BALL TECH ON DEMAND™

AT RISK CROPS FAQ

- **What are 'At Risk Crops'?** Some crops have significant inherent risks that must be managed to successfully finish the crop.

- **What's an example of an 'At Risk Crop' I produce?** Poinsettia is an excellent example of a crop that have whitefly, Pythium and botrytis problems. There is a inordinate need to manage and control these pests to ensure a marketable crop. 'At Risk Crops' are those crops where there is a need to have a strong preventative program in place to control the potential problems that might show up.

- **Are there any crops that aren't defined as 'At Risk'?** A majority of the crops produced have limited disease or insect problems. These crops are historically produced with limited concerns and traditional pest management. Often 'At Risk Crops' are produced successfully because of good cultural practices, sanitation protocols or just good luck!

- **What are examples of the current 'At Risk Crops'?**
  - Basil– Downy Mildew
  - Begonia Hiemalis – Xanthamonas Leaf Spot
  - Cabbage-Kale– Xanthamonas Leaf Spot
  - Canna – Canna Yellow Mosaic Virus
  - Carnations – Carnation Mottle Virus, Fusarium
  - Garden Mums – White Rust, Fusarium
  - Geranium – Ralstonia, Xanthamonas
  - Hosta – Hosta Virus X
  - Impatiens – Downy Mildew
  - Peppers – Xanthamonas Leaf Spot
  - Tomatoes – Xanthamonas Leaf Spot
  - Zinnia Elegans– Xanthamonas Leaf Spot

- **Why are they considered 'At Risk'?** Under some cultural or environmental conditions, bacterial, viral or fungal diseases will result in unsalable plants without proper sanitation and appropriate chemical control strategies. By calling out the unique risks associated with specific crops, growers can better manage the risk within their operations. We can trace losses due to disease outbreaks to a failure to appropriately manage the risks associated with specific crops.

- **What are seed suppliers doing to minimize seed borne diseases?** Ball Seed has committed to testing the seed of 'At Risk Crops' to ensure specific pathogens are not detected. We require our seed suppliers to provide a certification from an accredited lab that uses internationally acceptable standards for testing. Further we require young plant producers to follow rigorous protocols to ensure risk are mitigated.

- **Does this mean that if a seed lot is tested that it is 'clean'?** Unfortunately, testing does not guarantee that the entire lot is pathogen free. The testing protocol randomly samples approximately 20,000 seeds to determine if the pathogen is detected. This doesn't guarantee every seed (this could be millions) in the lot is negative. We can reasonably assume that if the 20,000 seed sample is negative that the rest should be too but there is no guarantee. This is why there is a vigilant need to be take preventative action when producing an 'At Risk crop'.

- **What are unrooted cutting suppliers doing to ensure disease free plants?** Ball requires that our top suppliers produce their starter nucleus plants from certified clean stock. These clean elite plants are then grown using proven clean stock protocols to ensure that the URC are free of specific pathogens which can affect finished growers' production.

- **Are the rooting stations maintaining the clean production process too?** All the Gold Suppliers have rigorous sanitation protocols in place to ensure that the URC remain clean and insect free throughout their production process. The Gold Supply chain has protocols in place that include appropriate fungicide and insecticide which are available upon request so that growers can maintain the clean production program in their greenhouse.

- **If I grow 'At Risk Crops' what should I do?** The attached documents provide recommendations on good sanitation practices and cultural practices that minimize infection of the 'At Risk Crops'. Good cultural practices are critical to grow disease free crops.

- **Why do I still have problems when I use the best cultural practices?** Bacterial and fungal diseases can easily spread from the environment and other symptomless crops to susceptible crops. The spread can be through wind, water, arthropods, or people moving the pathogen. Good sanitation practices will limit the probability of a disease outbreak.

- **How clean do I have to be, does this have to be 'hospital' clean**? Good sanitation is about controlling the potential for pathogen and disease spread. Not re-using trays and containers, disinfecting areas where diseased plants are discovered, using tested seed inputs, and sourcing from reputable suppliers are all good sanitation practices to prevent the spread of diseases to clean plants.