Top tips for grain storage success

Take a sneak peek at some of the storage extension team's favourite systems

SCALED UP

Figure 1: Two new 12,000-tonne silos dominate the skyline at the Candeloro family farm at Toodyay, Western Australia.
The new additions increase the already sizeable facility to 64,000t of gas-tight sealable storage and utilise the existing in-loading tower.
Aeration cooling systems are fitted to all the silos in the facility and are sized to deliver two to four litres per second per tonne of cooling air.
Twelve high-efficiency brushless electronically commutated (EC) motor-driven fans drive cooling air through the grain stack in both the new silos.

ROOM TO MOVE

Figure 2: Trucks' capacity and length are increasing.
Make sure hardstands can accommodate the turning circles of the largest of today's trucks, with some room for expansion in the future. This should be reviewed if the facility is to be constructed in stages or with a mix of storage types.

By Ben White and Chris Warrick

GRDC's grain storage extension team regularly meets growers and industry participants on-farm to run workshops and provide specialist advice. Examples of well-laid-out facilities, smart features, ideas and innovations are highlighted here to help inspire other growers who are investing in grain storage infrastructure. □

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Photos: Chris Warrick and Ben White

TAKING A BREATHER

Figure 3: When buying silos, look for pressure relief valves that are clear or semi-opaque so that oil levels can be adequately maintained and topped up if required with light hydraulic oil.
Clear or semi-opaque pressure relief valves can also be used for pressure testing to determine the suitability of the silo for fumigation.

HITTING THE HEIGHTS

Figure 4: Access to the inlet and head space is required to monitor the condition of grain in storage and to take samples when inspecting for insect pests.
Access is also useful when undertaking maintenance and repairs of the inlet and inlet seals to maintain gas-tight sealable status, particularly if bumped or damaged by the auger or conveyor when in-loading.
Silos should be ordered with quality ladders or staircases to ensure access to the inlet.
Where a line of silos is installed, a single ladder with a rooftop walkway and handrails may reduce costs while providing convenient access to numerous silos (Figure 4A).

DELIVERING THE DRAFT

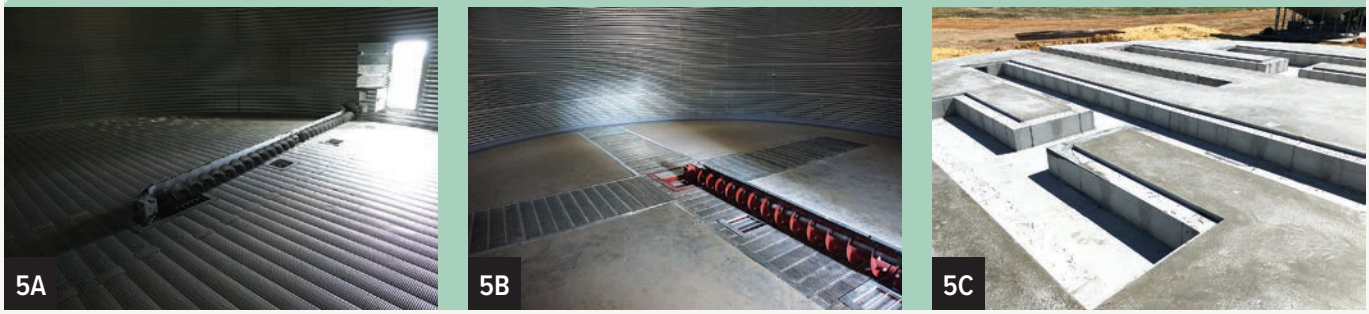

Figure 5: Aeration systems in large flat-bottom silos come in either full floor (Figure 5A) or trench delivery of air (Figure 5B).
With full-floor aeration, air flows through a false, permeable floor over the pad, while trench aeration has trenches formed into the pad to channel aeration (Figure 5C).
Each system has benefits and disadvantages. Full-floor aeration offers the most even delivery of air throughout the silo but is more difficult to clean, requiring the floor sections to be lifted and removed to clean out all traces of grain dust to prevent insect infestation.
Trench aeration requires careful planning of the trench position for maximum uniformity of air delivery.
While trench air delivery cannot match the uniformity of a full-floor aeration, a thorough clean-out is simpler, requiring only the trench screens to be lifted and the trenches cleaned out.

BOGAMILDI BRILLIANCE

Figure 6: The 4600t Manchee facility at Bogamildi, near Moree, NSW, is a clever design that minimises the need for cleaning.
Storage comprises two recently constructed flat-bottom 1500t silos and eight elevated 200t cone-base silos (Figure 6A).
The site is well-laid-out with a weighbridge and outer drive around the silos (Figure 6B).
A permanent out-load point is fed via a series of belted conveyors running under the elevated cone base silos (Figure 6C).
The belts extend back to the flat-bottom silos and, in the future, will be extended back to another pair of large flat-bottom silos.