



*Where the subject may be perishable  
but the insight isn't.*

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## Testing Sprout Seeds

*Jim Prevor's Perishable Pundit, May 22, 2009*

We've been focusing recently on the food safety outbreak on alfalfa sprouts, running pieces such as these:

[\*Insights On The Alfalfa Sprout Advisory\*](#)

[\*Recommendation For An 'Appropriate' Seed-screening Program Shows FDA Unwilling To Take Responsibility For Its Recommendations\*](#)

[\*Alfalfa Seed Company, FDA, USDA And Supporting Cast Comment On Seed Withdrawal\*](#)

[\*Testing Sprout Seed Before It Ships\*](#)

Although some of these pieces have been rather technical, we consider it vital that the industry do something to reduce the frequency of these outbreaks substantially. So we have wanted to listen, and we will do a little more of that in this piece.

One issue is making sure that the sprouters follow FDA guidelines for testing. Another issue is getting seed that is grown with human consumption in mind. Still another issue is testing seed, and in our piece [\*Testing Seed Before It Ships\*](#), a reader makes a strong point that International Specialty Supply, a seed supplier, has a strong testing program for seed destined for sprouting.

Several readers noted the same issue regarding the math, and frequent Pundit correspondent Bob Sanderson was among the most articulate:

*The statement in your article "Testing Seed Before It Ships" contains an error that could have unfortunate consequences, since it gives the impression that a good pre-production seed-screening procedure can almost certainly detect any pathogens that might be in the seed. The figure given is a "99.9999% certainty (at 4 cfu/kg — which is extremely light contamination)."*

*Pre-production seed screening is a common-sense intervention that should be done on all seed lots, prior to use in sprouting. The bigger the sample, from the greatest number of locations in the lot, the better. Sampling on some seed lots that have been implicated in outbreaks has*

*been able to isolate pathogens, which strongly suggests that if this sampling had been done beforehand, the seed would have been diverted to non-food uses, and the outbreak would not have occurred. However, making any claim of probabilities of detection based on certain sampling methods requires a knowledge of the distribution of pathogens in the particular seed lot. This distribution is not known except after-the-fact.*

*So "99.9999%" is an ideal case. The question is: Is distribution more likely to be close to this ideal case, or not? One can only guess. If the sprout producer is guessing and looking at maybe \$100 to sample and test the seed prior to using it for sprouting, as opposed to perhaps \$10,000 to sample and test every production batch as he uses the seed, it might be very tempting to assume even distribution. After all, if the grower believes that the initial seed sampling has reduced the likelihood of there being any pathogens in the seed lot by 99.9999%, then the grower could use 1,000,000 of these seed lots before running into a problem. That's over a thousand lifetimes, proving that a little math can be a dangerous thing.*

*— Bob Sanderson  
[Jonathan's Sprouts](#)  
Rochester, Massachusetts*

We thought the mathematical question a trenchant one and so turned to ISS to get its take on the matter:

*The model does not require even distribution. It does, however, require a certain percent of contamination. When we are talking about 4 contaminated seeds (CS not CFU) per kg, we could be talking about 100 CS per bag in each of the 880 bags, or 200 in half the bags or 400 in a quarter of the bags or 88,000 in one bag. The odds of capture are the same when you sample 1/1000<sup>th</sup> of the seeds in each and every bag.*

*However, if you are talking about 100 CS distributed evenly in just a few bags, odds of capture are very slim. Just because ISS Screened Seed has never been involved in an outbreak does not mean it won't be. If there is little contamination in just a few bags, the odds are high that contaminated seed will not be captured for testing. And even if you do capture a pathogen for testing, labs do make errors and do occasionally get false negatives. This is why sprout growers cannot rely on it as their only safety procedure. It is just their first safety procedure.*

*This procedure is, of course, most effective when you have many bags with much contamination. So the larger the likelihood of a seed lot creating a large multi-state outbreak, the larger the likelihood that ISS Seed Screening will detect the contamination before that seed is sold to sprouters. Indeed, each time we have found contaminated seed lots and removed them from the market, ISS Seed Screening very likely prevented an outbreak.*

*It is hard to tell how many outbreaks ISS Seed Screening has prevented because much of the seed does not pass visual inspection, so there is no need to go to the expense of testing it. I'm guessing that we only prevented about a dozen or so outbreaks. But can you imagine the state of the sprout industry if you added another dozen outbreaks in the last ten years?*

*In the middle of the [Seed Safety](#) page on our website we have a section called "OK, What if the Seed Isn't Evenly Distributed, and Pathogens are in Just a Few Bags?." This might explain it better.*

*Thanks for the great work you folks do to promote food safety,*

*— Bob Rust  
[International Specialty Supply, LLC](#)  
Cookeville, Tennessee*

So there we have it. The testing is a good idea; more testing is a better idea than less, but testing is not a guarantee.

That is why we go back to our three-step program: First, grow the seed under GAPs with an

intention to use them for human consumption. Second, use a [testing program](#) as ISS does on seed before it is sold to sprouters, and third, the sprouter must use a testing program such as [Jonathan's Sprouts does](#).

It is not in any one of these programs but in the intersection of all three that we can at least hope to find an acceptable outcome when producing alfalfa sprouts.

Many thanks to both Bob Sanderson and Bob Rust for helping us think through such a crucial issue.

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