

Z SERIES SOYBEANS



P21Z88E™ brand

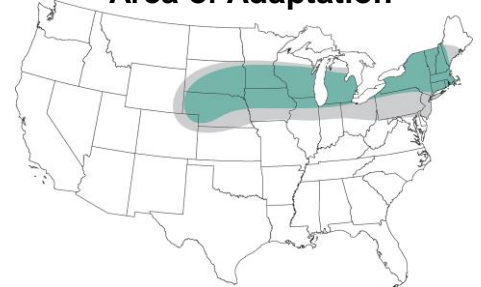


RELATIVE MATURITY: 2.1

MANAGEMENT INSIGHTS:

- Early group II Leader with tremendous yield potential and Peking SCN resistance.
- Robust plant type combined with reasonable harvest standability.
- Above average white mold and iron deficiency chlorosis tolerance, and very good SDS tolerance.

Area of Adaptation



Suitability and Placement Guide



- Delayed or Late Harvest
- Drought-Prone Soils
- Early Planting/Cold Seasons
- High Yield Environments
- Irrigation
- Poorly Drained Soils
- SCN-Prone Environments
- SDS-Prone Environments
- White Mold-Prone Environments
- No-Till/Reduced Till/High Residue
- High pH Soils/Soils Prone to Iron Chlorosis

Trait Score

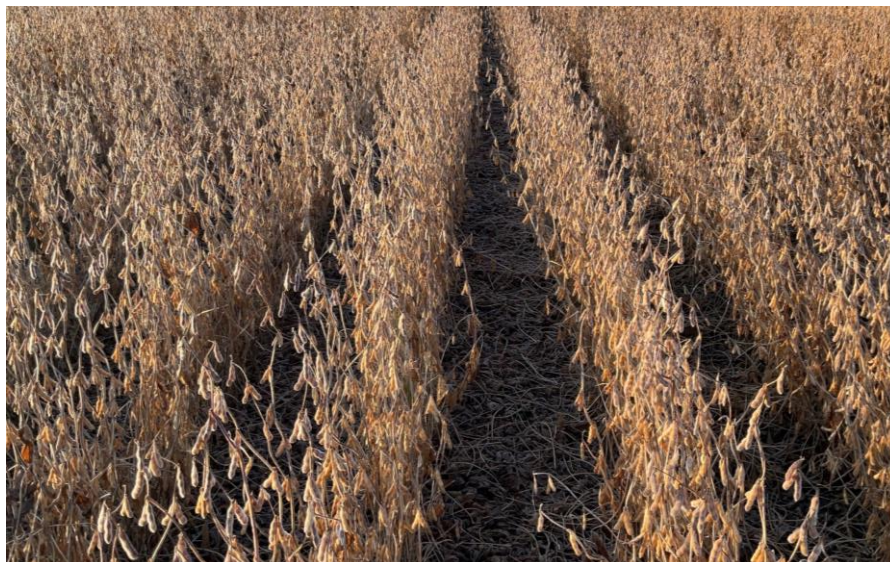
Trait	Score
Harvest Standability	7
Field Emergence	7
Plant Height for Maturity	6
Canopy Width	6
Rimsulfuron Tolerance	++
Metribuzin Tolerance	●
Sulfentrazone/Saflufenacil Tol.	●
Phytophthora Field Tolerance	4**
Brown Stem Rot	MT
Iron Chlorosis	5
White Mold	5
Sudden Death Syndrome	6**
Stem Canker	RES
Charcoal Rot	4
Frogeye Leaf Spot	8**
Phytophthora Resistance Gene	1K
SCN Resistance Source	Peking

RATINGS: 9 = Excellent; 1 = Poor; Blank = Insufficient Data or variety not tested for that particular trait. Ratings denoted with a double asterisk (**) reflect preliminary data subject to change when additional data becomes available.

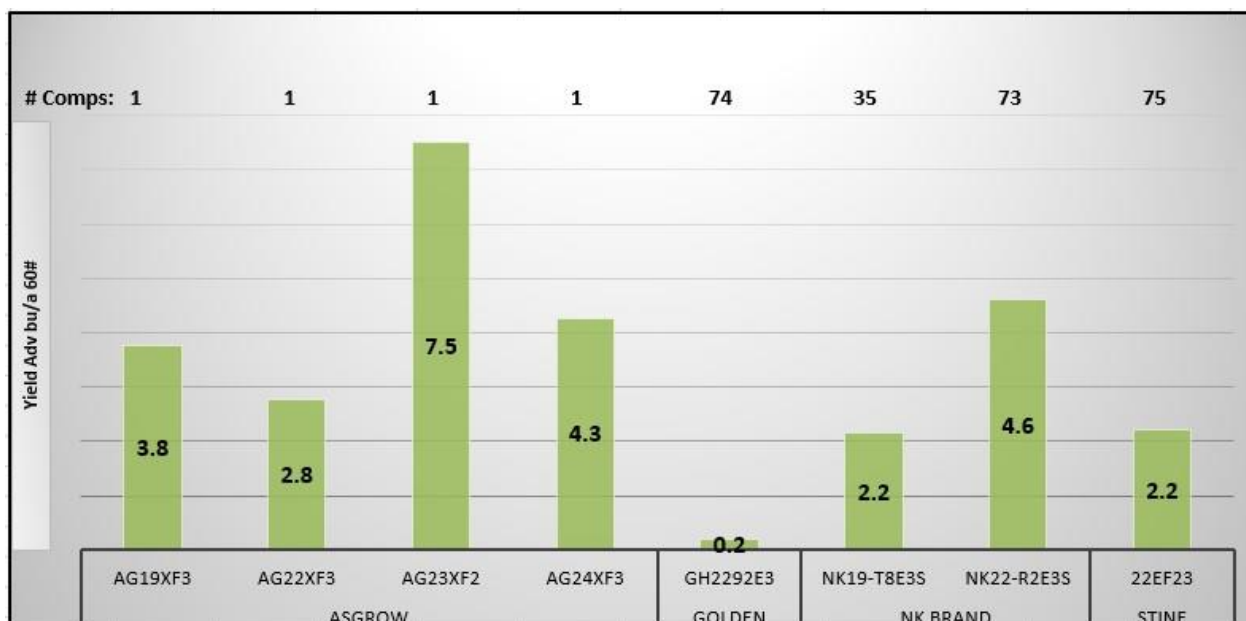
Field Experience Summary

Pioneer Trials 2023

P21Z88E™ at Harvest



Performance of P21Z88E™ vs. Competitive Varieties



Varieties with Enlist E3® technology (E3): The transgenic soybean event in Enlist E3® soybeans is jointly developed and owned by Corteva Agriscience and M.S. Technologies L.L.C

Data is based on an average of 2023 IMPACT™ trial comparisons made in U.S. through November 7, 2023. Comparisons are against any number of products of the indicated competitor brand, unless otherwise stated, and within +/- .3 RM of the competitive brand. Product responses are variable and subject to any number of environmental, disease and pest pressures. Individual results may vary.



STS®
herbicide tolerant trait



All Pioneer products denoted with TM are brand names.

** Ratings denoted with a double asterisk (**) reflect preliminary data subject to change when additional data becomes available.

Components of LumiGEN® seed treatments for soybeans are applied at a Corteva Agriscience™ production facility or by an independent sales representative of Corteva Agriscience or its affiliates. Not all sales representatives offer treatment services, and costs and other charges may vary. See your sales representative for details. Seed applied technologies exclusive to Corteva Agriscience and its affiliates.

IMPORTANT: Product responses are variable and subject to any number of environmental, disease and pest pressures. Please use this information as only part of your product positioning decision. Individual results may vary.

Trait ratings provide key information useful in selection and management of Pioneer® brand products in your area. Scores are based on testing through 2023 harvest and were the latest available at time of printing. Some scores may change after 2024 harvest. Information and ratings are based on average performance across area of adaptation under normal conditions, over a wide range of both climate and soil types and may not predict future results. Refer to www.pioneer.com or contact a Pioneer sales professional for the latest and most complete listing of traits and scores for each Pioneer brand product and for product placement and management suggestions specific to your operation and local conditions.

NUMERIC RATINGS: 9 = Excellent; 1 = Poor; Blank = Insufficient Data or variety not tested for that particular trait.

RELATIVE MATURITY: Shows the relative maturity group rating, with the digits preceding the decimal representing the general maturity group, and the digit following the decimal showing relative maturity within the group on a scale of 0 to 9, with 0 early and 9 late. For example, a soybean product with a relative maturity rating of 1.8 would be a late product in Group 1 maturity.

TECHNOLOGY SEGMENT:

Varieties with the STS® trait are tolerant to certain sulfonylurea (SU) herbicides. This technology allows post-emergent applications of DuPont™ Synchrony® XP and DuPont™ Classic® herbicides without crop injury or stress (see herbicide product labels). **NOTE:** A soybean variety with a herbicide tolerant trait does not confer tolerance to all herbicides. Spraying herbicides not labeled for a specific soybean variety will result in severe plant injury or plant death. Always read and follow herbicide label directions and precautions for use.

Varieties with Enlist E3® technology (E3): The transgenic soybean event in Enlist E3® soybeans is jointly developed and owned by Corteva Agriscience and M.S. Technologies L.L.C.

Always follow stewardship practices in accordance with the Product Use Guide (PUG) or other product-specific stewardship requirements including grain marketing and pesticide label directions. **Varieties with BOLT® technology** provide excellent plant-back flexibility for soybeans following application of sulfonylurea (SU) herbicides such as DuPont™ LeadOff® or DuPont™ Basis® Blend as a component of a burndown program or for double-crop soybeans following SU herbicides such as DuPont™ Finesse® applied to wheat the previous fall.

FIELD EMERGENCE: Rating based on speed and strength of emergence in sub-optimal temperatures.
1-3 = Below Average; 4-6 = Average; 7-9 = Excellent.

PHYTOPHTHORA RESISTANCE GENE:

- (-) = No specific gene for resistance.
- Rps1^{AA} = Contains Rps1c or Rps1k Phytophthora resistance.
- Rps 1a = Provides resistance to races 1, 2, 10, 11, 13-18, 24, 26, 27, 31, 32, 36, 38, 48, 50-52, 54-55.
- Rps 1c = Provides resistance to races 1-3, 6-11, 13, 15, 17, 21, 23, 24, 26, 28-30, 32, 34, 36, 38, 41, 42, 44, 48, 50, 52, 54, 55.
- Rps 1k = Provides resistance to races 1-11, 13-15, 17, 18, 21-24, 26, 36-38, 42-44, 46-55.
- Rps 6 = Provides resistance to races 1-4, 10, 12, 14-16, 18-21, 25, 28, 33-35, 38-48, 52-54.
- Rps 3a = Resistant to races 1-5, 8-9, 11, 13-14, 16, 18, 23, 25, 28-29, 31-35, 39-41, 43-45, 47-52, 54.
- Rps 3c = Resistant to races 1-4, 10-16, 18-36, 38-54.

PHYTOPHTHORA FIELD TOLERANCE: Products with high tolerance scores have demonstrated an ability to thrive in the presence of Phytophthora races to which they lack specific resistance. In some products, tolerance is expressed only after the early seedling growth stage, making such products susceptible to damping off during emergence and early seed growth.

BROWN STEM ROT: HT = Highly Tolerant; MT = Moderately Tolerant; MS = Moderately Susceptible.

WHITE MOLD: Scores based on Pioneer research observations of comparative white mold tolerance among various soybean products across multiple locations and years. All products are capable of developing white mold symptoms under severe infestations. To our knowledge, there are no totally resistant products in the industry. However, differences exist in the ability of products to tolerate white mold (i.e., the rate at which the infection develops and the extent of damage it causes). These scores reflect those differences.

SCN RESISTANCE SOURCE: There are three sources of genetic resistance to SCN currently deployed in the marketplace: PI88788; PI548402 (also known as Peking); PI437654 (also known as Hartwig); R = Resistant to SCN but the source of that resistance is not yet identified.

SOYBEAN CYST NEMATODE [SCN]: Resistance to each of the major SCN races is scored on a 1-9 scale. 9 = Excellent resistance; 8-7 = Very good resistance; 6 = Good resistance; 5 = Average resistance; 4 = Below average resistance; 3-2 = Susceptible; 1 = Highly susceptible; to the specific race indicated.

CHARCOAL ROT: A fungal disease that is enhanced by hot and dry conditions, especially during reproductive growth stages. Scores based on Pioneer research observations of the comparative ability to tolerate infection from the charcoal rot pathogen among various soybean products.

STEM CANKER:

- *RES* = provides resistance.
- *SUS* = no specific gene for resistance.

CERCOSPORA: A fungal disease that is enhanced by wet periods followed by hot and dry conditions, especially during reproductive growth stages. Scores based on Pioneer research observations of the comparative ability to tolerate infection from the Cercospora kikuchii pathogen among various soybean products.

CHLORIDE SENSITIVITY: All soybeans take in chloride (Cl⁻), a water soluble salt, via the plants' roots. Chloride moves freely within damp or wet soils. This can be an issue in soils with higher levels of Cl⁻ by allowing harmful concentrations of Cl⁻ to accumulate in the tops of plants, or the "growing point," which can lead to a condition known as "chlorosis" and result in injury to soybean plants by stunting the plant's growth.

- **EXC** - Excluder varieties have the ability to identify and exclude Cl⁻; inhibiting the movement of Cl⁻ into the growing point and reducing the likelihood of stunting due to chlorosis.
- **INT** - Intermediate varieties translocate Cl⁻; slowing the rate at which Cl⁻ reaches the growing point of the plant. Intermediate varieties are less susceptible to chlorosis and its effects than Includer varieties and are more susceptible to the effects of chlorosis than Excluder varieties.
- **INC** - Includer varieties readily translocate Cl⁻ to the growing point of the plant, increasing the risk of stunting due to chlorosis.

CANOPY WIDTH: 9 = Extremely bushy; 1 = Very narrow.

PLANT HEIGHT FOR MATURITY: 9 = Tall; 1 = Short.

PLANT HABIT: IND = INDETERMINATE-type soybeans grown in Group 00-4 regions. These plants typically continue to grow as they flower, resulting in a longer pod fill time. You may find nearly mature seeds at the bottom of a plant that is still flowering at the top. DET = DETERMINATE soybeans grown in Group 5 and later maturities. These plants typically stop growing once they begin to flower, and all flowering occurs within a more defined timeframe.

FLOOD TOLERANCE: Tolerance to standing water or saturated soils which are typically found at the low end of surface irrigated fields or in the low lying areas of fields after a heavy rain event. The score is a measure of the variety's potential to continue normal growth and photosynthesis when placed under those environmental conditions for up to one week.

% PROTEIN AT 13% MOISTURE: Compare data within table only. Values can vary widely by growing season and region.

% OIL AT 13% MOISTURE: Compare data within table only. Values can vary widely by growing season and region.

SEED SIZE RANGE: Expressed in seeds per pound under normal growing conditions. Range is calculated over multiple years and locations. Since seed size may vary by growing season and region, check the "seeds/pound" information printed on the bag.

FLOWER COLOR: P = Purple; W = White.

PUBESCENCE COLOR: T = Tawny; G = Gray; L = Light tawny; M = Mixed.

HILA COLOR: BL = Black; BR = Brown; TN = Tan; G = Gray; IB = Imperfect black; BF = Buff; Y = Yellow (Clear); M = Mixed.

POD COLOR: BR = Brown; TN = Tan.

Note: U.S. patents, Plant Variety Protection Act (PVPA) applications and certificates, or other limitations on use may be used to protect Pioneer brand soybean products from unauthorized growing, selling or use of the seed. These protections help assure that growers will continue to have access to new and improved products through the research efforts of plant scientists in the years ahead.

The purpose of this guide is to assist you in managing herbicide programs with Pioneer® brand soybeans. Pioneer uses molecular markers, lab, and/or field testing to evaluate soybean variety tolerance to several herbicides.

- Research has shown good correlation between molecular markers and varietal response to **preplant or pre-emergence applications** of the PPO herbicides sulfentrazone and saflufenacil, but low correlation with response to the PPO herbicide flumioxazin (e.g. Afforia, Enlite, Envive, Trivence, Surveil, and Valor) when the herbicides are used at normal field rates.
- Research has also shown good correlation between lab assays and field tolerance to preplant and preemergence applications of metribuzin.
- Research has also shown good correlation between molecular markers and tolerance to preplant or preemergence applications of rimsulfuron.

Please note that these ratings are not correlated with tolerance to exposure or application of these herbicides after soybean emergence. Metribuzin, rimsulfuron, and all PPO herbicides can injure soybeans when applied after emergence. Crop injury can also occur when metribuzin or PPO-treated soils are splashed onto soybean stems, cotyledons, or foliage.

Challenging environments such as heavy rainfall during seed germination or seedling emergence; sandy soils, soils low in organic matter or high pH soils; or during periods of excessively cold, hot, dry or wet weather can result in higher herbicide activity or reduced crop tolerance. In such cases, crop injury may occur on varieties rated as having acceptable tolerance to the herbicide. University research indicates herbicides within an herbicide class may vary in their degree of crop selectivity. The potential for herbicide injury may also be impacted by the labeled herbicide rate used and the method or timing of application.

Herbicides that contain **Sulfentrazone and Saflufenacil** include Spartan brands, Authority brands, Sonic, Optill, Optill PRO, Sharpen, and Verdict. **Always read and follow herbicide label directions.**

Herbicides that contain **Metribuzin** include DuPont™ Canopy® Blend herbicide, DuPont™ Trivence® herbicide, Sencor, Axiom, Boundary, Domain, and Authority MTZ. **Always read and follow herbicide label directions.**

The following herbicide sensitivity ratings are for sulfentrazone, saflufenacil, and metribuzin:

- **Adequate Tolerance.** Available research and/or field observations suggest this herbicide is unlikely to result in material crop injury to this particular variety under normal circumstances.
- ▼ **Requires Careful Management.** Available research and/or field observations suggest this herbicide may exhibit crop injury to this particular variety in challenging environments.
- **Response Warning.** Available research and/or field observations suggest this herbicide has a high potential for crop injury to this variety.
- **Insufficient Data.** Additional testing is needed to evaluate this variety.

Herbicides that contain **Rimsulfuron** include DuPont™ LeadOff® and Basis® Blend. **Always read and follow herbicide label directions.**

The following herbicide sensitivity ratings are for rimsulfuron:

- ++++ **Varieties with BOLT® technology.** Growers may apply DuPont™ LeadOff® or Basis® Blend herbicides 0 days or more prior to planting this particular variety.
- +++ **Varieties with the STS® gene.** This particular variety has a shorter plant-back interval for DuPont™ LeadOff® and Basis® Blend herbicides. See product labels for details on plant-back intervals.
- ++ **High degree of rimsulfuron tolerance.** Available research and/or field observations suggest these herbicides are unlikely to result in material crop injury to this particular variety under normal circumstances. See product labels for details on plant-back intervals.
- + **Low degree of rimsulfuron tolerance.** Available research and/or field observations suggest these herbicides have a high potential for crop injury to this particular variety. Do not plant this particular variety into rimsulfuron-treated fields within 10 months of application if soil is excessively cold or wet or if soil pH exceeds 6.5. Soil temperature should be >50° F and trending warmer. See product labels for details on plant-back intervals.

