OVERVIEW OF SEED CERTIFICATION PROTOCOLS

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Abstract

Seed certification procedures differ greatly among crops and between states. The purpose of seed certification is to maintain and make available high quality seed and propagating material of crop varieties. Use of certified seed helps protect buyers, providing a guarantee that seed meets a standard level of high genetic purity, germplasm identity, high germination rates, and minimal amounts of other crop seed, weed seed and inert matter. Seed testing procedures are in place and routinely used to ensure the viability of planting seed from each seed lot being sold. The Although not required, Cool-Warm Vigor Index serves as the standard germination test used to determine the quality of planting seed in the United States. Additional procedures are also conducted in seed production fields to ensure that planting seed remains genetically pure, does not contain noxious weed seed and is void of potential seedborne pathogens. Seed certification programs are typically governed by individual State Departments of Agriculture and/or Crop Improvement Associations affiliated with the State's Land Grant University. While differences in certification exist at the state level, all agencies reference guidelines set by the Association of Official Seed Certifying Agencies. The level of certification appears to be dependent on the crop and the value of the planting unit of the crop. Currently, information related to seed certification associated with labeling of bagged products consists of seed purity, inert matter, and weed seed, which have standards for Foundation, Registered or Certified seed classes. Little if any information pertaining to diseases is included on certification labels. Procedures are being used within the industry to inspect and certify planting seed; however, it is possible that different iterations may be utilized. In cotton, the general consensus in the United States is to focus Bacterial blight, caused by *Xanthomonas citri* pv. *malvacearum*, and Fusarium wilt, caused by *Fusarium oxysporum* f. sp. *vasinfectum*, race 4. For example, creation of a phytosanitary certificate for the exportation of seed requires pertinent information for fields if a particular disease is observed. Persons certifying or inspecting seed production on behalf of seed companies are routinely in the field, which is important as temporal and spatial aspects disease development need to be taken into consideration. Perhaps current industry standards related to seed production need to be reevaluated in light of increased concerns over Bacterial blight and Fusarium wilt. We propose increasing the minimum number of inspections within a season to three and for sampling procedures to be standardized across the industry. As a best management practice, fields exhibiting symptoms associated with diseases caused by seedborne pathogens, or those where a seedborne pathogen has been identified should be rejected. Finally, the advent of molecular diagnostic methods will greatly enhance the ability to detect seedborne pathogens. The establishment of updated certification procedures and implementation of rapid, reliable detection methods would improve the quality of cotton planting seed. Such changes will undoubtedly come at a cost. A cost benefit analysis of implementing these strategies will be required to see what the market will bear.