Using the Maine winter grow-out for identification of potato seed lots suspected to be effected by *Dickeya*

The Maine winter grow-out test (Florida Test) consists of a 400-tuber sample of each seed lot (larger than 1 acre in size). These are planted and evaluated for virus levels to ensure the levels present are within established certification tolerances. Plant emergence is also recorded. It is these plant emergence data that have potential for determining problem seed lots. Data from 2012 to 2015 were used to develop an algorithm to identify seed lots with high potential for *Dickeya* contamination.

Identifying seed lots with high potential for *Dickeya* contamination

Trace back in 2015 confirmed that seed lots with 25 percent or less emergence (100 or fewer emerged out of 400 planted) in the winter grow-out test have performed poorly when planted commercially. While nonemergence is not a symptom limited to *Dickeya*-infected seed, there is the high association with *Dickeya* presence in fields planted to these poor-performing seed lots. A 25 percent, or less, emergence is proposed for identification of seed lots with potentially high levels of *Dickeya* contamination. Seed lots with 25 percent or less emergence should be voluntarily flushed from the seed program, as there is a serious emergence problem with the lots.

Identifying seed lots that precurse those lots with potentially high levels of *Dickeya* contamination

Where more than half of the seed lots within a variety are over 75% germination (300 out of 400 plants emerged), 50 is subtracted from the mean number of emerged seed. Seed lots with emergence values less than the calculated mean minus 50 should be voluntarily flushed from the seed program, as there is a serious emergence problem with the lots.

Where less than half of the seed lots within a variety are less than 75% germination (300 out of 400 plants emerged) but more than half of the seed lots are over 50% emergence (200 out of 400 plants), 25 is subtracted from the mean number of emerged seed. Seed lots with emergence values less than the calculated

mean minus 25 should be voluntarily flushed from the seed program, as there is a serious emergence problem with the lots.

Similar to above, if less than half of the seed lots within a variety have less than 50% germination (200 out of 400 plants emerged), subtract 12.5 from the mean number of emerged seed to identify seed lots that should be voluntarily flushed from the seed program.

This year's post-harvest grow-out data can be found at:
http://www.maine.gov/DACF/php/seed_potato/index.shtml

Example for 2017 planting, Norwis variety:
From the link for the variety Norwis, there are 26 published emergences for seed lots greater than 1 A:

156	96	175	175	85
153	184	236	60	209
223	126	205	90	
132	120	200	220	
120	373	368	193	
174	200	357	188	

The mean emergence is 185 (out of 400) or 46%.

Four seed lots have less than 25% emergence (less than 100 out of 400) and are indicative of seed lots with potentially high levels of *Dickeya* contamination. These are candidates for voluntarily removal from the seed system.

Six seed lots have emergence values less than the calculated mean minus 25 (185-15 = 160) and are candidates for voluntarily removal from the seed system.

Example for 2017 planting, Reba variety:

From the link for the variety Reba, there are 13 published emergences for seed lots greater than 1 A:

390	400	160
350	375	390
375	325	380
177	380	
380	330	

The mean emergence is 339 (out of 400) or 85%.

Two seed lots have emergence values less than the calculated mean minus 50 (339-50=289) and are candidates for voluntarily removal from the seed system.

Example for 2017 planting, Dark Red Norland variety:

From the link for the variety Dark Red Norland, there are 54 published emergences for seed lots greater than 1 A:

400	369	374	400	377	390	370	390
400	377	376	400	180	307	377	370
364	385	400	372	380	237	356	400
352	225	400	369	380	210	379	400
357	400	400	390	380	400	371	363
338	359	375	370	346	360	395	
375	390	400	371	380	369	360	

The mean emergence is 363 (out of 400) or 91%.

Five seed lots have emergence values less than the calculated mean minus 50 (362-50=312) and are candidates for voluntarily removal from the seed system.