

breeders; but some breeders assert that advancement depends more or less on the disposition of their swine.

In selecting the size, particular attention should be paid to the back and hams as these parts are more or less liable to be weak.

The pen should 1st be dry well ventilated but not subject to draughts.

2. They should be roomy.

3. Situated so as to have easy access to yards and fields for pasture and exercise.

All classes of pigs require pens of this kind but sows require larger and warmer pens than other pigs.

The south side of the pen should be reserved for the sow and small pigs. If the wall is made of window sash with double glass so much the better, as it allows the light and heat to enter and keeps out the cold.

A pig that is intended for a breeder should not be fed with those that are being fed for the market. Stock for the market should be fed all that they will digest from the time they are weaned until sold as fat animals. Pigs for breeders and cattle for milking should be fed more moderately, also the food should be that which will produce muscle and bone in place of fat and flesh as is desired in the former instance.

Then, show-stock should be rejected for breeders as they generally are hard to keep in fair condition after having once been fattened to excess, they never make as prolific breeders nor yet do they last so long.

The age to commence breeding, for sires, should be at 6 months and sows from 6-12.

Better results will be obtained by commencing at these ages than by commencing either before or after.

The most favorable condition for breeders is a medium condition, neither lean nor fat.

A sow in fair condition will produce a heavier litter in lbs at 6 to 8 weeks old, than a sow that is fat or one that is too lean. A lean sow may produce a larger litter, but they are often irregular and some times weak.

A fat sow will produce a smaller litter, also weak, and she will give more or less trouble in raising the little ones.

A fat sow's milk is often too rich for the little pigs and causes diarrhoea. We found that by feeding wheat-bran about two weeks previous to farrowing and continuing the same for about two weeks after, it obviated the difficulty. Large, fat sows give more or less trouble in raising their litters, often lying on the pigs and killing sometime the whole litter.

Deafness is sometimes the cause of this, which fat stock is more or less subject to.

A large sow, after she has become deaf, is very poor property to own, the sooner she becomes the property of the pork-packer the better.

In raising litters from large sows we have arranged a protection in the pen for the pigs while small, by taking a scantling 3 feet long and beveling each end so as to form the hypotenuse of a right angle with the floor and wall and nailing it fast; then, nailing a plank or board horizontal to this about 8 inches from the floor afford a splendid protection for little pigs. Indeed we have not lost a single pig since it was adopted; also a little trough can be arranged behind this so the little pigs may be fed.

Raising and fattening pigs is not altogether a trade, but, like the occupa-

tion of which it forms a part, it combines both trade and profession. Not only should a person know how to feed, but he should know what to feed, and how to sell.

He should not only know that the old sow is going to have little pigs sometime, but he should know the very day, as pigs vary very little in the period of gestation, and he should be there when they come. We have found it best to attend the sow when farrowing, after she commences farrowing and get the piglings to suck; then move away until she has done. Then, clean out the pen and bed the sow with short, dry straw or chaff and return the pigs to the mother.

They will need no special attention for a few weeks, if pen is right and the feed for the sow is suitable except cleaning out and bedding each day.

When about four weeks old they will require a little feed in addition to sow's milk, especially if the litter is large and the sow thin. They can be fed by the method before described. The feed most suitable is  $\frac{1}{2}$  oats the remainder wheat, pease, and shorts, mixed. The whole should be ground very fine. If they are fed in this way at 8 weeks old they will depend very little on the sow for support.

We have had them to weigh 80 lbs at 8 weeks fed in this way. After the pigs are two weeks old exercise should be given the sow each day. At 8 weeks old they will be ready to turn out on clover if farrowed at the proper time in spring, which should be about the first part of April or last of March. By having them farrowed then they can be grown outside on clover, grass, rye, or rape. For the next 2 months they may be turned out to pasture, with the aid of skim milk and whey. They may be made to weigh from 120 to 150 lbs without feeding to them any wheat or the grain. The amount and kind of grain required will depend on the drink, pasture, and the feeding abilities of the pigs. We have found it best not to mix the chop before feeding.

We once tried an experiment, in which we divided a litter of pigs and fed one part by putting the chop in the trough and then pouring the drink in the trough on the chop. The other half had their feed mixed 12 hours before feeding and the results were as follows:

Aug 24 pen No 1 fed with dry chop weighed.....	330
Sept. 24 pen No 1.....	495
Gain.....	165
Pen No 1 ate 552 lbs chop	
Aug. 24 Pen No 2 fed with soaked chop weighed.....	365
Sept. 24.....	385
Gain.....	20 lbs

Pen No 2 ate 590 lbs in 1 month  
Pen No 1 made..... \$115

For wheat fed.....  
Pen No 2..... \$74

We cannot say that it would always give results like these, but as far as we know, the trial was accurate.

The last month or 6 weeks they will require more chop. Any one who has studied agricultural chemistry can quickly work out a feeding ration for stock of that age, 1 bushel of oats to 3 of wheat should give good results and finish pigs very quickly. (1)

Pease or corn chop may be substituted for the wheat, but at the present

(1) And make soft pork, we fear. A bushel of pease added would be advantageous.—Ed.

time oats and wheat would be the cheapest only costing \$16 per ton. Fall pigs of September and October farrow should receive the same attention, while with the mothers, as spring pigs. In the place of clover or pasture, boiled turnips, potatoes, pumpkins, or roots may be substituted for the pasture. Boiled roots are excellent for pigs. They will grow faster, eat less chop and make better and more desirable pigs for the market than those fed on clear chop.

We do not favor boiling the chop with the roots as it makes the feed sticky and in cold weather, when they huddle together, they make each other in a bad state. We tried several experiments in feeding boiled roots; an average one we give below:

Devised on the 3 of Jan., Pen No 1 weighed.....	1484
Weighted them on 22 Jan.....	1710
Fed 800 lbs of wheat with turnips. Gain.....	226
Pen No 2 weighed.....	1700
Pen No 2 weighed Jan 13.....	1900
Fed 900 lbs of wheat chop.	
Pen No 2 required $4\frac{1}{2}$ chop.	
1 lb of pork.	
Pen No 1 required 3 4-10 to produce.	
1 lb of pork.	

Pen No 1 were in better condition for the pork packer at end of experiment than No 2, as they were not so fat, and were in a better condition to lay on fat afterwards.

When strong feed is the ration, the other part should be part soft feed, such as pasture or roots, especially is this true in winter-feeding, when the pigs have to be confined to their pens. Pigs at  $5\frac{1}{2}$  (1) fed and cared for in this way selected and bred in the way described will furnish as much pleasure in attending, and as much profit in rearing, as any branch of agriculture. As there are many ways of feeding, and many different feeds, we have to give the simplest, and what we have found to give the best results in our own pens.

W. E. BUTLER.

One or two passages in the above, we regret to say, were undecipherable.—Ed.

## PLOUGHING AND SUBSOIL PLOUGHING.

(By J. W. Knight)

**Benefits of ploughing—Effects—Formation of nitrates—Width of ridges—The skim—Ploughing sandy soils—Autumn-cleaning—Deep ploughing—Subsoiling.**

### SECOND PRIZE, EX. 1895.

Before entering upon the subject of how the operation should be performed let us consider the necessity and beneficial effects of plowing. In the autumn, the farmer turns over his soil, leaving it exposed to the winter's frost. (2) The excessive rainfall during the late fall saturates the upturned soil and when the cold weather comes on, it is frozen solid, and, in the spring, when these lumps of earth thaw out they crumble into a finely pulverised mass. The soil-water, on freezing, has expanded and thus burst asunder the particles of soil, and, as a result, when the harrow is used these lumps of soil are brought into a fine state of division and

(1) Does this mean  $5\frac{1}{2}$  months old or what?—Ed.

(2) Yes; but, too often he "does not believe in fall-ploughing."—Ed.

are readily converted into a seed bed for the reception of the grain. This however is not the only object in fall plowing. It brings the undersoil into relation with the atmosphere, and the oxygen of the air is a powerful disintegrator acting upon any compounds of iron which may be present; the rains also bring to the ground large quantities of carbonic acid gas, which has a very powerful action on soils containing lime, forming compounds which are available as plant-food. Much ammonia is also brought by rains to the soil, and a bare, loose surface will absorb a considerable quantity of it; it has a special action forming nitrates in the soil which are held in reserve for the production of vegetation when it is required.

It is impossible to lay down any set of rules for plowing either sod or stubble, as soil of a sandy nature requires somewhat different treatment from stiffer soils. When plowing clay land in the fall the furrows should be so turned over as to lap on the preceding and lie at an angle of 45° and to accomplish this the depth of the furrow should be two thirds of its width. Thus, a furrow six inches deep should be about nine inches wide; and if eight inches deep, it should be twelve inches wide but the six by nine inches furrow is preferable. (1) This will allow of the furrows lying regularly and evenly, and in the proper position for the drainage of the soil, the free circulation of air, and the most efficient action of the frosts, which in this way have access to every side of them. The width of the ridges should depend upon the lay of the land, the condition of the subsoil and the provision made for drainage. If flat and retentive, the lands or ridges should not be wider than one rod; (2) there should be a gradual and even slope from the centre of the ridge to the furrow, to allow the easy escape of surface water. Where the land has a fair fall, and is less retentive in character, the lands may be made wider, even up to twenty five yards. While the foregoing is particularly applicable to fall plowing, the same general rules may govern spring plowing, at this season it is good practice to attach a skimmer. This skimmer fastened to the beam just behind the coulter is set to pare off a sod a couple of inches (3) in thickness and invert it in the bottom of the previous furrow. The plow then throws up the lower soil completely, burying the inverted sod, and gives a loose, mellow surface to the field. This with one or two harrowings forms an excellent preparation for any grain crop.

Sandy or dry soils require flat plowing. (4) To ensure this on an old sod the depth should be about half the width and the lands as wide as can conveniently be made, so as to preserve as much uniformity of surface on the whole field as possible. It has become a rule with the best farmers of the present day to skim their stubble land as soon as possible after harvest is taken off with a gang of plows. (5) This plow-

(1) We prefer 7x10.—Ed.

(2) In England, on heavy land, half a rod; so that the horses, harrowing, drilling, &c., may walk in the open furrows, thus avoiding "poaching" the land.—Ed.

(3) One inch is enough.—Ed.

(4) With this we disagree.—Ed.

(5) The surface should never be turned under but kept atop. No plough, but a grubber. As for the addition of fertility, that is infinitesimal.—Ed.