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Poultry Farm Winterization Suggestions

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The winter is approaching so now is the time to prepare the poultry houses and consequently winter poultry flocks for cold weather. Some suggestions of things to do to save money and protect bird performance are as follows:

Ventilation

Ventilation is necessary to provide fresh air to the poultry house for maintaining a healthy environment. It also helps to maintain humidity and temperature levels in turn effecting ammonia and dust levels. The respiratory system of birds can be adversely affected by high levels of ammonia, carbon dioxide, noxious gases, and dust. Increased levels of ammonia can cause damage or loss of the cilia of the respiratory tract. These cilia (small hair like structures) are part of the defensive system of the respiratory tract. High levels of particulate matter (dust) can cause excess mucus production making it harder for the lungs to remove. When the lungs and air sacs of the bird are damaged this allows an increase in opportunities for bacteria and viruses to cause respiratory infections. Tasks that will help improve ventilation capacity are:

1. Make sure the tunnel curtains close properly and do not snag at corners resulting in a gap.
2. In poultry house with curtain sides it is important that the curtains are tight against the house side to prevent leaks.
3. Replace any loose or broken curtain strings to prevent sagging of the curtain thus resulting in air leakage.
4. Check the sidewall air inlet vents to make sure they close completely when minimum ventilation fans are not running. It is also important to make sure they open uniformly.
5. Make sure your incoming air is directed toward the ceiling so it warms sufficiently before contacting the birds.
6. Make sure minimum ventilation fans, shutters, screens and

blades are cleaned after each flock. Dust build-up forces the fan to work harder and decreases its efficiency. Heavy dust loads may cause the equipment to wear out prematurely.

7. Check belts on belt driven fans after each flock and replace those that are worn or loose since loose and worn belts will decrease the efficiency of fan operation.
8. Use fan covers on tunnel fans during the winter. Cold air can leak in around the shutters on the tunnel fans and fan covers will reduce this leakage. (Fig. 1)
9. If air cannons are used make sure they are clear and open.

Insulation

Another area that needs to be checked is the house insulation. Damaged insulation will result in increased heat loss and air leakage causing temperature extremes resulting in increased fuel consumption. Areas to check are as follows:

1. Make sure load out and entrance doors seal properly. Use weather stripping or spray foam insulation to seal cracks and air leaks.
2. Check any windows for a tight seal, weather stripping should be applied if needed to properly seal them.
3. Ensure that there are no leaks in the roof. Small leaks can develop around loosened nails or other damage. When insulation is wet the heat retention ability is greatly reduced. Loose insulation when wet can also migrate if on a slope and weigh down drop ceilings (Fig. 2).
4. Inspect ceiling and sidewall insulation for cracks, holes, and open seams. Damaged insulation will result in heat loss so repairs such as using caulk, seaming tape, etc. should be made as needed.
5. Turn off water to cool cells and drain cool cell systems and remove the pumps. Exposed pipes should be wrapped with insulation to prevent freezing.

6. Disconnect any rubber hoses from PVC fittings to prevent freezing and resulting cracks and water leakage. Again, any exposed hoses that will contain water may need to be drained and or insulated to prevent freezing.

Heating

Heat loss results in increased fuel usage which in turn increases the cost associated with raising the birds. This impacts profits negatively so things that are done to conserve fuel while maintaining proper ventilation will increase the profit margin.

Suggestions for checking and winterizing are:

1. Clean and maintain ceiling fans so hot air from the ceiling can be adequately mixed and re-circulated to prevent temperature stratification. Utilization of this hot air at the ceiling level will help reduce fuel usage.
2. Monitor all house environmental controls to know what static pressure is present when the minimum ventilation fans are running. In the winter, static pressure should be in the 0.08 to 0.10 range which indicates a reasonably air tight house. Static pressure in this range will allow efficient operation of the heating and ventilation systems and uniform mixing of incoming cold air from attic or sidewall air inlets before it contacts the birds. Static pressure can be read on most controls when the fans are running.
3. Modern poultry houses have numerous temperature sensors to monitor inside temperatures. It is important to inspect these sensors ahead of flock placement to make sure all are working properly and are placed at bird level. Also, inspect brooders to make sure the igniters and electronic circuits are all in proper working order.
4. The burner orifices of all brooders and stoves should be checked to make sure they are free of dust, spider webs, or other obstructions.
5. Inspect the thermostats to insure they are accurate and functioning properly.
6. Make sure there is at least 4°F difference between heating and cooling set points. Any less and the systems will be in competition resulting in heating and cooling occurring at the same time.
7. Check any backup controls to insure there is no conflict between settings.
8. Keep a daily record of the house temperatures. Newer control units may have a recording feature to assist with this.
9. Determine which houses use the most fuel and try to determine why, these houses will need the most work to correct the problems.

Other areas for winterization efforts.

It is important to thoroughly check over each poultry house and accompanying equipment for areas that need winterization efforts. Naturally three of the big areas are ventilation, heating, and insulation as covered above. However, a few areas that are not as big but are also important are the following:

1. Feed and water lines - It is important to check all water and feed lines to be sure they are working properly. Birds need to eat and drink in cold weather as they do in hot weather. The best time to check is when no birds are in the house. Repair or replace damaged feed lines and receptacles. When no birds are in the house make sure no feed is in the lines and bins to prevent the attraction of rodents. In addition, make sure the feed bin is secure and the lid closes tightly. This will keep water from contaminating the feed and allowing mold to grow. Ensure that there are no cracks within any exterior feed lines that would allow moisture into the feed that may freeze and bind augers. Also make sure no feed is leaking outside. Feed that has leaked out is very attractive to rodents and wild birds. Set the temperature control in the house, when out of birds, to maintain at least a 36 to 40°F temperature inside the chicken house to prevent water lines from freezing.
2. Pest Control - Inspect and repair all bait stations as needed. Recharge all bait stations with fresh bait since with the onset of cool weather; mice and other rodents will be looking for a warm place to spend the winter. It is important, as a matter of Biosecurity and disease prevention, to make sure they do not move into the poultry house.
3. Litter - Another important winterization point to consider is the addition of a litter amendment. Litter amendments can reduce the ph of the litter which will help with ammonia levels. This in turn will reduce minimum ventilation rates thus helping with fuel consumption early in the flock.



Figure 1. Tunnel fan covers help reduce air leaking around tunnel fan shutters.



Figure 2. Wet insulation has a reduced effectiveness and can weigh down drop ceilings.

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