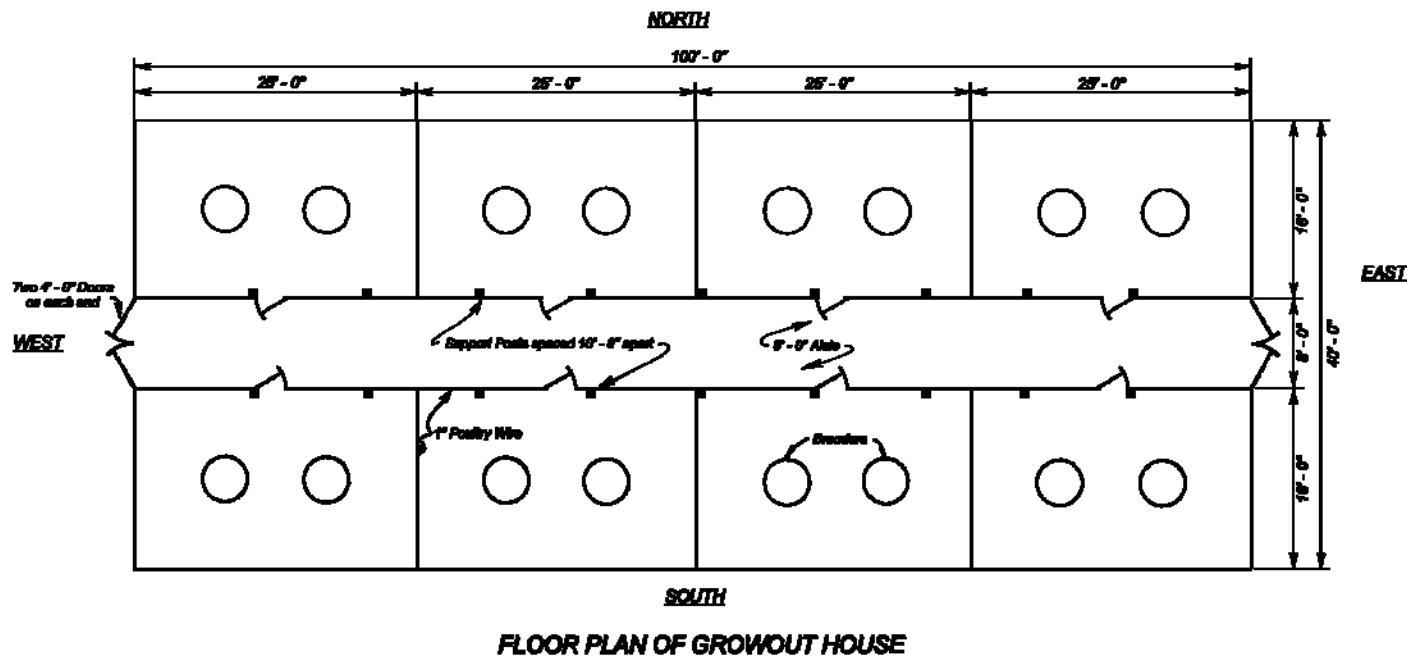


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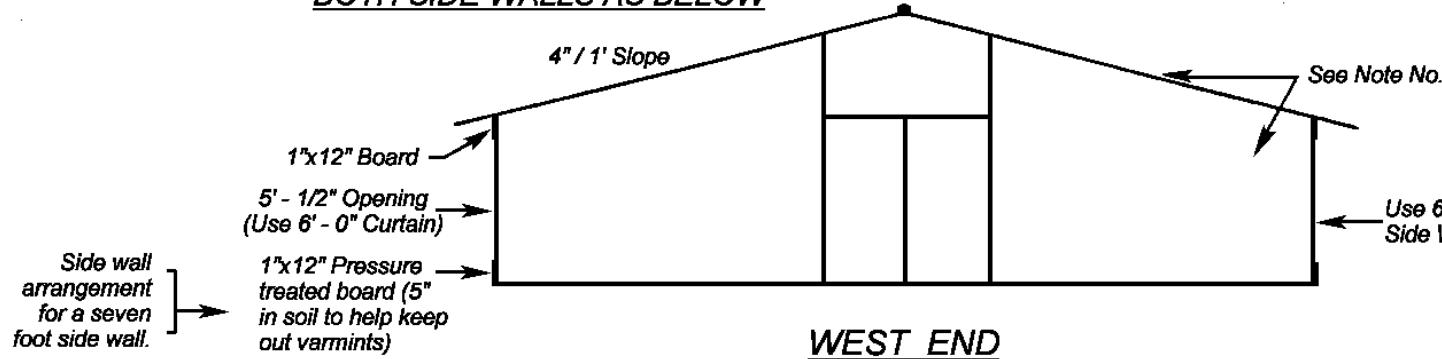
Game Bird Grower House Plan

Shown below are the basic plans for building a Bobwhite Grower House for housing up to 8,000 quail between 7- and 14-weeks of age. This design complements the brooder house plan for facilities that house birds through the first six-weeks of age. Click on each diagram for an enlarged view and additional details.

The diagrams can be printed from this web page or enlarged versions can be printed from the downloaded graphics files. The files can also be enlarged, viewed and printed using a graphic editing program.



BOTH SIDE WALLS AS BELOW



This basic plan can only be a guide into which many of the features of the brooder house can be integrated. These features are not shown in this plan but can be found in the accompanying plan. Brooders are shown as a safety precaution during cooler seasons of the year when the younger birds may need extra warmth. The [construction details](#) explain the brooder, ventilation, and house construction details in more depth.

Additional assistance or a printed copy of this plan can be obtained by contacting Mississippi State University; Poultry Science Department; Box 9665; Mississippi State, MS 39762 or by e-mail at poultry@dept.msstate.edu.

Instructions To Accompany Bobwhite Quail Brooding and Grower House Plans

1. The gamebird brooder house is designed to accommodate 1,000 bobwhite quail in each of the seven pens. Move the birds to the growout house when six weeks of age. Placement of 1,000 birds weekly will allow one pen to always be vacant for one week. This provides time to prepare the pen for the next hatch of baby birds and remain bird-free for a few days.
2. Use insulation in the walls of the house that has an R-factor rating of 8 or higher. Use insulation in the roof of the house with an R-factor rating of at least 11. One and one-half inches of extruded polystyrene board has an R-factor of about 8 and the same material 2-inches thick has an R-factor rating of about 11. One-inch of polyurethane has an R-factor of 8 and the same material 1 1/2-inches thick has an R-factor rating of about 12. Install insulation in a manner that protects it from the birds as they peck and destroy insulation.
3. Use solid wall partitions to allow optimum brooding conditions for each pen of birds, even though the ages are different. The partitions may also help prevent the spread of disease among different ages of birds.
4. The hallway is used not only as an area from which to enter and exit the pens, but also as a ventilation plenum. Outlet air from each pen can collect here before being exhausted outside the building. A minimum amount of feed may also be stored in the hallway.
5. Air intake slots are located high on the outside wall, 6-inches below the roof or ceiling area. Air inlet baffle boards made from dressed 1"x4"x6' boards should be hinged in at least three places to help prevent warping of the board. Position hardware cloth over the baffle board opening as shown in the plan to prevent birds from perching on the boards and restricting air flow during hot weather. Do not install the wire in the slot openings because the birds can still perch on the board. Adjust the board to a partially open position to produce the best air circulation within the brooding room. A rope and pulley arrangement is suggested for controlling the adjustment of the baffle board from the hallway area.

The bottom of the air outlet slots are located 12-inches above the surface of the litter, which makes them about 16- to 18-inches above the floor of the house. One-half inch hardware cloth can be placed over the inside opening of the outlet slots. Outlet air slots are 4-inches wide and 6-feet long.

6. In areas where frequent and lengthy power outages occur, a standby generator is recommended to supply enough power to run one or more fans.
7. Solid doors of the pens open into the pens. This keeps them out of the way of hallway activities.
8. Optional feed storage stands, located in the hallway above the air outlet slots, should be hinged to allow them to be folded against the wall when not in use. Use leg-type supports to prevent restricting air flow from the air outlet.
9. When building any gamebird house, it is important to run the length of the house east and west.

This allows the sun to pass over the ridge of the house and, thereby, affords more protection from the sun. With this particular brooder house, if the fans are located on the north side of the house, the air inlet side faces south. The 2-foot roof overhang serves to protect the south wall from direct sun during most of the hottest part of the year. If the air inlet wall faces west, the afternoon sun shines directly on the wall. The heat from the wall rises and enters the air inlets causing very high inside temperatures.

A slight advantage during the spring, fall, and winter is gained by having the air inlet wall face south. The sun is farther south and aids in warming the cool air before it enters the house, thereby saving fuel.

An alternative house orientation is to run the length of the house east and west, but turn the house around so that the fans face south and the air inlets face north. Located in this manner, the air inlets are always protected from the sun. The disadvantages are that the fans face south and must blow air against prevailing southwesterly winds. This results in a need for more fan power to accomplish the same amount of air movement through the house. In addition, no partial warming of the air at the air inlet wall is gained during spring, fall, and winter.

10. The fans and air inlets/outlets are designed to require constant operation of one or both small fans (650 cfm size). When installing these fans, locate them 14-feet from either end of the house, 18-inches from the ceiling. Wire the fans with an on/off switch on each fan. This allows either one to operate by itself or both fans to operate together.
11. Locate the 1,500 cfm fan equi-distant from each end of the house. Wire this fan on a thermostat. As the temperature increases, the thermostat calls for cooling, and the fan will start. All three fans eventually operate until sufficient cooling takes place. Locate the thermostat near the center of the house and 4-feet above the floor of the hallway. Place it on the wall of the pen as shown in the plans, as opposed to being located on the outside wall of the building.
12. An option is to install doors about 3'x3' in size in the outside wall of each pen to allow use of a hopper or a conveyor for removing old litter. New litter can be conveyed into the house through the same opening. Open these doors for extra ventilation during power failures.
13. If two small brooders are used instead of a single large brooder, install the two brooders so that they cycle on and off at the same time. If installed this way, when one fails to light, the other will provide enough heat for most situations.
14. An evaporative cooler is optional. If one is installed, it is used frequently during June, July, August and September.

Using an evaporative cooler (not shown in the plan) results in cooled air being blown from the cooler into a distribution box, from the box into a PVC pipe duct and eventually into each pen. Install the PVC pipe duct a few inches under the air inlet slots. Wrapping the PVC pipe with outdoor-type insulation adds to its efficiency. The pipe inlets from the PVC duct that carries air into the pens is installed at an upward angle that stirs the cool air with the hot air, thus making the entire room cooler. It also prevents cool air from hitting the birds directly. Devise an air flow regulator for each cool air inlet opening. Due to differing ages of birds, the need for cool air volume will be different for each pen.

When do you use an evaporative cooler? Use it on one-week old birds when the temperature in the pen is above 95 degrees F. Use it on two- and three-week old birds after the temperature rises above 90 degrees F. Use it on birds four-weeks and older only when the temperature is above 85

degrees F.

15. Use the regulators on each cool air inlet pipe to control the amount of cool air entering the pen. Keep the brooder temperature set at the proper temperature setting for the age of bird in the pen and regulate the cool air volume so that it cools the pen some but not enough to cause the brooder to light. If the room is cooled enough to make the brooder come on, the volume of cool air is too great and must be reduced.

Having a large dial-type thermometer in each pen makes it easier to monitor the air flow rate. Watch the thermometer and the reactions of the birds to arrive at the best temperature and rate of air flow.

16. The brooder house in this plan is designed to be ventilated and cooled with fans. All the air entering the building comes through the 4"x6' air inlet slots.
17. The ventilation system is based on the best information available for ventilating brooder houses. However, the system does require reasonably close attention that not everyone is willing to give. Therefore, this system is not suited for everyone. Those who install and learn to properly use this system will benefit in less disease, lower mortality, reduced morbidity, better feed efficiency, shorter growing times (to market age) and lower per-bird production costs.
18. When building any house where birds are reared on littered floors, be sure the house is well drained. Construct the house site on level ground so the floor of the house is $1\frac{1}{2}$ to 2-feet higher than the surrounding area. Have the floor level from end to end and side to side. Where ditching is needed around the house site, construct the ditch so its bottom is 2-feet below the floor of the house.
19. The floor of the brooder house may be either wood, dirt, concrete or wire.

Wood floors are not normally used because they cost about as much as concrete but are not as long lasting or as easy to manage as concrete.

Dirt floors that are well drained and stay relatively dry work well when covered with 4-inches of pine shavings. Using hardwood litter always increases the possibility of an aspergillosis outbreak in the birds.

Cover concrete floors with 4-inches of pine litter. Concrete floors are great at clean-out time because they can be washed and cleaned more thoroughly than wood or dirt floors. Slope concrete floors about 1-inch in the direction you want your wash water to drain. Sloping the floor also helps drain away water spilled from a leaking water system and does not wet the litter as thoroughly as happens with level floors. Provide an adequate opening at the lower side of the pen for the water to flow when washing. Tightly cover the opening when not in use. Do not slope the floor more than about one-inch or the litter will shift to the low side of the pen, leaving the litter layer thinner on the high side.

Wire floors, properly constructed, offer many advantages, especially to the producer of meat-type birds. Birds raised for flight may experience feathering problems when grown entirely on wire. But with meat birds, where perfect feathering is not critical for sale, the use of wire floors should be strongly considered. Birds raised on wire have almost no problem with the gut diseases like ulcerative enteritis, coccidiosis or worm parasites. Eliminating cecal worms greatly reduces blackhead disease because the blackhead organism is transmitted primarily through the cecal worm egg.

The wire floor may be built above well-drained dirt floors or concrete floors. Bird droppings under a wire floor that is only 6-inches above the subfloor may have to be removed at 6 to 12 month intervals. Wire floors that are 24-inches above the dirt or concrete surface may not need cleaning but once every 3 to 5 years. Moisture loss plus insects and bacteria feeding on the waste, eventually reduce the droppings volume to about ten percent of the original mass.

A good choice for a wire floor is $\frac{1}{2}$ " x $\frac{1}{2}$ " welded wire. Wire this size is strong enough for a person to walk on and allows the droppings to pass through freely. During the first week of brooding, the birds are so small that some will fall through the $\frac{1}{2}$ " x $\frac{1}{2}$ " wire floor. To prevent this, place $\frac{1}{4}$ " x $\frac{1}{4}$ " hardware cloth over the pen's wire floor inside the brooder guard during the first few days of brooding.

Support the wire floor using 2" x 4" lumber placed on edge to form a grid. Install the 2" x 4" supports in a checkerboard fashion to form 30-inch squares. Several leg supports underneath the floor are used for support. The wire floor may also be supported by a framework of metal reinforcement rods. The $\frac{3}{4}$ -inch diameter rods are welded to form 2' x 2' squares. Several leg supports are needed to support this flooring.

20. The house may be built with metal or wood framing. The size and dimensions may be altered but fan sizes and ventilation louvers must be adjusted to meet air exchange requirements.
21. If pens are build to house more than 4,000 chicks in each pen, the air plenum should be eliminated. Instead, install the fans in the wall of each pen. This allows a more precise control of the ventilation requirement of each pen. In this case, use the air plenum hallway only as a hallway. Air outlets in the hallway must allow sufficient air passage so that the air can escape unimpeded.

This house plan was designed by Dr. Robert L. Haynes, Retired Professor of Poultry Science and Leader of Extension Poultry Science at Mississippi State University. Additional assistance can be obtained by sending your questions to Mississippi State University; Poultry Science Department; Box 9665; Mississippi State, MS 39762 or by e-mail at poultry@dept.msstate.edu.
