

DE Engineers have developed a sophisticated, low cost aeration controller (the 'Safegrain 8") here in WA for Australian farmers.



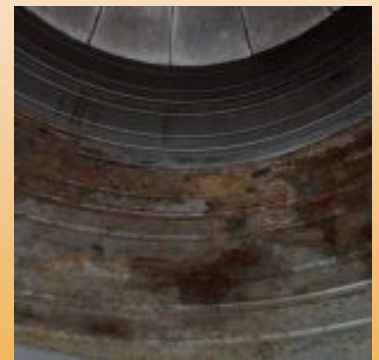
GRDC studies have underscored that the most pressing threats to grain quality during storage in Australia are insect pest infestations and grain moisture-related issues. Here are several key points detailing effective strategies:

1. **Thorough Hygiene and Maintenance:** An initial and pivotal step involves the meticulous cleanliness and upkeep of storage facilities and equipment. This proactive measure mitigates the risk of pest infestations and the growth of molds. By maintaining proper sanitation, the attraction of pests is reduced, and conditions conducive to mold development are prevented.
2. **Cool and Dry Grain:** Preserving grain quality hinges on storing it under cool and dry conditions. This necessitates the precise management of both temperature and moisture levels within the storage environment. By achieving this balance, the integrity of the grain is upheld.
3. **Aeration:** Employing aeration techniques, such as using fans or similar systems, facilitates the circulation of air throughout stored grain. This practice serves to lower grain temperatures and establish uniform cooling. Cold temperatures deter the breeding of pests and can even halt their reproductive cycles when maintained below a specific threshold.
4. **Long-Term Benefits:** Customers who have adopted aeration strategies for extended periods have reported promising outcomes. Notably, the disappearance of pests like weevils and the maintenance of low germination rates have been observed. Aeration is particularly indispensable for the optimal storage of canola.
5. **Fumigation:** While aeration significantly diminishes the necessity for fumigation, it may not entirely obviate the need for it. In cases of severe infestations or other challenges, fumigation could still be required to effectively address the issue.
6. **Sealed Silos:** Sealed silos are purposefully designed to enhance fumigation's efficacy. However, it's imperative to recognize that these silos should not be hermetically sealed at all times. Regular "cracking open" or aeration is essential to allow the escape of moist air and prevent the accumulation of moisture.
7. **Moisture Management:** Effective moisture control is pivotal in thwarting condensation within silos. Grain with excessively high moisture content can release water vapour, resulting in condensation on the silo walls. This has the potential to damage both the stored grain and the structural integrity of the silo.

In summary, adept management of moisture and temperature, coupled with strategic aeration and occasional fumigation, are pivotal strategies for averting pest infestations, mold proliferation, and related quality challenges. Ensuring proper maintenance of sealed silos, complemented by periodic ventilation, is also indispensable in combatting issues stemming from excessive moisture.



The provided images vividly illustrate the corrosive impact on the walls of a near new 109-ton silo, a consequence attributed to the presence of damp grain. This particular silo was loaded with grain during harvest, characterized by excessive moisture content. As a result, the moisture condensed upon the silo's roof and subsequently trickled down the walls, giving rise to the evident corrosion seen in the images.



DE ENGINEERS

Grainsafe 8 Silo Aeration Controller



The Safe Grain 8 has three stages of automatic independent control:

Stage one — continual aeration

The initial aim is to get maximum airflow through the grain bulk as soon as it goes into storage, to push the first cooling front through and lower grain temperature.

The controller keeps the fans running continuously unless the ambient humidity exceeds 80%. Once the air leaving the silos has cooled and the humidity has lowered, then the controller will switch to rapid cooling mode.

Stage two — rapid cooling

After aeration fans have been running continuously to flush out the warm, humid air for 2–3 days, the controller automatically reduces the run time to 9–12 hours per day for the next 3–5 days. The goal is to quickly reduce the grain temperature from the mid 30°Cs to the low 20°Cs. An initial reduction in grain temperature of 10°C ensures grain is less prone to damage and insect attack, while further cooling becomes a more precise task.

Stage three — maintenance cooling

After 3–5 days of aeration in the ‘rapid’ or ‘purge’ phase the automatic controller needs to be switched to ‘normal’ or ‘protect’ mode. During this final phase it continually monitors ambient air temperature and humidity and run fans on average during the coolest 100 hours for the month.



DE Engineers manufacture our own aeration fans and unique louvered ducting to push cool dry air to the bottom of silos to ensure all the stored grain is kept in optimum condition. NB/-sealed grain storage allows moist air into silos damaging grain and rusting silo walls.



Start boxes have a contactor to start and stop fans with overload, Earth leakage and lightning proof protection and are capable of running 4-6 fans on a 10 amp lead. This allows one controller to aerate dozens of silos.

DIY installation without anything more than a simple power board distribution of 240Vac, so an electrician is not required.

DE ENGINEERS

131 Clayton Street Bellevue, Western Australia, 6056.

Phone: 08 9274 2632

e-mail: info@deengineers.com.au

