

MECHANICAL VENTILATION
Part 2 of 3

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Fast inlet air velocity is essential for providing air mixing and desirable circulation patterns.

The basics of mechanical ventilation are that fans exhaust air from a building and thus create a static pressure difference between the interior of the building and outside conditions (Figure 1).

Fans provide air exchange by exhausting stale air. The very slight static pressure difference created by the exhaust fan causes air to move into the building through any opening. Air inlets are designed and located in the structure to supply air at a desirable direction, speed, and condi-

tion. Properly functioning inlets alleviate problems such as poor air distribution, uneven temperatures, and drafts.

Functions of an air inlet:

1. Provide fresh air throughout the building.
2. Control direction of air flow.
3. Maintain fast inlet air velocity.

Provide Fresh Air Throughout The Building

Since birds are in all parts of the building, then fresh air is needed in all parts. Therefore, it is necessary to have inlets in all locations, or a distribution mechanism to get air to places where there are no inlets.

Two methods commonly used to do this are either by providing inlets around most of the building perimeter, such as along the long sidewalls, or by bringing air in at one point and distributing it throughout the building using a duct (which is uncommon in the

poultry industry).

Air moving through high-density poultry facilities picks up moisture, odors, heat, ammonia, and dust which we want to remove from the house. Generally, air near the inlet is fresher than air near the exhaust fans. In addition, air movement near the inlets is more predictable and less prone to dead air zones than near the fans, where the inlet's control over air direction has been dissipated.

Direction Of Air Flow Is Controlled By The Inlet

Inlets usually direct fresh air flow horizontally along a ceiling. Inlet air jets have an affinity for traveling along surfaces. In fact, an inlet air jet that can attach itself to a surface will travel farther across a room than a free air jet issued into free space.

One goal of inlet direction is to cause cold air to mix with the air already in the room before it enters areas where the birds are located. In contrast, during hot summer conditions, it is often desirable to have air moving over birds as a breeze to enhance convective cooling. Inlets can direct air onto the birds. Changing the size and orientation of the inlet opening or the type of inlet al-

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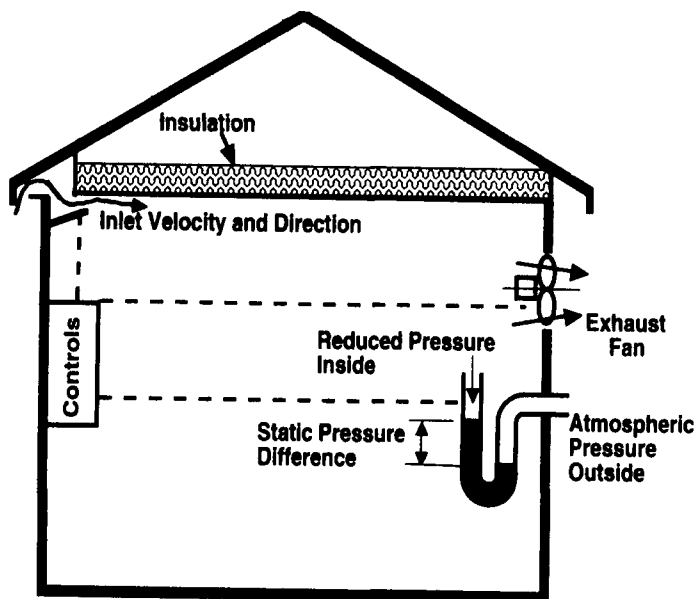


FIGURE 1 A ventilation system includes fans, inlets, controls, sensors, and often building insulation for proper environmental control.

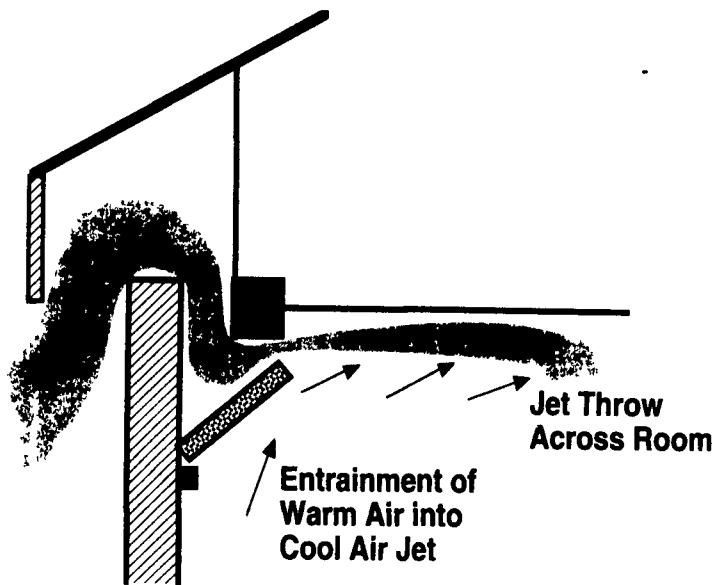


FIGURE 2 With an inlet adjusted correctly, high-velocity cool air sweeps the ceiling and mixes with warmer room air.

CHEMGRO HYBRID CORN FIELD DAYS

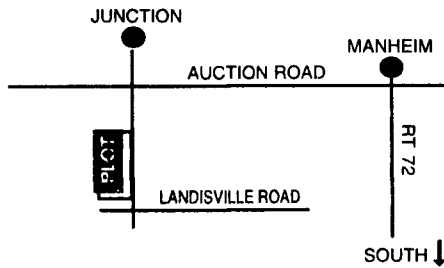
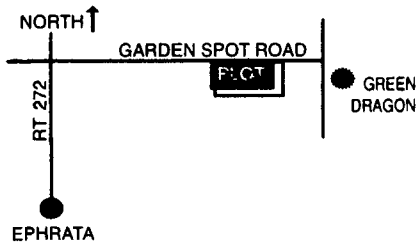
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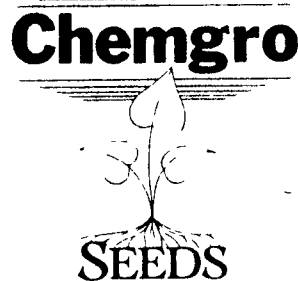


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