing in markets where breeding programs are not located. The result is that the best locally adapted varieties are provided to growers in each market. Transgenic trait introduction is centralized, rather than distributed among breeding programs to ensure purity of the desired genes, while excluding genes not approved for that particular market.

Delta and Pine Land Company’s transgenic trait portfolio is rapidly expanding. Delta and Pine Land Company has licenses to commercialize varieties containing Monsanto’s Bollgard®, and Roundup Ready® traits, following approval by the Brazilian government. Commercialization will occur through MDM Sementes de Algodão Ltda, our joint venture with Maeda S.A. Agroindustrial. We anticipate commercial launch of Bollgard varieties in limited quantities about 2007. The companies await Roundup Ready trait approval in cotton, thus varieties including that gene may be sold in Brazil at a later date. We are also incorporating the second generation of Monsanto pest management traits into elite varieties. The anticipated successors to Bollgard and Roundup Ready are Bollgard II®, a dual Bt-gene product, and Roundup Ready Flex, a glyphosate tolerant product that extends the opportunity to apply glyphosate later in plant development compared with Roundup Ready varieties. Delta and Pine Land varieties containing Bollgard II were launched in 2005 in Australia and the United States, with an anticipated 2007 launch of varieties combining Bollgard II and Roundup Ready Flex in the United States. We cannot yet project a date to commercialize Delta and Pine Land Company
varieties containing Roundup Ready Flex in Brazil until after this trait receives approval from the Brazilian government.

Our company is very excited to broaden the portfolio of popular pest management traits through our relationship with Syngenta. Delta and Pine Land Company has a global license to commercialize Syngenta’s transgenic lepidopteran insect protection trait, tradenamed VipCot™, as well as other Syngenta traits. Vegetative insecticidal proteins or Vip is a novel insect control trait with a different mode of control than that of ‘Bt’ cottons. Syngenta has shown that VipCot is effective at controlling many pest lepidopteran insects encountered in cotton production. Commercialization of Delta and Pine Land Company varieties containing VipCot in Brazil is some years off and is, of course, subject to regulatory approval.

Further off in the transgenic pipeline are traits derived from our DeltaMax LLC, joint venture with now DuPont/Pioneer-owned subsidiary Verdia. With the DeltaMax joint venture, D&PL gains access to Verdia’s Molecular Breeding™ platform, including their gene shuffling technology. In short, the gene shuffling approach is a means of enhancing the expression of traits by repeated cycles of dividing and re-assembling the portions of genes encoding for the desired trait, each time selecting for better expression (Stokstad, 2004). The first ‘gene shuffled’ trait to emanate from this approach was announced by Dupont’s Pioneer Hi-Bred International corn seed company in 2004 and is a glyphosate tolerance trait. It is possible that the same trait may become available in Delta and Pine Land Company cotton varieties. Other traits that may be realized through DeltaMax include insect and nematode resistance. These emerging transgenic technologies combined with our global breeding network present us a pipeline of varieties to meet the requirements of Brazilian growers.

In summary, Brazil is a focus market for Delta and Pine Land Company and our company is ready to provide Brazilian growers with their cotton planting seed needs.

REFERENCES