Conditions for Global Seed Production

The U.S. seed industry relies on production locations globally to advance R&D and breeding programs and for the production of commercial seed. From development to final sale, a seed variety may cross as many as six international borders (see map on page 3). A consistently applied global regulatory framework and commercial best practices are critical for U.S. seed companies to succeed at the international level.

Use of diverse global production locations provides alternatives in case of regional disruptions such as weather failures, pandemics, or political instabilities, important counter-seasonal opportunities to speed up variety development during the U.S. winter season, opportunities to diversify product offerings based on local agronomic conditions, and the ability to produce quality seed with skilled labor closer to the location of final sale.

While the laws, regulations and commercial practices vary from country to country, there are broad conditions that U.S. seed companies need in order to succeed in these markets.

Climate and Agronomic Conditions: Of primary importance is the local climate and other agronomic conditions such as soil quality, daylight hours, access to a water source, and ability to respond to local pest and disease pressures. Companies will often spend 1-3 years evaluating local conditions with field trials before establishing larger production operations.

Science and Risk Based Regulatory Environment: Seed companies abide by national regulations and policies related to biotechnology, new breeding methods such as gene editing, phytosanitary standards, seed treatment and crop protection requirements. It is critical that countries establish transparent and science-based regulatory standards that can be adhered to by the global seed industry. We recommend that countries adhere to reciprocal standards when possible, such as those set forth in trade agreements negotiated with the United States and from intergovernmental organizations. Government participation in international regulatory decision-making ensures that the seed industry is held to the same high standards in each market.

As countries adopt and implement regulatory policies relating to products developed using new breeding methods, ASTA maintains that plant varieties developed through the latest breeding methods should not be differentially regulated if they are similar to or indistinguishable from varieties that could have been produced through more conventional breeding methods. Like products should be treated the same under the law.

The United States does not have a seed variety registration system, relying instead on market conditions to determine the suitability of seed varieties for farmers. For countries that do have variety registration systems, these systems must provide clear and transparent mechanisms for registration and field evaluation.

As new pest and disease issues emerge, it is important that the country has the technical capacity to conduct pest risk analysis, establish clear phytosanitary measures, adopt internationally recognized testing methods, and maintain an up-to-date harmful organisms exclusion list which is science-based.

Import Requirements Appropriate for Small Seed Lots: Parental lines for breeding programs and seed stock for commercial production enter a country in small quantities, or as small seed lots. Some countries have specific regulations to address small seed lots, for example requiring fewer

seeds to be taken for sampling and inspection than from a commercial seed lot. The number of seeds needed for destructive seed health testing for pathogens can be significant, usually 10-20% of the entire lot. Without special regulations to address small seed lots, shipments can experience months-long delays in national quarantine centers. National adoption of global standards for seed movement such as the International Plant Protection Convention's International Standard for Phytosanitary Movement of Seed (ISPM 38) can help standardize protocols. Furthermore, some countries including the United States, are in the early stages of exploring ways to move away from phytosanitary inspection on a consignment-by-consignment basis to a pilot project systems approach model, where countries evaluate a company's overall phytosanitary risk management structure. This would speed up the movement of seed across borders while maintaining safety.

Testing for Seed Health and Quality: Once the seed is produced and ready for export, it will require a phytosanitary certificate and additional tests or declarations as required by the importing country. The country's National Plant Protection Organization or designated party must provide trained experts to inspect the product in the field and the laboratory. It is recommended that the laboratory be accredited by the International Seed Testing Association or by the NPPO to ensure uniform testing results. The ability to issue declarations of seed quality or OECD Certified Seed Tags is beneficial. It is recommended that countries enable the accreditation of third-party laboratories to increase the throughput of testing, in addition to government managed laboratories.

Intellectual Property Rights: It takes between 5-10 years and over $1 million to develop a new seed variety. Seed is vulnerable to intellectual property theft during all phases of production from R&D and breeding to commercial production. Seed production is best done in locations with strong and enforceable intellectual property rights protection. A country must have an established system to evaluate applications for Plant Variety Protection and to award Plant Breeder's Rights. The country should be a member of the International Union for the Protection of New Plant Varieties (UPOV) or be working towards UPOV membership. Ideally, the country will have adopted the most recent 1991 Act of UPOV.

Trained Workforce: Seed production and breeding programs require more precision than commercial production of vegetables and commodities. For many varieties, pollination must be done by hand, especially Certified Organic Seed Production, requiring a dedicated and highly skilled labor force. While companies do train their workers on seed quality management and on a crop specific basis, it is an added benefit when a country's workforce already has a strong understanding of how agricultural best practices can be applied to the seed sector.

Logistics and Infrastructure for Export: Once the seed is prepared for shipment by air or ocean freight, a country's transportation infrastructure must ensure the safe and effective movement of seed to its destination. Seed can be sensitive to heat, which reduces germination. For breeding programs, a small box of seed may be worth thousands of dollars to ensure the next step in a seed variety's development.

Resources:

ASTA works closely with the U.S. government, regional and national seed associations, the International Seed Federation, international organizations, and foreign governments to promote the adoption of clear, transparent, science and risk-based regulations and practices. Capacity building activities and

technical trainings can greatly assist in the development of new global production locations. ASTA and other stakeholders welcome the opportunity to provide additional educational tools and resources to interested parties.

For specific information about the U.S. seed system – laws, regulations, and commercial practices, please click here.