GRAIN STORAGE MANAGEMENT

Aeration Versus Drying

Grain conditioning is a widely used term that can be used to identify situations where either aeration or natural air-drying is used. Knowing the difference between aeration and natural air-drying will help in selecting aeration systems, equipment, and storage to meet your needs.

Aeration vs Natural Air-Drying – What's the Difference?

Aeration involves moving a small amount of air through a pile of grain to cool and preserve the quality of grain.
When aerating, only a small amount of airflow is required - 0.1 to 0.2 CFM/BU.

When used properly aeration will:

- Cool and maintain grain quality in long-term storage
- Cool grain that has been harvested at temperatures above safe storage temperatures
- Preserve grain quality while holding grain in a wet bin until it can be dried
- Cool grain that has been dried using a grain dryer before storing

Natural air-drying requires much more airflow - 0.75 to 2 CFM/BU, depending on the crop being stored.
Natural air-drying removes moisture from the grain, enabling it to be stored at safe moisture levels.

Points to look for in a natural air-drying system are:

- Airflow levels in cereal grains of 0.75 to 1 CFM/BU
- Airflow levels in oilseeds of 1 to 2 CFM/BU
- Ambient air temperatures at a minimum of 10° Celsius
- Aeration system that will provide uniform airflow
- Storage facilities with adequate ventilation

Do I Need Aeration or Do I Need Natural Air-Drying?

The best time to decide is during the planning stage when adding new storage bins. If you are setting up a new site and plan to add a grain dryer, aeration bins may be the solution. If you set up a row of smaller hopper bottom bins and typically run into wet or late harvests, you may look towards natural air drying as an option. Either way, the most important thing you can do when it comes to storage is to have the option to move air through your stored grain with the ability to monitor it regularly.

When it comes to determining the appropriate aeration system for your conditioning needs, there are some points to consider:

- Do you want to aerate or naturally air-dry?
- What crops will be stored?
- What is the availability of power at the site?
- Will a dryer be part of the system?
- Will you be storing both wet and dry grain on-site?
- What is the required bushel capacity?
- Will there be a need to expand the storage site in the future?

Once you have determined your requirements, the next step is to plan your site. Your AGI dealer or AGI representative can help you decide what bin/aeration/fan/monitor combination will work best. It's important to know that if you set up a bin for natural air-drying, you will always be able to use it for aeration. If you set up a bin for aeration and later decide you would like to use it for drying, you'll likely need to change or adapt your system to do so.

NUMBER OF SAFE STORAGE DAYS (WHEAT)											
GRAIN TEMP.	GRAIN MOISTURE (%)										
°C	14	15	16	17	18	19	20	21	22	23	24
30	40-120	20-30	8-15	5-8	3-5						
27	120-160	40-60	10-30	10-15	5-8	5-8	3-5				
25	160-240	40-120	20-60	20-30	10-15	5-15	5-8	5-8	3-5		
20	<270	80-160	40-120	40-60	20-30	10-20	10-15	10-15	5-10	5-8	5-8
15	>270	160-240	80-150	60-120	40-60	20-30	20-30	10-30	10-15	10-15	5-8
10	>270		160-240	90-160	80-120	50-80	40-60	20-30	15-30	10-20	10-15
5	>270			<270	120-240	80-120	50-90	40-60	30-50	20-30	10-20

NUMBER OF SAFE STORAGE DAYS (CANOLA)												
GRAIN TEMP.	GRAIN MOISTURE (%)											
°C	6	7	8	9	10	11	12	13	14	15	16	17
30	150-210	90-130	40-80	30-70	8-15	5-8	5-8	3-5				
27	<300	130-210	70-150	50-90	20-50	8-15	8-15	5-8	3-5			
25	>300	150-240	100-180	70-105	30-70	20-40	15-30	8-15	5-8	3-5		
20	>300	<300	<300	100-150	70-120	40-60	30-60	20-40	8-15	5-8	3-5	
15	>300			<300	130-200	100-180	60-100	40-80	20-70	10-30	5-8	5-8
10	>300				<300	130-210	130-200	100-200	60-90	10-40	10-30	5-15
5	>300					<300	150-250	100-240	80-105	20-50	10-30	8-15

Managing temperature and moisture levels in stored grain will impact safe storage periods. If you maintain low moisture and temperature levels, safe storage can be measured in months. On the other hand, storing grain with high moisture and high temperatures can put your grain at risk within a few days. Whether you are looking to aerate or naturally air-dry, having a system to move air through your grain is an essential farm management tool. Coupling your aeration system with a monitoring system goes a long way toward ensuring successful on-farm storage, both short- and long-term.

For more information and expert advice, visit **aggrowth.com/agifans**