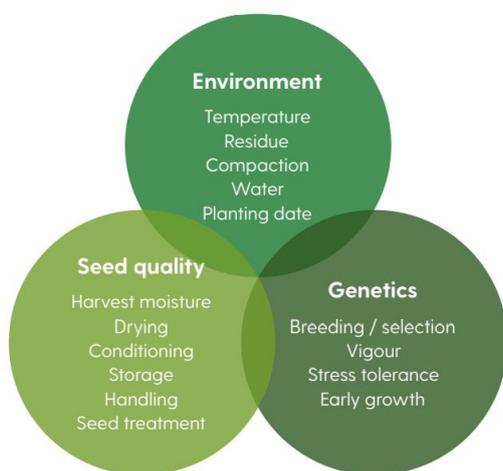


PIONEER STRESS EMERGENCE RATINGS

Research shows that the highest maize yields come from uniform stands of plants which emerge at the same time and grow to produce even plants. Three factors interact during germination and emergence and together determine how well a maize crop establishes. These are seed quality, hybrid genetics, and the growing environment.



While it is possible to influence some environmental factors (e.g., soil compaction and planting date) others are virtually impossible to control. In New Zealand, spring growing conditions can be challenging with fluctuating temperatures and saturated soils.

For the past six seasons, the quest for more uniform maize seed emergence has led to increased seed quality research to help characterise the performance of individual Pioneer hybrids under cold, wet emergence conditions. As a result of this work, Stress Emergence ratings have been included in the Pioneer Maize Silage Catalogues since 2022.

Seed quality and emergence

A number of tests can be used to quantify maize seed quality.

- Pioneer Stress Test (PST) – a proprietary vigour test which imposes extreme chilling and anaerobic stresses, beyond that of the industry standard saturated cold test.

- Saturated cold test – seed is planted into saturated trays which are kept at 10°C for seven days.
- Cold germination test – seed is planted into trays which are kept at 10°C for seven days.
- Warm germination test – seed is planted into trays which are kept at 25°C for seven days.

While warm germination tests – conducted according to International Seed Testing Association (ISTA) protocols – provide a good indication of paddock germination under ideal conditions, the proprietary Pioneer Stress Test (PST):

- Applies the highest level of vigour stress testing by providing a low temperature, waterlogged germination environment.
- Helps to further differentiate the quality of individual seed lines.
- Quantifies the impact of seed treatments on seed quality.
- Helps characterise the genetic stress tolerance of individual Pioneer maize hybrids.

Laboratory seed quality testing

Over the winters of 2024 and 2025 over 1300 samples of New Zealand produced, and treated commercial Pioneer maize hybrids were tested for physical purity, genetic purity, warm germination and through the Pioneer Stress Test (PST). This allowed us to characterise the relative vigour of individual hybrids under the toughest germination conditions.

Field stress emergence trials

Every spring, commercial hybrids are planted ultra-early at twice the normal planting depth (8.5 cm) into cold wet soils. These are replicated research experiments planted at three Waikato and three lower North Island sites giving a total of 36 replicates per hybrid.

The Pioneer Research Team monitors these sites and measures the rate of emergence, and the final plant

stand. These challenging establishment conditions further enable the stress emergence characterisation of hybrids.

Pioneer stress emergence ratings for spring 2026

All Pioneer seed supplied to the market is expected to establish excellent plant stands if planted well and under normal germination conditions.

Data collected from the laboratory seed quality testing exercise and the field stress emergence trials, referred to above, were used to develop the Pioneer Stress Emergence Ratings. These ratings indicate each hybrid's ability to establish under challenging cold, wet growing conditions. The table below groups hybrids into three classes as a result of this research.

Stress emergence rating	Commentary	Hybrids
7-9	Very good potential to establish normal stands under stressful environmental conditions of cold, wet soils.	P9091, P92575, P9911, P0283, P0710, P0900, P0937, P1185
5-6	Good potential to establish normal stands under stressful conditions of cold, wet soils.	P7179, P7364, P7647, P8086, P8240, P8333, P8666, P8711, P9650, P9978, P0450, P0640, P1477W, P1636, P17822
1-4	Below average potential to establish normal stands under stressful conditions of cold, wet soils. Should not be used if severe wet and cold conditions are expected after planting.	P9400, P0891.

Growers can be confident that every bag of Pioneer® brand maize seed they plant has been thoroughly tested in this extensive screening program and meets Pioneer's industry-leading standards.