



Agricultural Marketing Service
U.S. DEPARTMENT OF AGRICULTURE



AMS

Plant Variety Protection Office US Disease Resistance Characteristics in DUS Examinations

October 22, 2024



Disease Resistance Characteristics in DUS Examinations

- More than 20 disease characteristics are listed on our application forms
- All US crop description forms (Exhibit C) have disease characteristics questions
- Our top 10 crops have several disease characteristics questions
- Disease characteristics are routinely used in Distinctness, Uniformity, and Stability (DUS) examinations
- Only 3 of the top 10 US crops have matching questions on US Exhibit C and UPOV Table of Characteristics (TC) forms
- For the other 7 crops, the UPOV TC forms do not list disease resistance characteristics

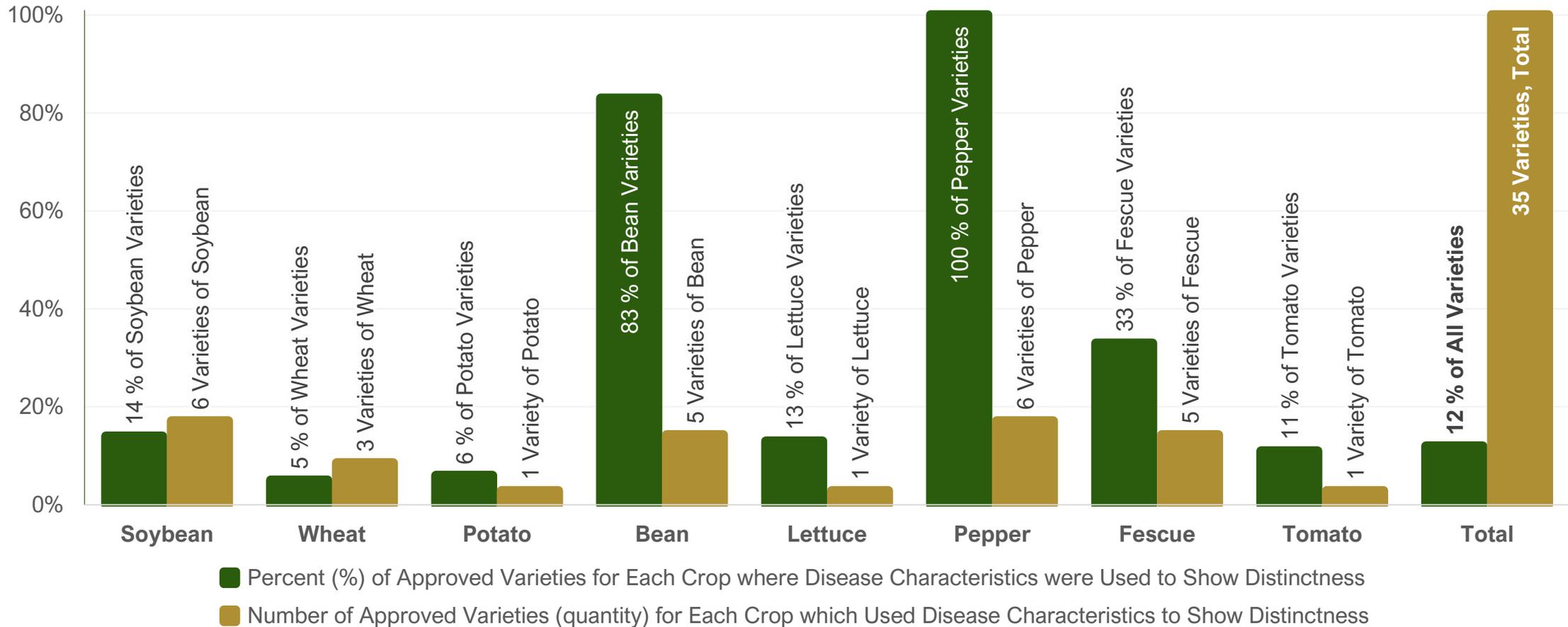


Predominant Crops that Use Disease Resistance Characteristics in Examinations

Beans	• <u>48 disease characteristics</u> : Anthracnose, Rust, Root Rots, Bacterial Blights, etc.
Wheat	• <u>40 disease characteristics</u> : Bunt, Rust, Viruses, Snow Molds, Fungal Leaf Spot
Tomato	• <u>36 disease characteristics</u> : Fungal & Bacterial Wilts, Viruses, Powdery Mildew, etc.
Pepper	• <u>26 disease characteristics</u> : Fungal Wilts, Bacterial Spot, Anthracnose, Viruses, etc.
Corn	• <u>25 disease characteristics</u> : Anthracnose, Smuts, Fungal Leaf Spot, Ear & Kernal Rot
Soybean	• <u>21 disease characteristics</u> : Root Rots, Viruses, Fungal Leaf Spot, etc.
Lettuce	• <u>19 disease characteristics</u> : Downy Mildew, Viruses, Fusarium Wilt, Corky Root, etc.
Fescue	• <u>19 disease characteristics</u> : Rust, Snowy Molds, Fungal Leaf Spot, Blights, etc.
Cotton	• <u>14 disease characteristics</u> : Bacterial Blight, Fungal Wilts, Rust, Anthracnose, etc.
Potato	• <u>11 disease characteristics</u> : Early & Late Blight, Viruses, Rots, Scabs, etc.



Crops that Routinely use Disease Resistance Characteristics





How Data is Received

- **Types of Data Received**

- Observational
 - From no resistance to fully resistant
- Approved Test Method
 - Published methods are used

- **Characteristics are Standardized**

- Resistance is scored on a scale relative to the Most Similar Variety
- This keeps values consistent, relative to other varieties (like any other characteristic)



Why Disease-Resistance Characteristics are Important

1. Breeders select for disease characteristics, sometimes exclusively, to improve performance and yield.
2. Disease characteristics are important for farmers choosing which variety to plant.
3. This makes disease characteristics among the most important to both breeders and farmers.
4. Due to the lack of diversity within some crops, disease characteristics help support distinctness.

US Recommends Adding Disease Resistance Questions to the UPOV Test Guidelines



Thank you!

Website: <https://www.ams.usda.gov/services/plant-variety-protection>

Email: PVP@mail@usda.gov