

# WHEN STORING PULSES, CONSIDER WHAT'S INSIDE AND OUTSIDE THE BIN

Harvest 2019 highlighted the need for storage guidelines geared to pulses. At that time, APG and PAMI were wrapping up research on exactly that topic. Here are key findings.

For many pulse growers, the harvest of 2019 was one of the most prolonged and challenging in memory. Making matters worse, getting the crop off the field wasn't the end of the struggle. Next came hard decisions on how best to store and manage crops until they could be safely delivered.

"One of the biggest risks to pulse production is storing crop that comes off tough," said Charley Sprenger, Project Leader with PAMI, the applied R&D and testing organization based in Humboldt, SK. "If it's not stored in a safe condition, the losses can be significant."

She cites the example of a bin holding 4,000 bushels of lentils. With each move in temperature and humidity – both inside and outside the bin – \$40,000 in potential economic value is at risk if the whole bin were to spoil.

Most research on management of stored crops has focused on cereals and canola. Two years ago, APG and other pulse associations believed that pulse-specific storage guidelines were urgently needed. The group engaged PAMI to give the issue a thorough examination.

## Many scenarios explored

PAMI's facility is equipped to test a wide variety of storage and drying scenarios (including aerated temperature and moisture control,



*Unloading lentils from the 15 bu test bins at the end of the drying trial.*

with continuous and real-time monitoring) in 15-bushel bins. "We also have solid research," Sprenger said, "that shows that our 15-bushel set-up reflects what would occur in full-scale storage."

Under this study, PAMI explored many different scenarios of crop moisture, temperature and airflow rate for yellow

peas and green lentils over two years. As Sprenger explained, this work confirmed the main issues that should be top of mind for producers. Here are four takeaways.

## Ambient conditions are key.

"Outside air temperature and humidity – the air you draw from outside to blow through your grain – has the greatest impact on moisture and temperature conditions inside your bin," said Sprenger. "It's not enough to run your fans for 24 hours and expect the same results every time."

## No impact on quality from airflow rate.

One question going in was whether increasing airflow rates could affect germination and vigour. As confirmed by third-party vigour and germination tests, no such quality loss was found for peas and lentils.

## Best airflow rate for peas and lentils.

"We confirmed our recommendation of 1 cfm (cubic foot per minute) per bushel airflow rate for drying with favourable ambient conditions," Sprenger said. "With the larger kernel size of peas and lentils, you're able to achieve that airflow rate with a standard fan size. If you just want to cool, it's 0.1 to 0.5 cfm per bushel."

## Monitoring technology helps.

A new generation of tools is making it easier to monitor temperature and humidity inside grain bins. Weighing capital dollars invested versus crop revenue protected, these can be a sound investment. "Not just for pulses but for grain storage in general, everything starts with understanding the condition of what's in your bins," Sprenger said. "You are arming yourself with the information you need to effectively manage your bins."

A full report on this project, *Improved Management for Stored Pulses*, is available at <https://albertapulse.com/research/improved-management-of-stored-pulses/>.