

Soils and Crops

Address communications to Agronomist, 73 Adelaide St. West, Toronto

Hog Rations and Methods of Feeding as They Affect the Finished Product.

Food supply as well as heredity exercises a controlling influence on the character and development of the growing animal. In order to attain maximum development, the normal individual requires certain specific food constituents in well defined quantities. A failure to supply these or an abnormal supply of one or more of the required elements will result in more or less altered character and development.

The animal body is constructed from fourteen chemical elements and because these are not all available in any one food it is necessary to resort to a variety of feeds in order that the body tissues may be permitted to function normally. The fact that some feeds contain certain of the elements in greater proportions than others has been utilized as the basis for the proper computing of rations for the needs of the particular individual has been derived. It has been convincingly demonstrated that different animals and also the same animal at different stages of development require the various elements in different proportions. Throughout the earlier stages of an animal's life, while the body tissues are growing and developing, there is a proportionally greater mineral and protein requirement, these being utilized in the formation of bone and muscle, and a relatively smaller amount of energy-producing food requirement such as is obtained from the fatty portion of the feed.

For the production of pork, particularly during the early part of a pig's life, feeds with a high content of protein and mineral matter should be supplied. In this connection, it is noteworthy that the feeds which are rich in protein are also usually high in mineral matter or ash, while the feeds which are high in fat are relatively deficient in mineral matter. As the pig develops and matures, the proportion of the protein and mineral matter is decreased and the fat or energy-producing part of this ration is increased to satisfy the body requirements. Should the young growing pig be reared on a ration materially deficient in the bone and muscle forming material, the individual thus fed will be undersized, fine boned, lacking in muscling, and will mature earlier than would a similar individual fed a good growing ration high in protein and mineral matter content. Young breeding stock which has been reared on a highly fattening ration such as corn frequently suffer from impaired fecundity. It will, therefore, be observed that the hog destined for the block at the earliest possible date may be forced with such a feed as corn or its by-products, swine that are destined for bacon production must be fed a higher protein ration which is conducive to the production

of a longer pig and also one that is less heavily fleshed.

Self-fed hogs in the main make greater gains than trough or hand-fed hogs, but these gains frequently cost more to produce. The trough feeding method, on the other hand, is more suited to produce bacon hogs because the feeder can regulate the feed to the needs of the hogs and keep them growing without their becoming gorged, as is frequently the case on the feeder. While more or less spread must be and is allowed in the feeding of swine, the following deductions can be accepted as satisfactory under ordinary conditions for raising young pigs.

About three weeks before weaning a creep should be supplied where the young pigs learn to consume meal and milk. In order to realize the best results milk by-products are almost a necessity both at this stage and for some considerable time after weaning. Middlings, and finely-ground or rolled oats, either fed separately or together in varying proportions, make a very satisfactory meal to feed the young pigs. After weaning, which is done to best advantage at about six weeks of age, feed a daily ration of about one pound of the following mixtures: oats, shorts and linseed meal or flax seed meal mixed in the ratio of equal parts of oats and shorts with the linseed composing about 5 per cent. of the total mixture with also an addition to this ration of five pounds of milk by-products. Soaking the meal in the milk for twenty-four hours previous to feeding improves the palatability.

Pen fed hogs make the most rapid and economical gains and generally this method is preferred for the production of market hogs. Alfalfa or clover fed in racks is the most satisfactory for hogs fed in pens. Whole dry grain such as corn or oats scattered through the litter tends to make the pigs take exercise. The meal ration should be gradually increased until at six months of age three or more pounds of meal are being fed. Corn or barley meal should gradually be added to the ration until these feeds compose 6 parts, with the remainder of the ration composed of three parts of shorts and 5 per cent. of linseed oil meal or flax.

The paddock or pasture lot is most desirable for rearing young breeding stock as soon after weaning as conditions permit. Alfalfa and clover occupy first place as pasture crops with oats, barley and rape ranking second. Similar rations should be given these pigs as those given market hogs, except that the ground corn should be wholly or partially substituted with ground oats or barley. Undoubtedly the most satisfactory method of rearing young breeding stock is on paddock, because the growth of bone and muscle and the constitutional vigor thereby encouraged cannot be realized under other conditions.

The Experimental Farm System.

The second of the series of articles describing the work carried on by the Dominion Experimental Farm System is given in the March-April number of The Agricultural Gazette of Canada. It is the story of the Prince Edward Island Station established at Charlottetown in 1909. The land occupied covers an area of 29 acres, is conveniently situated about a mile north-east of the business section of Charlottetown, and is intersected by the Prince Edward Island Railway. Research work, experiments and demonstrations are carried on in every branch of agriculture, with special regard to the climatic and soil conditions of the island. One result has been the origination of Charlottetown No. 80 barley which has been found to average eight bushels per acre more than any other barley.

In co-operation with a number of farmers, experimental investigation has been carried on to determine the variety of oats best suited to Prince Edward Island conditions. In two tests, the first covering five years, and the second one year, Banner oats have proved the leading variety, yielding more than Old Island Black, Ligow and Victoria. Every promising variety of cereal originated through plant breeding at the Central Experimental Farm, Ottawa, is tried out at Charlottetown. In tests with alfalfa and red clover the latter has proved to be the better forage crop for the island. Timothy stands in the first place for hay. Tests in soil cultivation have shown that rolling just before seeding with a drill gave better results than deep plowing was better than shallow plowing, and that early autumn plowing of the soil resulted in much better crops than spring plowing. Investigations in live stock breeding and feeding have proved a source of reliable information for the island farmers, and at an annual auction sale information is given of the feeds supplied, of the methods of feeding, and the weights and gains of the animals. An evidence of the advance in dairying is furnished by the fact that an Ayrshire cow at the farm has given 16,444 pounds of milk and 682 pounds of fat, a percentage of 4.02, in 365 days. All the cows kept are registered in the Live Stock Branch's Record of Performance. However, it is poultry prides itself on, for it was there that the Dominion egg-laying contest started in 1918. From this beginning came about the Record of Performance and Registration of Poultry which in these respects has placed Canada in the foremost position. The Experimental Farm System has adopted 150 eggs as the minimum of production in the pullet year.

Small birds build small but complete nests.

The price of feed does not always disclose its real value in making eggs.

Experimental Farm Facts.

A brief study of the reports of the various Dominion experimental farm superintendents makes evident the fact that they contain much that is of value to the farmer. By writing to the Publications Branch of the Department of Agriculture, Ottawa, a copy of the report of the nearest farm or station for the district can be obtained. Numerous experiments are conducted at these farms and they are frequently so designed as to deal with local problems. At Beaveridge, Alberta, for instance, some special experiments with alfalfa seed inoculations have been conducted. At Brandon, Man., we learn that cleaned screenings have been fed to horses with success to replace part of the oats previously fed, and that the screenings should be mixed with bran. For over two years, while this mixture was fed, there were no digestive troubles and the horses appeared to keep in better condition than before. At Scott, Sask., we learn that when barley was a little higher in price, screenings were profitably fed to lambs. From the farm at Nappan, N.S., we are informed, experiments in feeding steers have proven that cheaper gains can be made by feeding a cheap grade of hay along with ensilage corn, and that ensilage corn has a higher value in feeding steers than have roots. At Kapuskasing, Ont., tests have shown that on dry knolls or any soils lacking in moisture, better results may be expected from seeding alfalfa without a nurse crop than with one. Regarding sunflowers, the superintendent at Invermere, B.C., reports that the yields obtained compare quite favorably with field corn. These extracted statements by no means convey a fitting idea of the large amount of information to be obtained in the reports of the superintendents, but they illustrate in a very limited way the facts that are forthcoming.

A Good Early Corn.

Early Malcolm table corn originated at the Central Experimental Farm, Ottawa, has given excellent satisfaction and is well worthy of a wide distribution. It seems to be about ten days or two weeks earlier than the Golden Bantam and has good quality. The Dominion Horticulturist, Mr. W. T. Macoun, reports on it as follows: "The Early Malcolm corn was obtained by selection from the Early Malakoff, which variety was introduced from Russia by Prof. Hansen, of South Dakota. The selection was begun in the Horticultural Division at Ottawa in 1909, and by 1913 the variety was so changed that it was decided to name it the Early Malcolm. Since that time it has been steadily selected for better ears and earliness. This variety has become very popular, and seed firms both in the United States and Canada are now offering it for sale and are eager to get seed. The average length of ears is six inches and number of rows to the ear twelve."

Don't Wake the Baby

His Entire Future Health Depends Upon Abundance of Sleep Now.

By Water A. Loops, M.D.

Human beings have been defined as "bundles of habit," and habit as "the result of repeated action." It is of vital importance then that actions be properly directed so that both habits and individual may be what they should.

The normal, new-born infant will sleep nearly all the time, twenty to twenty-two hours out of the twenty-four. He should wake only when disturbed by hunger, pain or other cause. As age advances, the amount of sleep required is less. At six months, about sixteen hours; at one year, about fourteen hours; at two years, about twelve hours. Day time naps should be continued as long as possible. School children need—and should have—the following amounts of sleep:

Years	Hours
4	12
5 to 7	11
8 to 11	10
12 to 14	9

The best procurable sleeping accommodations should be provided. The child should sleep by himself and wherever possible in his own room; never should he be permitted in the same bed with a person who has a cold or a chronic cough or in fact any physical ailment.

The sleeping room should be kept cool. During the first three months the temperature should be about 65 degrees. After that time the room may be kept at 55 degrees or lower. Babies—as well as adults—usually sleep well in a good bed, not a cradle, with clean suitable coverings, in a cool, well-ventilated, darkened, quiet room. Protection from flies, mosquitoes and too sudden temperature changes should always be provided. The average healthy infant will usually get hungry enough to wake about every three hours. If he is asleep at regular nursing time he should be gently awakened. On the other hand, if he wakes before it is time to nurse him, he should not be given his food until the hands of the clock come around to the appointed place.

A sufficient amount of exercise will help induce refreshing sleep. It may sound ridiculous to talk of exercise for

a baby because the majority of people associate the word with Indian clubs, chest weights or a "buck saw." During the first year an infant gets his exercise by crying and thrashing his arms and legs about, provided he is unhampered with improper clothing. He should be permitted to cry from fifteen minutes to a half hour or more each day. No, this is not cruel or inhuman advice. Baby actually needs this amount of gymnastics to develop properly. The habit of picking the baby up every time he cries is, after all, more often for the relief of some adult's distressed nerves than for doing the best for the baby.

Children's sleep should be naturally sound and unbroken. When, as a rule, it is not so, an investigation should be instituted. The diet may be at fault, are early suppers of easily digested foods. They should not be permitted to come to the table for the evening meal, especially if meat and fried foods are served. It is not wise to tempt and deny them. To indulge them is wrong. Poor ventilation, overheating or insufficient bedding may cause disturbed sleep; as may also a misused pin, wrinkled bed or clothing, cramped position or thirst. Much of the restlessness with which many children are affected may be due to the presence of adenoids or diseased tonsils. Too much excitement—either play or discipline—more especially shortly before bedtime may produce a like result.

Quieting medicines or soothing syrups should never be given to children without the specific direction of a competent physician. Most of these preparations contain morphine or some other form of opium. If a child is restless there must be some cause for it and the only treatment worthy of the name is the removal of the cause. Drugging the child with sedatives only conceals the symptoms of the underlying condition. Then the child's system has to overcome the poison. Mothers and nurses who do not know the effects of sedatives may exceed the dose prescribed and thus put the little life into danger of the sleep from which there is no awak-

THE SUNDAY SCHOOL

MAY 14

Hezekiah Leads His People Back to God, 2 Chron. 30: 1-9
13. Golden Text—God is gracious and merciful, and will not turn away his face from you, if ye return unto him.—2 Chron. 30: 9.

Lesson Foreword—Hezekiah, king of Judah, has been described as a man of a steady purpose. In B.C. 701, during Hezekiah's reign, Sennacherib of Assyria invaded the land and captured forty-six cities, but after unsuccessfully besieging Jerusalem was compelled to withdraw. This shows the difficulties of Hezekiah's reign. All the more credit is due to him that under these circumstances he was able to institute religious reforms. 2 Chron. 29 describes the cleansing of the temple of its idolatrous apparatus. Influenced and guided by the prophet Isaiah who prophesied during his reign.

I. Hezekiah's Purpose, 1-4.

V. 1. The temple had just been cleansed of its idolatrous objects and had been solemnly dedicated again to the worship of Jehovah, ch. 29. Ephraim and Manasseh were the two most important tribes of the northern kingdom of Israel. A few years before this, in B.C. 721, the northern kingdom had fallen before the Assyrians. Only a remnant of the people remained and they were without a king. While the two kingdoms had not worshipped together since the time of Jeroboam (1 Kings 12: 26-33), probably Hezekiah considered himself responsible for the religious condition of the northern kingdom. Hence he asked for their co-operation in the observance of the festival. Come to the house of the Lord at Jerusalem. The earlier law appears to have allowed each man to observe the feast in his own home and required him to smear the door-posts of his house with the blood of the lamb (Exod. 12: 7), but the later law required the passover to be observed in Jerusalem only. Deut. 16: 5, 6.

V. 2. Before the invitation was sent out the king had held a council with the political leaders and the religious authorities regarding the matter and they supported him in his endeavor to bring all Israel to the newly sanctified temple to observe the passover. In the second month, the regular date was on the fourteenth day of the first month (Num. 9: 1-5), but provision was made in the law that persons unable to keep that date should hold it in the second month (see Num. 9: 9-12).

V. 3. Pleased the king, etc. This refers back to the general council mentioned in v. 2.

V. 4. Hezekiah's Proclamation, 5-9. V. 5. The decision of the king-in-council to hold the passover was published throughout the land. From Beersheba even unto Dan, Beersheba, whose name means "Seven Wells," was a town on the southernmost limit of the land of Judah; it had been a sanctuary from very ancient times. Dan was the northernmost town of Israel. It was situated at the base of the Lebanon Mountains and, like Beersheba, had been a sanctuary. So Hezekiah appealed to the whole nation of Israel to come to Jerusalem to the passover. The cleansing of the temple had been undertaken chiefly by the people of Jerusalem. They had done it, etc. Evidently the passover had fallen into disuse for a period or it was observed by only a few. Josiah at a later date had to revive it again (see 2 Kings 23: 21-23).

V. 6. Posts; runners or messengers from the king. They would likely bring the king's proclamation to the elders of each town or village and the latter in turn would inform the people of it. The Lord God of Abraham, Isaac, and Israel. The proclamation before we went in, I know that I'm going to get this job. I just feel it in my bones. The man took us both together and asked us a lot of questions, and when he got through he laughed and said, 'Well, which of you kids am I going to give this job to?' And Tom said, 'To me, of course.' I told Phil so just before I stepped into the store, didn't I Phil? And of course I had to say he did. And when the man asked me if I didn't feel that way, too, I said I didn't expect to get it.

"And then did he advise you to go and join the navy?" asked Uncle Jim in his surprising way.

"The navy? Why, no. Why should he send me to the navy?"

Uncle Jim smiled. "Well, not really to the navy," he said whimsically; "just to the navy yard where they make the flags for the navy—some to be used constantly, others frequently, others sometimes, and others only possibly—in case of going to some remote foreign port. But among all those hundreds of different flags there is not one flag of truce. If ever an emergency arises that calls for one, somebody hunts up a sowl or an old shirt, and ties it to a stick, and hoists that. But the navy flag is prepared to run up a white flag."

Phil's face glowed. "Fine!" he said. Then suddenly he caught a glimpse of the twinkle that was beginning to dance in Uncle Jim's eyes. "Oh, no," stammered. "Oh—I see. You mean—that—that—"

"That the next time I sailed out of port, I shouldn't have my flag of truce quite so much in evidence, that's all," said Uncle Jim. "People are likely to misunderstand those signals."—Youth's Companion.

THE CHILDREN'S HOUR

The Flag They Do Not Carry.

Even an eye less keen than Mr. James Preston's would have been able to read at a glance the distress signals that his Nephew Phil was flying as he entered. The drooping mouth, the sagging shoulders, the frown on his forehead, were there for anyone to read.

"Why, how-de-do, Phil?" he began quite as usual. "Which one of the jobs did you get?"

Phil slumped into a chair. "None," he answered briefly. "I knew there wasn't any use in going. Saunders wanted a fellow that was older and had more experience."

"They didn't say anything about age in their advertisement, did they? And that work you did for Judge Morris was quite in line with what they would be looking for. Didn't they see that?"

"Oh, I didn't say anything about that to them. What was the use? As soon as they asked about my age I knew that they wouldn't take me."

"All settled, eh? What about Henry Riker?"

"Oh, I didn't go to Henry Riker's. Just as I got to the corner of Centre Street I met Thomas Haynes coming from there, and he said there was a fine lot of at least fifty fellows waiting to get it. I did go to the Otis Company, and that's all the good it did. Tom and I both went."

"And how many others?"

"Nobody else."

"And Tom got it?"

Phil nodded, and the flush on his cheek deepened. "Well, I couldn't help it, Uncle Jim," he said. "Tom said

Medium weight hofs of any variety are usually most profitable.

Arguments win few friends.

Poultry

Feeding the Young Chicks.

When the chicks are taken from the incubator, they are put around the hard cold brooder stove. The floor is covered with sand and fine gravel; also some crushed burned bone. They begin almost at once to eat of both. Then when they are forty-eight hours old, they may have sour milk, in partly covered dishes which they cannot drown in it.

If sour milk is available, I do not give water until the chicks are three weeks old. My experience is that chicks around artificial heat will drink so much water they become sick. If water is given it should not be cold and should be removed after a few moments of drinking. After three weeks they may have it all the time.

Chicks should not be fed until past forty-eight hours old. Then the first feed is hard-boiled eggs with powdered charcoal and pulverized burned bone well mixed with it, one egg to about one hundred chicks. I only feed two or three times the first day of feeding as there is so much danger of over-feeding when so young.

The second day use egg, charcoal, burned bone and rolled oats may be added or a small amount of chick feed. Feed four or five times. The third day I still use egg, charcoal, burned bone with other feed mixed in. We have used cracked corn and rolled oats or steel cut oats mainly for two years though I really think a good commercial chick feed rushes them along better.

When corn is the main feed I bake corn bread until the chicks are three or four weeks old, giving only one feed a day of raw corn. Never feed corn bread hot or sour. Never feed chicks any kind of musty feed. In the little fellows are a week they may have a little wheat bran feed for a week. Then larger chicks until three weeks old, I give them to give them a hopper full parts of bran and middlings. If any toe pecking takes place, I scrape in a feeder, are available, dig and every day. The chicks are in the soil and I also give them

The Dairy

Green Onions, Cabbage, and Often a Large Raw Potato. I like to keep granulated charcoal in a feeder from the start. They eat much of it and it is a guard against disease. Their sand floor must be cleaned and new sand and gravel added to keep them supplied with grit. I throw their feed to them until they are six weeks old.

After that both mash and grains are put into a self-feeder from which they may help themselves. A barrel of water with a spigot placed under a tree makes an ideal waterer that does not need to be filled often. With a shallow trough under the tap, a slight turn keeps the water dripping just enough to keep a good supply before the chicks at all times. After the chicks get old enough to take all their feed from the self-feeders they are but little additional work.

In changing the herd from dry feed to pasture it is advisable to make the change rather slow, especially with heavy-milking cows. Early pasture always contains a high per cent. of water and a low amount of dry matter. It is next to impossible for heavy-milking cows to consume enough of such feed to supply the necessary amount of nutrients to maintain maximum milk production.

I find it a splendid practice when turning to pasture in the spring to continue feeding the winter ration in such amounts as the cows will readily consume. If the herd is allowed to pasture only a half-day at a time for the first week or two, most of the cows will continue to eat a good ration of both roughage and grain at night and two after being turned to pasture the cows may not take well to the roughage feed, but in a very short time they will gradually come back to their regular ration. Another reason why the change from dry feed to pasture should be done gradually, is that the sudden change produced a marked taste in the milk which, if supplied to retail trade is very likely to cause some dissatisfaction.

A mixture of blue ointment and half pound of tallow makes a good louse killer.