NSHS

National Seed Health System

SAMPLING

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Importance of Seed Sampling

- Gives a representative sample of entire seed lot
- Provide enough seed for all required phytosanitary testing
- Ensures that samples are taken from all areas of the lot
  - Before samples are combined they are visually examines to make sure that they are uniform
  - If a portion of the sample is not uniform it is kept separate from the remaining sample so it can be examined in the lab
- Samples are labeled clearly and traceable back to the original seed lot
- Stored in a cool, dry place and are tested as soon as possible

Why does the seed industry sample?

- Samples are used for routine testing purposes
  - Quality tests: germination, vigor, hybridity, purity, seed health
  - Phytosanitary declarations
  - Retention
- Based on testing results, dispositions on use will be made
  - These could include:
    - Upgrade (to improve germination)
    - Seed Treatment (which will increase cost of goods)
    - Additional sorting
    - Do not use--DESTROY

The goal:

- To obtain a representative sample that is suitable for testing or retention

How do we sample?

- There are established protocols available
  - ISTA (International Seed Testing Association)
  - AASCO (Association of American Seed Control Officials)

- Either or both may be used routinely (for accreditation or declaration purposes)
  - Both provide guidance on how to sample from various materials
    - Seeds in an operational stream (such as on a conveyor towards packaging)
    - Bulk lot in a container
    - Packaged seeds

Triers and Probes

- Nobbe Trier – used for free flowing seed in bags

- Double Sleeve Trier – used for sampling horizontally and vertically and for a variety of seed size

Submitted Sample Creation

Seed Lot/Batch Containers

Primary Samples

Composite Sample

Submitted Samples

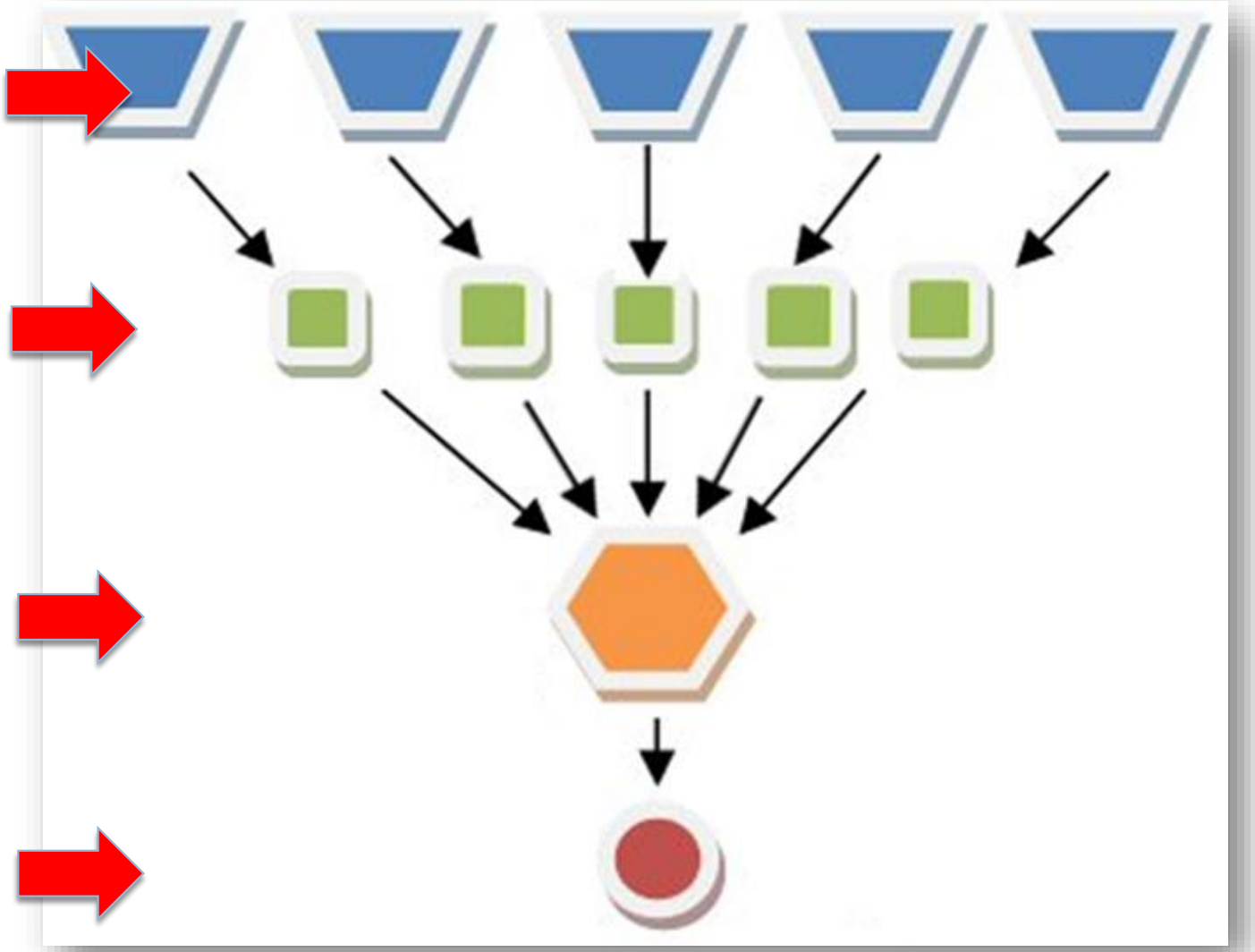

Diagram adapted from UC Davis image

Sample sizes

- For quality testing, the sample size that is needed for analysis can vary greatly
- Germination, vigor, purity, hybridity have standard samples sizes
  - Ex. 400 seeds for germination tests
- For vegetable seed health, samples sizes are a reflection of pathogen biology, epidemiology, thresholds for disease outbreaks
  - Sample sizes range from 2000 seeds to 30,000 seeds depending on host/pathogen combination
  - There may be several disease test needed per crop
  - Different test types result in multiple samples will be needed to complete
  - The composite sample needs to be adequate to generate all the samples required for testing

Example of Quality Testing Specifications

Quality Component	Test	Sample size
Germination	Germination	400
Vigor	Usable Transplant	400
Hybridity		200
Seed Health	Bacterial diseases	30,000
	Viral diseases	3000
Composite sample needs to exceed:		34,000
Additional seed needed for phyto declarations		