

**Mildew Task Force  
Meeting Notes January 12, 2017**

- Need to determine if mildew is on the seed. If it is we need an early warning detection system. We already know its in soil and airborne.
- SK – tested 133 random lots of spinach. Found 28 lots had oospores.
- Although race 17 is about to be confirmed, many believe we are up to race 24. The pathogen is mutating faster than we can confirm races.
- JC – varietal trials in Yuma data coming shortly.
- There is no single test to determine race. Because of all the mutations, there are variants now instead of single races.
- Breeding is losing its potency. The pathogen is mutating faster than breeders ability to keep up.
- ES-spoke to the big chemicals companies (Monsanto, Bayer). Our industry is too small. If the answer isn't patentable, and 100,00's of thousands of row crops like the mid-west the big guys aren't going to spend R&D dollars on mildew. Some said if we make the plant stronger with their in-house products it would help mildew.
- Even the biggest seed companies sometimes only have one breeder in Holland or Denmark.
- SK/JC – treating seed with ridomil during seed production gives weeks of protection, but its expensive and seed producers wont do it on their own.
- Until a lab can see the germination, seed companies can't accept the hypothesis because of the liability issues it represents.
- Ag Bio Tech, Monterey, working on an assay to detect the pathogen
- AEMTEC, Fremont, CA, has the right equipment to test. We need a protocol so it is standardized.
- DM needs moisture to sporulate so irrigation amount, timing, wind, are all factors to be considered. Best time to irrigate is 9am. Sunrise and sunset seems to be a trigger for the highest spore release.
- Crisper technology seems to be one possibility if it can be approved for organic. It's is not the same as GMO. Its utilizing gnome markers, not genetically modifying.
- Conventional flash heat treatment, or steam, kills the pathogen but also hurts the germination.
- Incotech's steam treatment didn't seem to work. The have since sold the technology to another company who has not further developed it.
- Phosphates work but no commercial way to produce them.
- Freezer spinach sits in the valley until it turns white sometimes.
- Actiguard is registered as a fungicide by doesn't work on DM.
- KS - If we model the races geographically we will find some races are more susceptible in certain areas. This would help develop controls. Spore traps in the desert would provide valuable information.

- Need to ask the CA Seed Association spinach seed committee what they recommend on a standard test.
- We need to develop a HACCP type approach. i.e. how do we clean truck tires, clean equipment, clean seed, etc., to stop spread to new fields? If it isn't on the seed then how does it spread to Northern CA, and NV?