



VESPER SPARROW PRAIRIE RESEARCH INC.



**OAT ADVANTAGE** >>> *Oat Breeding by the numbers*, SASKATOON, SASKATCHEWAN

PROGRESS REPORT, January 7, 2022

**A. Main outcome: High bushel weight – a 55lb\*/bushel target, off the combine**

Using a small sized gravity table our work to create mini populations of “High side & Low side” pairs has been accomplished.

With two seasons of initial set up and progress toward this effort, we had a successful harvest of our gravity evaluated plot pairs in the fall of 2021. Through some effort and delays, selected pairs were sent to New Zealand and are emerging there as of January 4<sup>th</sup>, 2022.



Near Christchurch New Zealand

In the summer of 2022, we will be able to see our selection technique prove itself in the field. The seed coming from New Zealand will go into full sized research plots at selected sites in the three prairie provinces to have a real look at our gravity comparisons. Mechanical selection for characteristics such as bushel weight is a prime way of gathering together many beneficial plant genes to move us to our goal.

I invite you to come out to our farm this summer to see the project in action!

\* Depending on the growing season moisture and temperature conditions, as well as agronomy, sometimes oat growers see oats coming off the combine that weigh up to 50lbs per bushel. Our goal to have improved oat varieties that tip the scale at times to 55lbs per bushel, is based on real opportunities present within the oat kernel.

**B. Main outcome: Low hull content – a target of %17 oat hull**

We will be making good progress with simple mechanical techniques here.

A combination of two machines will be used to move our oat lines in this direction, with confirmation by a third machine. These machines are our sizing device or “Kicker”, our Forsberg gravity table, and our recently purchase simple Flaman dehuller, respectively. De-hulling is messy step which can damage vital experimental oat seed for further use. By sizing our oat kernels to the prime value fraction [between a slotted sieve size of 6.0/64<sup>th</sup> -7.0/64<sup>th</sup>], and then gravity table processing them into “High/Low” fractions, we will automatically be reducing hull content. We will not be regularly using the de-huller but again, we will confirm our results with it later on when we have a lot more seed to work with.

**C. Extra outcome: High protein: toward 20% kernel protein**

Our process of mechanical sizing and gravity selection will now be applied to a high protein early generation population.

A high protein project already underway has much early generation oat seed left over that we can now put through our new and best selection methods of A & B above. These selected seeds will be in the field in 2022 and will be ready for single plant evaluation and viewing.

**D. “Harvest Durability”:** toward an easier and successful harvest without desiccation or swathing.

Our work here is to greatly reduce oat variety regrowth and greening up in August.

Drought seriously affected all of our oat research work in 2021, and yet there were bright spots. One key opportunity from the dry weather was a chance to see regrowth of single plants in key populations. After a small rain in August, then to see this regrowth in certain plants, and the zero regrowth in others, was unexpected but welcomed. Hundreds of selected plants were pulled out of the soil in September with full selection occurring against any individuals with regrowth. Being from our gravity table “High/Low” population pairs, I was able to eliminate regrowth plants in this valuable project test. A few plants with regrowth were kept as reference individuals so that we can compare good oat lines from the bad.

**E. Main outcome – High yield and valued oat varieties**

Our target here is a gathering together of all our work in variety development.

In general, all of the four above goals feed together to create what you want and need from an oat variety on the farm, and what is wanted and needed at the Oat mill. Opportunities presented to us to also test in Alberta and Manitoba, and taken up by our oat motivation, will help our testing to be stronger in all three prairie provinces. As we do this wide location testing with very early generation oat material, we are breeding for these diverse areas. Good things will come.