The effectiveness of wash water treatments to prevent or reduce the spread of plant pathogens in the Holland Marsh

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Carrots from different fields are being washed in the same facility and the wash water can contain potential plant pathogens. Infested irrigation water is not only an important source of pathogens inocula, but also an efficient means of spreading potential pathogens from a single site to an entire farm. These potential pathogens cause important diseases in the "Holland Marsh" but there is no effective control yet. This will increase the use of pesticides to control disease outbreaks and increasing production costs. The main plant pathogens of concern in the Holland Marsh are *Fusarium* spp (Fusarium root rot of carrot), *Pythium* spp (Cavity spot of carrot), *Stemphylium vesicarium* (Leaf blight of onion), *Rhizcotonia crocorum* (Violet root rot of carrot), *Sclerotinia sclerotiorum* (Sclerotinia rot of carrots, pink rot of celery and sclerotinia drop of lettuce), *Sclerotium cepivorum* (White rot of onion) and *Agrobacterium tumefaciens* (Crown gall of carrot). Information is scant on the fungal inoculum load and species diversity in recycled irrigation water. Therefore, a rapid, accurate, and sensitive detection method is crucial for preventing plant pathogens spread through recycled irrigation water.

Objective

Determine if the treatment techniques used in the Holland Marsh are effectively eliminating potential plant pathogens by Detecting, identifying and quantifying plant pathogens in water samples. Therefore growers will determine the best method to treat vegetables wash water.

Methods

Any potential method should isolate, identify and quantify potential plant pathogens in the vegetables wash water at different levels. 3M yeast and mold count petrifilms designed to identify food borne yeast and mold in food products but tested to confirm that the common plant pathogenic fungi can be detected.

Results

The 3M petrifilms can detect mold and yeast in vegetable wash water but can't identify if they are plant pathogens. Plating methods are needed to detect and identify plant pathogens in water samples.
Initial results show that there are high numbers of yeast and molds in water sampled going into and out of settling ponds. Research will assess the effectiveness of treatments on important plant pathogens in wash water in the Holland Marsh and to enable producers to evaluate the effectiveness of their wash water treatment system.