

Appendix A – Anti-microbial treatments for sprouting seeds

A. Treatments that have been evaluated at a pilot- or commercial scale

Hot water treatment (Bari et al. 2008, JFP, 71, p830-834); pilot scale validation (Bari et al. 2010, JFP, 73, p752-757)

2000 - 20,000 ppm calcium hypochlorite treatment (Montville and Schaffner, 2004, JFP, 67, p758-765); commercial scale evaluation (Brassica/IEH report to be published)

Peroxyacetic acid or Tsunami 100 (10,000 – 30,000 ppm); commercial scale evaluation (Buchholz and Matthews, 2010, Lett Appl Micro, p462-468) It remains to be determined whether it has been approved by EPA for use at 10,000ppm?

Levulinic acid and SDS; commercial scale evaluation (Zhao et al., 2010, 73, p2010-2017) Questions to be addressed: Does this have regulatory approval, is the mixture commercially available, and is it able to be used on organic seeds?

B. Other peer reviewed, published treatments that have shown comparable effectiveness as 20,000 ppm calcium hypochlorite

Acidified sodium chlorite (Liao, 2010, JFS, 74, p M159-M164) approved up to 1500ppm (use at 800ppm)

Germin-8-or = (Keeper by BioCide) Chlorine Dioxide (Kumar et al., 2006, JFP, 69, p1571-1578)– approved up to 1500ppm (use at 200ppm)

Fit (Beuchat et al., 2001, JFP, 64, p152-158) GRAS (A product that is GRAS for certain uses can be used as GRAS for other processes by self-determination.)

C. Other work that has not been carried out in relation to 20,000 ppm calcium hypochlorite, that show strong reduction of pathogens

Gaseous Acetic Acid, (Delaquis et al JFP, Vol. 62, No. 8, 1999, p953–957)

Fumigation with Ammonia (Himathongkham, JFP Vol. 64, No. 11, 2001, p1817-1819)

Biological Treatments, Especially Pseudomonas Fluorescens 2-79 (Fett, JFP Vol. 69, No 4, 2006, p719-728; Ye et al., JFP, Vol. 1, 2010, p9-17)