11-1913

Circular No. 14 - Housing Farm Poultry

Byron Alder

Utah State University

Follow this and additional works at: https://digitalcommons.usu.edu/uaes_circulars

Part of the Agricultural Science Commons

Recommended Citation
https://digitalcommons.usu.edu/uaes_circulars/10
Utah Agricultural College

EXPERIMENT STATION

Circular No. 14

Housing Farm Poultry

BY

BYRON ALDER

Logan, Utah, November 1913
UTAH AGRICULTURAL EXPERIMENT STATION

BOARD OF TRUSTEES.

LORENZO N. STOHL..................................................Brigham
THOMAS SMART........................................................Logan
JOHN Q. ADAMS.....................................................Logan
ELIZABETH C. McCUNE....................................................Salt Lake City
J. W. N. WHITECOTTON...................................................Provo
JOHN DERN............................................................Salt Lake City
JOHN C. SHARP.......................................................Salt Lake City
ANGUS T. WRIGHT......................................................Ogden
J. M. PETERSON........................................................Richfield
HAZEL L. DUNFORD.....................................................Salt Lake City
GEO. T. ODELL........................................................Salt Lake City
JOSEPH QUINNEY, JR.................................................Logan
DAVID MATTSON, Secretary of State, Ex-officio.....Salt Lake City

OFFICERS OF THE BOARD.

LORENZO N. STOHL..................................................President
ELIZABETH C. McCUNE.............................................Vice-President
JOHN T. CAINE, JR.................................................Recording Secretary and Auditor
JOHN L. COBURN.....................................................Financial Secretary
ALLAN M. FLEMMING...............................................Treasurer

EXPERIMENT STATION STAFF.

J. A. WIDTSOE, Ph. D., President of the College.

E. D. BALL, Ph. D..................................................Director
H. J. FREDERICK, D. V. M........................................Veterinarian
ROBERT STEWART, Ph. D..........................................Assistant Director and Chemist
E. G. TITUS, Sc. D..................................................Entomologist
L. D. BATCHELOR, Ph. D...........................................Horticulturist
F. S. HARRIS, Ph. D.................................................Agronomist
F. L. WEST, Ph. D..................................................Meteorologist
J. E. GREAVES, Ph. D...............................................Bacteriologist
W. E. CARROLL, M. S..............................................Animal Husbandman
BYRON ALDER, B. S.................................................Poultryman
G. R. HILL, JR., Ph. D............................................Plant Pathologist
JOHN STEWART, B. S..............................................Associate Chemist
C. T. HIRST, B. S..................................................Assistant Chemist
ARCHIE EGBERT, D. V. M........................................Assistant Poultryman
H. W. STUCKI, B. S...............................................Assistant Horticulturist
W. W. KNUDSON, B. S...........................................Assistant Agronomist
H. J. MAUGHAN, B. S............................................Assistant Agronomist
J. I. LAURITZEN, B. S...........................................Assistant Plant Pathologist
B. L. RICHARDS, B. S............................................Assistant Plant Pathologist
GEORGE STEWART, B. S.........................................Assistant Agronomist
C. Y. CANNON, B. S............................................Assistant Animal Husbandman
LESLEY A. SMITH, B. S...........................................Assistant Bacteriologist
VIOLET GREENHALGH...............................................Clerk and Librarian

IN CHARGE OF CO-OPERATIVE INVESTIGATIONS WITH U. S. DEPARTMENT OF AGRICULTURE.

W. W. McLAUGHLIN, B. S............................................Irrigation Engineer
L. M. WINSOR, B. S...............................................Irrigation Engineer
R. A. HART, B. A..................................................Drainage Engineer
A. D. ELLISON, B. S..............................................Assistant Agronomist
Housing Farm Poultry

By BYRON ALDER

With the exception, perhaps, of actual starvation of the fowls themselves, there is no other factor in connection with the keeping of poultry that will affect egg production and good vigorous growth so decidedly as poor or improper methods of housing. This circular sets forth some of the essentials of a good house for Utah conditions, and offers plans of three houses in which an attempt has been made to include these essentials. The ideas and plans presented here do not represent any one person's original work. They are a compilation of the work done on this subject by those who have preceded the writer in charge of the work at this station, and suggestions that have come from a study of the types of houses recommended and in use in different parts of the country.

The Colony or the Stationary House.

There are two systems in common use throughout the country. The colony or free range system in which the fowls are kept in small flocks, housed in small movable houses, and the permanent yard system in which the fowls are more or less closely confined and the house is built in such a way, or of such material, that it is stationary. The colony system is admirably adapted to farm conditions where only from two to three hundred hens are to be kept. Where the fowls are kept in larger numbers than this considerable time is required to go from house to house to feed or gather the eggs. The advantages are, however, in being able to move the house from place to place about the farm or yard, thus giving the fowls fresh ground and pasture and utilizing space which at certain times could or would not be used for other purposes. The soil is less likely to become filthy and contaminated with disease. Where the soil on which these houses are kept is of a sandy or gravelly character, with good underdrainage, there is no need of floors in the colony houses, and the problems of cleaning and keeping the surroundings fresh and sweet are reduced to a minimum, since all that is necessary is to hitch a horse to the
house and take it off a short distance to fresh ground, leaving all manure and filth behind. In winter the houses should be grouped more or less closely together in a convenient place and the soil banked up well around them before the ground is frozen too solid.

Plate I. Fig. 1.—Partial view of the Station Poultry Yards. Fig. 2.—Interior of Farm Poultry House shown in Plates IV and V.
In the permanent house larger flocks can be handled with less expense and trouble, because of many conveniences that may be provided for the general management of a large flock. Exceeding care should be exercised in cleaning up the yards and houses, in keeping the soil sweet and fresh by occasional cultivation, and in preventing the spread of contagious diseases.

**Factors that Should be Considered.**

Whether the colony or the stationary house is used, the problems to be considered in planning the house are very much the same. These may for convenience be divided into four groups.

**The Health and Comfort of the Fowls.**

**Dryness.**—The first essential of the house itself to insure health and vigor, is freedom from moisture. Since the house must be kept dry it must be located in a dry place. A gentle slope to the south with a porous soil and good air drainage is ideal. In many places it will not be possible to get the ideal, so that some provision must be made to keep the moisture out of the house. A good floor well up from the surface of the ground is about the best we can do. A concrete floor, under which is placed a six or eight inch layer of fine gravel or broken stone, will keep out the moisture and will be more easily cleaned and kept in a sanitary condition than the dirt floor. Many prefer the dirt floor, however, because of cost, and if six or eight inches of dirt are placed on top of the stone after a thin layer of cinders or other fine material covers the stone, it does fairly well and will usually be dry; but the dirt must be replaced occasionally by fresh soil and the cost of keeping it in condition will soon pay for the cement floor. In wet or damp surroundings evaporation is continually taking place, and evaporation is a cooling process, so that the temperature will be kept down. The hen's feet will be wet and muddy. This means fewer eggs and many dirty ones.

**Ventilation.**—Fresh air without draughts is the next important consideration. In the past warmth was the big object sought, and many houses were built with little or no ventilation provided for, or the openings that were provided caused draughts; now if we are not more careful in planning the house, the open front will be carried to the other extreme, as has been
done already in some instances. No rule can be given as to just how much space should be left open in the front of the house, as that depends on the type of the house and somewhat on local conditions. One very important feature of all open front houses is that during the severe cold weather the other three sides of the house must be perfectly tight. To secure this these three sides should be constructed of matched lumber and lined either outside or inside, preferably the latter, with good heavy building paper. The double wall with a dead air-space is not necessary and is undesirable. It offers protection and a breeding place for mice, rats, mites, etc., and adds considerably to the expense of the building. In the hottest part of the summer an opening may be provided in one of the other sides, providing it is not located so that a draught would strike the fowls while on the perches.

While reasonably cold, pure fresh air is to be preferred to warm impure air, yet it should not be forgotten that it is the purity of the air and not the low temperature that is desired. The more surface there is exposed in the walls and roof of a house the greater will be the loss of heat, other things being equal. For this reason it is not desirable to extend the walls higher than is necessary to allow sufficient room in the house for the attendant to move about freely without continually bumping his head. The greatest vigor and production cannot be secured if the fowls are required to breathe impure or very cold air. Early spring condition, when we have our highest egg production, should be the aim in this regard both winter and summer. Plenty of fresh air with a moderate temperature, and good, clean, nutritive food brings high production in eggs and meat.

Sunlight.—This third essential for healthful, vigorous stock must be provided for in a good chicken house. For this reason the open front has become very popular and the house should always face to the south. The opening should not be too low or the snow and rain will drift in and dampen the litter, and the fowls should be protected from the cold wind while at work on the floor. Two to three feet from the ground to the bottom of the opening will give this protection and will not shade much of the floor space. It must extend as high as possible so that the sun will go to the back of the pen. The direct rays of the sun not only make the house warmer but keep the interior
dry and are the best of disinfectants and germicides that we know. They aid materially in preventing disease. Very much glass space is undesirable, not alone because of the additional expense and breakage, but it is estimated that glass allows about four times as much heat to escape from the building as the ordinary board wall. In this respect it is not much better than the muslin curtain, and on sunny days the curtain may be raised to allow the sun’s rays to enter without reflection in any direction.

Convenience.

It seems to be more or less a fault in human nature that those tasks are more often neglected that are a little out of our way, or are a little difficult to get at. There is no animal around the yard that responds more quickly to kind, sympathetic and regular treatment than does the hen. The poultry house should not be located, as it too often is, after all other buildings, sheds and yards are planned, and then find that there is room out behind the barn or some other out-of-the-way place for the chicken house. Much of the work in caring for the fowls is done by the women or is not done at all, and therefore, the house and yards should be readily accessible to them. All gates, doors and other fixtures should be made as simple as possible, yet securely fastened and easily operated. There should be plenty of room to get inside the building. The nests, feed hoppers, etc., should be easily reached, so that cleaning and refilling is made as easy as possible. It is sometimes advisable to arrange the nests so that the eggs may be gathered without going into the house.

Protection from Vermin.

The house should not be located close to the grainery, barn or other buildings where grain is stored that afford breeding places for mice and rats, to prey upon the fowls. The building should be made as tight as possible to exclude all such enemies. All nests, perches, etc., and the interior surface of the house itself should be as smooth and free from cracks and unnecessary corners as possible. The internal fixtures should be solid, yet easily taken out to clean and disinfect.

Cost.

Many who have gone into the business of poultry raising have failed because of the lack of consideration of this factor
in connection with the poultry houses. It is necessary of course to make a building as permanent and substantial as the local conditions demand, yet buildings of this nature need not be elaborate in construction or of expensive materials. Except, perhaps, in special cases, the cost of the house should not exceed one dollar and a quarter for each fowl that it will accommodate when complete. This is not given as a rule, but to indicate what we should expect in this regard. To illustrate further, the total cost of the colony house shown in Figures 3 and 4 including material and labor should not exceed thirty dollars, and it will accommodate under usual conditions about fifty hens of the smaller and forty of the larger breeds, making a cost in the one case of sixty cents per hen, and in the other seventy-five cents per hen.

By following the ideas suggested above, a number of houses could be planned that would no doubt be entirely satisfactory. On the following pages are given detailed plans, slightly modified, of three houses that have been tried at the Utah Experiment Station and different parts of the State, and proved to be eminently satisfactory.

It is not necessary in any case to follow strictly all the details given in all respects. An attempt has been made to furnish these definite instructions and details of plan to those who are looking for just such specific information. A general discussion of the construction and a bill of the material required is given for each of the different plans.

The Utah Station Colony House.

This house has been used for several years at the Utah Station poultry yards, also at two or three other places in the State, and is found to be very satisfactory for Utah conditions. Because of the small size and substantial construction it can be readily moved about from place to place on the 4 by 4 skids, which also serve as a foundation for the house. This house will accommodate from 40 to 50 hens, and is highly recommended for use where flocks of two to three hundred or less are kept on the farm, or for a special breeding or brooding house on large poultry farms. The front should be left entirely open as shown, with no curtain of any kind, except in some of the higher valleys of the State, where it may be advisable during the
Roof should be covered with good roofing paper or shingles 45° or 3° to the weather. Where shingles are used a single layer of tarred building paper should be placed between them and the sheathing to keep out the wind.

**DETAILS of a PORTABLE TABLE ROOF COLONY HOUSE**

The rear end and sides should be lined with a good heavy grade of tarred building paper. The perches, nests, and all other inside fixtures should be so made that they are solid but can be easily taken out to be cleaned and thoroughly disinfected.

---

Plate II. Fig. 3.—Working plans of Utah Station Colony House.
coldest part of the year to hang a curtain to the rafter just in front of the perches, and down to within about a foot of the floor.

Material.

The lumber used need not be of the best grade. Select common shiplap, or No. 2 rustic is good enough, providing the sides and rear end are lined with good two-ply building paper or tarred felt. This lining of paper would be necessary with the best grade of lumber, because of the openings at the joints. Where shingles are used a single layer of paper should be placed between the shingles and the sheathing to keep out the wind. The sheathing should be placed close together to make the building warmer. A good grade of prepared roofing may be used, and is a little cheaper than shingles, but not so durable.

Construction.

See Fig. 3. Round off one side at each end of the skids and drill a \( \frac{3}{4} \) inch hole about six inches from the end to run a clevis pin through to hitch a chain or spreader on when moving the house. Cut one piece of 2x4x16 in the center and nail these pieces firmly, one foot from the ends of the skids, for the front and rear plate. On the under side of these at each end nail firmly a short piece of 1x3 butting close up against the skids to prevent them from pulling together. The rest of the frame work is all 2x4 and should be well fitted and securely nailed. The point of the rafter should not project beyond the outer edge of the wall plate. When the frame is finished, tack the building paper onto the outside of the stud-ding, then nail the siding on so as to hold the paper in place. Where joints occur in the paper be sure that they overlap well, then tack a thin board strip or cleat over this joint from the inside of the house. This paper gives a smooth clean surface to the inside and offers very little protection and few breeding places for mites, and is the only sure way to prevent draughts. The siding may be nailed on first and the paper put on the outside of this as shown in Fig. 4, but the former method is generally to be preferred.

The opening for the door in the side may be cut out after the siding is nailed on. Extreme care should be taken to fit the door well in this opening, so that no cracks are left to
cause a draught in the house in winter. The door should be kept closed during the coldest part of the year.

The boards at the bottom in front should not extend up more than two feet and are placed there only to keep the snow and rain from drifting in. Two pieces of 1x6 should be cut to fit between the runners at the front and rear, but should be left so as to be easily taken out when the house is to be moved onto a new piece of ground. No floor is provided in this house. It, therefore, cannot be used except on dry well drained soil. A wet damp place should never be selected for a hen house, unless no other is available, then it will be necessary to provide a floor to keep the interior dry.

The cut on the front page shows this house in use in winter. There is usually a breeze from the canyon at this place during the winter as indicated by the drifted snow and the trees. This house gave excellent results except during the summer, and it was found advisable to add the side door for additional summer ventilation.

The perches should fit in notches cut in the 1x4, but should not be nailed nor fitted tight. The two top edges should be rounded and the entire piece made as smooth as possible. A good heavy coat of paint would make the perches easily cleaned and cover rough spots or cracks that would otherwise afford breeding places for mites. The nests should be made of good pine, free from rough knots or cracks and not securely fastened to the bracket on which it rests. It must be easy to take out to clean and disinfect.

A good coat of paint when the house is new adds greatly to the appearance and is a great preservative for the lumber.

**Bill of Material for Utah Colony House.**

Size of house, 8 ft. by 14 ft., 3 ft. to eves and 7 ft. to peak.

2 pieces 4x4—16 ft. long for runners.
6 pieces 2x4—12 ft. long for rafters.
6 pieces 2x4—16 ft. long for studding.
2 pieces 2x4—14 ft. long for wall plates.
10 pieces 1x8—14 ft. long shiplap for sides.
8 pieces 1x3—12 ft. long for casing over corners, doors and next to roof.
1 piece 1x4—12 ft. long for casing over corners.
2 pieces 1x12—16 ft. long, and
Plate III. Fig. 4.—Frame work of Utah Station Colony House.
Fig. 5.—Shed roof Colony House.
1 piece 1x4—16 ft. long No. 1 pine for nests.
1 piece 2x6—16 ft. long, ripped through center, for perches.
1 piece 1x4—16 ft. long to support perches.
1 piece 1x6—16 ft. long to cover opening between skids.
25 pieces 1x8—16 ft. long shiplap for ends and roof.
1 rod of 2 ft. 1 in. mesh wire netting.
1 piece of 1x8x16 ripped to 4 in. and 3½ in. for saddle.
1 roll of good building paper.
Shingles 5 in. to weather, 7 bunches, 1750 shingles.
Five lbs. No. 4d nails; 8 lbs. No. 8d nails; 6 lbs. No. 10d nails.
Estimated cost, labor and material, $30.00.

Shed Roof Colony House.

A cut of this house is shown in Fig. 5. It is ten feet long, eight feet deep, six and one-half feet high in front, and four and one-half feet high at the back. The opening in the front is three by four feet and has a curtain on a hinged frame which swings up and fastens to the roof. The house is built on 4x4 skids and is lined with heavy paper. A house of this size is large enough for twenty to twenty-five hens. This house is a little better for small flocks in a city lot than the one shown in Fig. 3, and is used at present more extensively. It is not as warm for winter use, but gives a little better circulation of air to the fowls in summer than the gable roof house described above. The perches and a dropping board are placed along the back and the nests are placed under the dropping board.

Farm Poultry House.

In Figs. 6 and 7, is given the plan of one section of this house. Other sections the same as that shown may be added at either end as the increase in the size of the flock makes this addition necessary. The plan shows a concrete floor which is advisable under most conditions, and is necessary where this house is located in a damp place. As a rule a cement floor is more desirable than a wooden floor, because it can be kept more sanitary, offers little or no protection to mites or other vermin, and when once put in is permanent and needs no repair. In case a cement floor is used it should be made
Dropping board six inches below perches, nests below this with the entrance from the back and door in front.

FLOOR PLAN AND INTERIOR ARRANGEMENT.

PERMANENT LAYING HOUSE

FRONT ELEVATION.

Plate IV. Fig. 6.—Plan of Farm Poultry House.
CROSS SECTION.

SECTION THROUGH NESTS.

DETAILS of DUST-BOX

DETAILS of NESTS

Plate V. Fig. 7.—Details of construction of Farm Poultry House.
reasonably smooth and level with the top of the foundation so as to make cleaning easy. A cement floor should never be left bare, but should always be covered with at least three inches of sand and with from six to ten inches of straw. Because of the little wear there would be on the floor it is not necessary to make the concrete very strong, perhaps 1:3:6 would be good enough. On a well drained sandy or gravelly soil it would not be necessary to put in a floor of any kind. Under these conditions a sand or dirt floor is cheap and advisable. The level of such a floor should be higher than the ground outside. Hens like a dirt floor if it is kept dry, as it gives them a natural dust wallow, but must be frequently replaced to keep it in a clean, sanitary condition. A concrete floor would make the house easier to clean and in the long run might save considerable labor and expense.

Under all conditions it would be necessary to have a good foundation extending at least six inches above the surface of the ground, and down far enough so that the frost could not get under.

The house as shown is 12x16 ft. and will accommodate eighty or ninety hens. Perhaps in special cases it would be advisable to increase the depth to fourteen or perhaps sixteen feet.

**Construction.**

The siding should be a good grade of shiplap or rustic and must be lined with a good grade of building paper. Many old houses were built with rough boards running up and down and the cracks covered with battens. This is very undesirable in a place where the winters are as severe as in Utah. The battens work loose and the fowls are subjected to draughts from all sides. The double wall is sometimes made by nailing boards on both the inside and outside of the studding; this is not necessary and is undesirable as already explained. The only place that a double wall is necessary is above and behind the perches. This is to protect the fowls from draught when the rear ventilator is open.

It would not be advisable to use shingles on a roof as flat as this one. Where prepared roofing, either felt or paper, is used, it is not necessary to cover the roof first with building paper. Under no condition should a poultry house be covered with boards and battens.
The dropping board and nests are made in two sections and held in place by means of a stirrup or hook. They should be made just as light, yet substantial, as possible, must be solid, not shaky, but easily taken out to clean and disinfect. Everything in the house except the dust box and feed hoppers should be at least 18 inches from the floor. This allows considerable room for the fowls to work. There should be but one entrance to the dust box, so as to keep as much dust as possible out of the house. It would be best to have the top of this box hinged or removable, so that it may be taken off to clean and refill. See Fig. 7.

The door is made of matched flooring, the same as the drop board, and is provided with a good lock.

The frames for the wire and muslin should be made of good material, 1 1/4 by 3 inches, with at least one cross brace. The frame on which the wire is nailed need not be hinged, but made so that it can be taken out when necessary.

**Bill of Material.**

23 pieces 1x8x12 shiplap for ends.
17 pieces 1x8x16 shiplap for rear and front.
23 pieces 1x8x18 shiplap for roof.
2 pieces 2x6x12 wallplate.
2 pieces 2x6x16 wallplate.
9 pieces 2x6x14 rafters.
11 pieces 2x4x16 studding.
44 pieces 3/4 in. x 16 ft. No. 2 flooring, for door, drop boards and inner wall over perches.
2 pieces 2x6x16, ripped through center, for perches.
3 pieces 2x2x16 for drop boards and nest support.
11 pieces 1x3x16 for casings on corners around door and window and under roof.
2 pieces 1x6x16 doors for nests and ventilator in rear.
2 pieces 1x3x16 for platform at back of nests.
2 pieces 1x4x16 nests.
1 piece 1x6x16 nest front.
1 piece 1x12x16 nest bottom.
4 pieces 1x6x16 frame, window and door.
1 piece 1x8x16 dust box.
1 window sash, 20x20 in., 4 glass.
3 pieces 1\(\frac{3}{4}\)x3x16 frames for curtain and wire over front of opening.

2 rolls No. 1 heavy prepared roofing, 220 sq. ft.
350 sq. ft. two-ply tarred building paper.

For foundation—
68 cu. ft. concrete, mixture 1:2\(\frac{1}{2}\):5.
14 bags of cement.
33 cu. ft. sand.
66 cu. ft. stone or gravel.
Estimated cost of material, $60.00.

For floor—
83 cu. ft. coarse gravel or stone for first 6-inch layer.
10 bags of cement.
15 cu. ft. sand.
30 cu. ft. stone or gravel.
Additional cost for concrete floor, $20.00.

---

**Feed Hopper.**

Fig. 8 is the plan of a good feed hopper, especially adapted for dry mash, grit, charcoal, etc., and may be used for whole grains where desired. The opening at A, where the feed passes out so that the fowls can get it, should be about 3\(\frac{3}{8}\) inch for
wheat or oats; ¾ inch for charcoal, oyster shell or grit, and about 1 to 1½ inches for dry mash, if composed largely of bran. The back should be placed squarely against the wall. The top is slanted at about forty-five degrees, so that the fowls cannot roost on it.

The back should be placed squarely against the wall. The top is slanted at about forty-five degrees, so that the fowls cannot roost on it.

![Diagram of types of roofs for poultry houses](image)

**Fig. 9.—Types of Poultry Houses.**

**Types of Roofs for Poultry Houses.**

In Fig. 9 is shown the different types of roofs for poultry houses. The shed roof is one most commonly used. It carries all of the water to the back, leaving the south front dry and allows more sunshine directly into the house. The two thirds span is a modification of the shed roof and is especially used on houses more than fourteen feet deep. The shed roof for deep houses give too high a front and require too heavy material for the roof to hold up the heavy snow that falls in most parts of the State.

The equal span roof is especially adapted for colony houses or comparatively small farm houses. A house with this roof can be built low yet roomy inside and will thus be warm in winter, as
the air when heated by the fowl's body does not readily pass up and out of the house.

The semi-monitor is the tall narrow shed roof with a small shed roof, or lean-to, built in front for scratching shed. It cannot be used for long houses because all material going in or out in cleaning must come through the end, as the sides are too low to permit a door to be placed in them. The monitor roof is too complicated in construction for poultry houses. It is too high and allows too much heat to escape, and is, therefore, little used under climatic conditions similar to those found in Utah.