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POULTRY RATIONS and Feeding Methods

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POULTRY SECTION OF MANITOBA FEED BOARD

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POULTRY FEEDING

Poultry production in Manitoba centres largely on farm where ample supplies of grain are grown. This can and should lead to low-cost, efficient production. Grain in some form may comprise 75% to 90% of a well-balanced poultry ration. Frequently, however, a full grain bin means careless or indifferent feeding because no attempt is made to balance this ration properly. One must include all the essential nutrients in order to obtain a profitable rate of growth or egg production. The poultry raiser who must buy all his feed knows this full well, and in addition he aims to sell only high quality products; otherwise he cannot continue long in business. The purpose of this publication is to encourage the efficient use of feed on Manitoba farms where poultry and eggs are being produced. It is the poultry keeper's responsibility to market well-finished birds, and eggs of the best quality, in order to secure maximum returns in relation to feed and other costs.

ESSENTIAL NUTRIENTS

The following six classes of nutrients are essential to life, growth, production and reproduction in all classes of poultry. Nature supplies most of these essentials in the form of pasture, bugs and insects, gravel, grains and seeds, sunshine, etc. Indoor feeding of young or adult poultry, places full responsibility on the attendant to supply these same requirements in some form or another and in adequate but not excessive amounts.

1. **WATER**: Birds can live longer without food than without water. Lack of a consistant supply of fresh water hinders the growth of young poultry; it leads to low egg production and early moulting in the laying flock.

2. **PROTEIN**: This is usually the most expensive feed material, but the one most likely to bring profitable results if properly used. Protein from animal sources – milk, liver, fish scraps, meat or meat meal – is more effective in promoting growth and egg production, than protein from most vegetable sources. Grains alone are entirely inadequate in amount and kind of protein. Excess protein has a forcing effect which may be detrimental to poultry of any age.

3. **CARBOHYDRATES**: These are the starchy materials in grains and grain products. Only a starved flock will lack for carbohydrates. They supply fuel and energy, the excess going to form fat in the body or egg.

4. **FATS**: Some fat is present in practically all feed materials. An excess of fat from fish oil or meat and fish products may cause digestive upset in birds, and lead to such disorders as fatty degeneration and “crazy chick disease”.

5. **MINERALS**: Calcium carbonate (from limestone or gravel, clam or oyster shells, bone, etc) in the presence of Vitamin D, forms most of the egg shell. Calcium and phosphorous make up the major part of bone; but excess phosphorous (from bone materials) may immobilize the manganese in the diet, leading to crooked bones and slipped tendons in chicks and poults. Salt supplies some essential minerals. Green feed contains small amounts of certain highly important minerals.

6. **VITAMINS:** The naturally speedy growth of young poultry soon reveals any vitamin deficiencies in their rations; hatching of eggs is a critical test of the vitamin content of a breeder diet. Most commonly lacking in Manitoba diets are:

   (1) **Vitamin A** (from green feed, yellow corn and fish oils). Vitamin A protects against colds and infections.
   (2) **Vitamin D** (in marine fish oils and synthetic products, or formed in body when exposed to ultra-violet rays of sun). Vitamin D aids in laying down of mineral in shell or bone, and in preventing leg weakness and rickets.
   (3) **Riboflavin** (in milk, liver, yeast, green feed, synthetic riboflavin, etc.). Riboflavin promotes the growth of chicks and poults, both in the egg and after hatching; hence it is one of the most important factors in hatchability. Riboflavin prevents nutritional or curled-toe paralysis in young chicks.

FEEDS

Wheat usually is one of the best grains for poultry feeding, although a proportion of course grains in some form should always be included in the ration, along with wheat. In seasons of rust or frost, when wheat is shrunken, more should be ground and fed in mashes and less in the scratch feed. Either hard spring or Durum wheat may be used.

Oats vary considerably in feeding value, due to difference in hull. They can be fed whole as part of a scratch feed, or in mashes in the crushed, rolled, or finely ground form. If light, sift out the hulls; poor quality oats frequently have so much hull as to be of little use for poultry feed.

Barley will work well as part of the scratch feed and in mashes in crushed, rolled, or finely ground form. Ordinarily it is not quite as

palatable as wheat or oats; still in seasons when these two grains are of poor quality and the barley is fair or good, more can fed in the different forms, or even as boiled or soaked barley, with very good results.

Corn is a very desirable grain fed whole, cracked or ground. Ripe corn on the cob may be fed to hens and turkeys. Shelled corn may be used with other grains as scratch feed. Corn chop could be included in any of the dry mash rations listed in this circular. The corn, if not thoroughly dried, should be mixed with the other chop in the mash immediately after grinding.

Millet (proso or hog millet), where grown, may be used to good advantage in growing, laying, and fattening rations. Millet may compromise up to one-third of the whole grain fed, and up to one-third of the chop mixture in dry mashes.

Rye is not as palatable as wheat, oats or barley, but can be fed in limited quantities as a scratch feed or in mashes along with two or more of the other grains. In large quantities it is likely to cause digestive disorders.

Flax is high in protein and fat. A small amount may be fed in the whole or ground form in mashes during the moulting season and fall and winter months. Linseed oil cake meal may also be used.

By-products of grain (such as wheat middlings, shorts, bran, barley meal, oat flour, oat middlings, and oat feed) have a place in poultry feeding, especially where feed must be bought. They may be higher in price than the whole grain, and if used should be fed for a specific purpose, such bran, shorts or middlings in growing and laying rations, and oat flour, oat middlings, oat feed, or barley meal in fattening rations.

Skimmilk and Buttermilk are Excellent for all Classes of Poultry but especially valuable for young chicks, laying hens and fattening birds. Milk supplies the vitamin riboflavin which is indispensible to high hatching quality in eggs. As a desirable protein supplement, milk undoubtedly heads the list.

“Concentrates” and “Balancers” are especially prepared supplements put up by feed companies. They should be added to home-grown chopped grains in proportions recommended by the manufacturers.

Fish Oils (cod liver oil, pilchard oil, etc.) are used in chick rations, in winter laying rations and in rations for producing eggs for hatching, as a source of Vitamins A and D when the supply of green pasture and direct sunshine is limited or lacking. Standard fish oils for poultry should contain 1,250 units or more of Vitamin A, and 200 A.O.A.C. units

or more of Vitamin D, per gram. If fed in dry mash the oil should be mixed first with a small quantity of ground wheat.

RATIONS FOR GROWING CHICKENS

STARTER RATIONS:

Young chicks require a diet rich in protein and certain vitamins, with a carefully balanced mineral content. Two pounds of chick starter dry mash will feed one chick up to about six weeks of age. After that, in the case of the birds to be reared to maturity, a cheaper ration with increasing amounts of whole grain may be used. Birds to be killed as broilers, however, should be kept on a more concentrated diet to promote the rapid growth essential to profit in broiler raising.

While one may mix chick starter at home, the simplest plan is to purchase 200 pounds of commercial chick starter mash for each 100 chicks. Choose a brand that is flaky or mealy, avoiding the less palatable finely ground mixtures that tend to paste inside the chick's mouth. The dry mash should be stored in a cool dry place and fed fresh daily.

Start feeding the chicks as soon as they want to eat. Place dry mash on clean egg-case flats (cup type) or on clean cardboard, at several points around the brooder, with possibly a little cracked wheat or chick scratch grain sprinkled over the mash. After two or three days, when all the chicks have learned to eat, place the dry mash in self-feeders. The usual method is to keep dry mash continuously before the birds, though some people prefer to lift the feeders for an hour at a time during each half day.

Provide a constant supply of fresh drinking water in clean chick fountains. Place hard insoluble grit or fine gravel in pans or hoppers separate from the feed. In addition to the dry mash a little cracked wheat may be fed at three weeks, and a little whole wheat after four weeks.

	Chick Starter No. 1	**Turkey Starter**
	lbs.	lbs.
Coursely Ground Wheat	30.0	25.0
Coursely Ground Oat Grouts	18.0	10.0
Medium Ground Barley	15.0	15.0
Finely Ground Oats	10.0	10.0
Wheat Bran	5.0	5.0
Meat Meal (60% Protein)	5.0	10.0
Fish Meal (67% Protein)	5.0	10.0
Milk Powder	3.0	4.0
Alfalfa Leaf Meal	5.0	7.0
Linseed Oil Cake Meal	1.5	1.5
Fine Oyster Shell or Limestone	1.5	1.0
Fine Iodized Salt	0.5	0.5
Fish Oil (200 D)	0.5	1.0
Manganese Sulphate (see below)		
	100.0	100.0

To each ton of chick or turkey starter mash, add 4 ounces of powdered Manganese Sulphate, pre-mixed in the salt. Thoroughly mix the fish oil into part of the wheat chop until no lumps are left. Add each ingredient in a thin even layer over the previous one, starting with the ingredients in the greatest amount and ending with the smaller amounts on top. Shovel from the bottom of the pile, turning the mix three times.

Chick Starter No. 2

Suitable if chicks will have good pasture at 2 or 3 weeks of age

Coursely Ground Wheat	40 lbs.	**Milk** to drink.
Oat Chop (sift out coarse hulls)	25 lbs.	
Barley Chop (sift out coarse hulls)	25 lbs.	**Alfalfa** or **Clover** chaff or other green feed, until chicks are on pasture.
Meat Meal (60% Protein)	10 lbs.	
Fine Iodized Salt	½ lb.	**Fine Gravel** and **Oyster Shell** in separate pans or hoppers
Fish Oil (200 D)	½ lb.	

GROWING RATIONS:

After the chicks are five to six weeks old they may be changed gradually to a coarser and cheaper mixture, e.g. ½ starter mash and ½ growing mash during the sixth and seventh week.

Growing Mash (in self-feeders)

Ground Wheat	100 lbs.	
Ground Barley	100 lbs.	Oyster shell and gravel, or limetone grit, in separate pans or feeders.
Ground Oats	75 lbs.	
Meat Meal	25 lbs.	
Fine Salt	3 lbs.	

Whole Grains (in self-feeders)

(Whole Wheat, Whole Oats, and other available Grains)

To promote the growth of late hatched pullets or of market poultry, give milk to drink as well as water. Milk may be used to replace the meat meal in the grower mash, if a separate hopper of bone meal is provided. Reduce or omit meat meal or milk if pullets are maturing too rapidly. If pasture is dried up or lacking, add 20 pounds of alfalfa meal and 2 pound of 200 D fish oil to the above growing mash.

PASTURE:

A special effort should be made to provide tender green pasture throughout the growing period. Fall rye sown in the fall, provides early

pasture for early hatched chicks. One acre sown in the spring to a mixture of 2 bushels of fall rye and ½ bushel of oats, will carry 300 to 400 chicks through most of the season. Or a thick seeding of oats may be used on the start; then after alfalfa or clover hay is cut, the colony house or shelter may be move there to give the flock clean ground and fresh green feed. Keep pasture short by grazing or cutting. A few rows of corn may be planted to give shade and shelter.

Pasture lowers the cost of growing poultry. It reduces the amount of mash and grain consumed, and allows one to use a cheap and simple growing ration. Good pasture helps to grow sleek smoothly-feathered vigorous pullets, enabling them to withstand the strain of heavy egg production the following winter.

RATIONS FOR LAYING HENS

Egg production, to be profitable, must continue at a reasonably high level through most of the year. Hens turned loose to forage in the spring and only grain fed, soon lay themselves thin, cease laying, moult and spend the summer and fall growing new feathers; moreover any eggs they lay are likely to be of "barnyard" quality and low grade. Laying hens require some form of protein supplement in addition to grain and chop. Similarly they need more vitamin and mineral materials than grains contain. Most poultry raisers recognize the importance of the diet in winter egg production. Generous summer feeding is equally important, since profit depends upon a steady production of eggs.

A farm supplied with wheat and coarse grains, well-cured alfalfa or clover hay, and plenty of skimmilk, provides practically everything required in the laying diet. Some form of Vitamin D supplement is needed for winter or indoor conditions. Hens aren't likely to drink enough milk in cold weather to supply their protein requirement; this may be met by the use of laying concentrates or balancers, meat meal, fish meal, cooked meat or fish, etc. In any case the flock should have an ample daily feeding of alfalfa or clover leaves, or else limited pasture. Laying hens require a constant supply of oyster shells or limestone grit; also bone meal in a separate hopper when milk is used as the main protein supplement. **Provide fresh clean drinking water at all times, or as soon as the daily amount of milk is consumed.**

FALL CARE OF PULLETS

Generally speaking pullets starting to lay in the fall should be placed in winter quarters and fed a laying ration before egg production reaches 10 per cent. Those housed in August or September require a fenced run with good pasture, or plenty of feed in some form, to offset the change from free range.

RATIONS FOR LAYING AND BREEDING FLOCKS						
	Breeder or Winter Laying 1. Milk to drink	**Summer Laying Ration 2. Milk to drink**	**Breeder Rations (Dec. – June)** (Using commercial breeder concentrate mixture)		**Winter Laying Rations** (Using commercial laying concentrate mixture)	
			3. Breeder Concentrate	**4. Milk plus concentrate**	**5. Laying Concentrate**	**6. Milk plus Concentrate**
I. DRY MASH MIXTURE (in self feeder)			Concentrate with chop, per manufacturer's instuctions	Reduce amount of concentrate to ½ mfgr.'s instructions	Concentrate with chop, per manufacturer's instuctions	Reduce amount of concentrate to ½ mfgr.'s instructions
Ground Wheat	100 lbs.	100 lbs.				
Ground Barley	100 lbs.	100 lbs.				
Ground Oats	75 lbs.	75 lbs.				
Meal Meal (50%)	10 lbs.	15 lbs.	----	----	----	----
Fish Meal	10 lbs.	----	----	----	----	----
Fine Salt	3 lbs.	3 lbs.	----	½% of mash	----	½% of mash
II. **SUPPLEMENTS** (fed daily) (per 100 hens)						
Alfalfa or Clover	Daily	Daily*	Daily	Daily	Daily	Daily
Skim-milk to drink	2 gals.	3 gals.	----	2 gals.	----	2 gals.
Fish Oil (200 D)	1/3 cup	2 tblsp.*	2 tblsp.	¼ cup	2 tblsp*.	¼ cup*
II. **WHOLE GRAIN** (fed daily)						
100 Pullets (A.M.)	4 lbs.	----	4 lbs.	4 lbs.	4 lbs.	4 lbs.
(P.M.)	10 lbs.	10 lbs.	10 lbs.	10 lbs.	10 lbs.	10 lbs.
100 Yearlings (P.M.)	10 lbs	10 lbs.	10 lbs.	10 lbs.	10 lbs.	10 lbs.

*Omit in summer if birds have pasture (also omit morning whole grain in summer to encourage dry mash consumption).

IV. **MINERALS:** A constant supply of oyster shell and gravel, or limestone grit, in separate hoppers. Also – for rations 1, 2, 4 and 6 above – place bone meal in a separate hopper.

V. **MOIST MASH** (if fed): For 100 hens take 4 pounds of dry mash and moisten to a crumbly state with milk or water, first adding the fish oil to the liquid. Once started, it is advisable to continue feeding daily, in addition to the dry mash, throughout the laying season. (If moist mash is not fed, mix the fish oil with the whole grain and feed in a trough.)

WHOLE GRAIN: Various mixture such as 3 bu. wheat, 2 bu. oats, 1 bu. barley may be used.

GREEN FEEDS: Well-cured alfalfa or clover leaves or chaff are excellent. Carrots, cabbage, beets or mangels may be fed in moderation (not over 5 lbs. per day for 100 breeding hens).

Pullets should be housed separately from yearling or older birds. Keep pullets gaining in body weight each month of the fall and until about March. If they lose weight, neck moult or possibly a complete moult will follow, with consequent loss in egg production. To maintain body weight, feed in troughs all the whole grain the birds will eat in the evening, and about half that amount the next morning in dry litter or troughs; keep fresh dry laying mash before them, daily; and if necessary feed moist mash at noon. Excessively high production from pullets in fall and winter may lead to numerous double-yolked and shell-less eggs, feather-picking, prolapse, and cannibalism, as well as loss in weight and moulting. If production reaches 60 per cent, feed more whole oats, putting the oats in a trough before the birds all the time, in addition to the regular feed.

SOAKED ALFALFA FOR WINTER GREEN FEED

For 100 hens take 3 pounds of good quality second-cut alfalfa hay, run through a cutting box to one inch lengths, and soak overnight in a barrel of fresh water. Drain until noon, and feed in troughs.

This is a means of increasing the amount of green feed consumed by laying and breeding flocks while confined indoors. In some cases the feeding of soaked alfalfa serves to prevent or check feather picking and cannibalism.

RATIONS FOR BREEDING STOCK

A ration suitable for egg production, is not necessarily satisfactory for the breeding flock. To obtain high hatchability, the riboflavin content of the feed must be greatly increased. This is provided in milk, or specially prepared commercial breeder concentrates or balancers. Extra Vitamin D is required over the amount in laying rations. See Ration No. 1, 3 and 4 (page 29) for suggested amounts of milk, fish, oil, etc. Note that the daily feeding of clover or alfalfa leaves is recommended in all cases. Any change in feed must be made gradually. **The flock should receive the breeder diet a full six weeks or two months prior to saving the first eggs for hatching.**

FATTENING RATIONS

Fattening of poultry is likely to be disappointing unless the birds are in good flesh to begin with. Flesh is produced during the growing season, and if lost through improper or insufficient feeding it is difficult to regain. This means that market poultry should be well fed all summer. The cockerels might well be enclosed in a large yard to separate them from the pullets. Give the cockerels one feed of moistened mash daily in addition to the growing mash and whole grain. Provide plenty of green or

succulent feed during the growing season; also plenty of milk or water to drink.

Allow two to three weeks for the final fattening period. Wheat, oats and barely are satisfactory feeds for fattening.

	Ration No. 1	Ration No. 2	Ration No. 3
Ground Wheat	50 lbs.	100 lbs.	50 lbs.
Ground Oats	100 lbs.	100 lbs.	50 lbs.
Ground Barley	50 lbs.	100 lbs.	100 lbs.
Fine Salt	2 lbs.	3 lbs.	2 lbs.

Grind all the grains as finely as possible. Use No. 3 C.W. oats and barley; if lower grade sift out hulls.

For crate-fattening, mix mash with skim-milk or buttermilk to make a batter that will pour nicely. If milk is not available, add 7 pounds meat meal to each 100 pounds of grain and use water to make the batter. Feed lightly at the start, then all the birds will eat twice a day. **Give water to drink after each feeding.** For pen fattening feed wet mash two or three times daily. Boiled potatoes may be added to the wet mash.

The liberal use of skim-milk or buttermilk in fattening rations will tend to produce chickens that can be classed as “milk-fed.”

Whether fattening in crates or pens, allow twenty minutes for wet mash feeding, and do not leave any in the troughs from one meal to the next.

TURKEY FEEDING

The feeding of turkeys differs but little from that of chickens and laying hens. Young turkeys may be a little more exacting in their requirements than are chicks, and the growing turkeys and the adults will forage over a greater area than do chickens; otherwise there is little difference. Turkey poults must be taught to eat right on the start – failure to do this is a common cause of loss in brooder turkeys. Any lack in the ration will show more quickly in little turkeys than in chicks. This is especially true in the earlier hatches that are brooded indoors for the first few weeks, reared where there is a lack of green feed and sunshine.

BREEDING TURKEY RATION

Early in February the breeding birds should be given a good laying mash such as described for breeding hens in this bulletin. This involves the generous use of milk, clover or alfalfa leaves and cod live oil. Care should be taken not to let the breeders become over-fat prior to the breeding season.

TURKEY STARTER

Use commercial turkey starter, or the turkey starter mash listed on page 27, or chick starter No. 2 with doubled amounts of meat meal and fish oil. Use either liquid milk or dried milk as recommended. If the baby turkeys do not eat the dry feed readily, it is advisable on the start to moisten small amounts of the starter mash, using sour milk or eggs for moistening. The eggs should be boiled for 20 minutes and run through a meat chopper. These moistened feeds are given several times daily in addition to the dry starter mash which is kept before the birds at all times. Provide plenty of green food in the form of finely cut onion tops, dandelions and green alfalfa. Sprinkle the cut green feed on top of the dry mash.

Provide a supply of clean gravel and oyster shell in open hoppers from the start.

When turkeys are about two months old and on good pasture gradually change to growing mash similar to the one described for chicks. Also give sour milk to drink and hard grains in open hoppers. An extra feed daily of moist mash will stimulate growth. If milk is not available add an extra five pounds of meat meal to each 100 pounds of growing mash.

Move feed troughs and drinking dishes daily to clean ground, as a precaution against blackhead, intestinal worms, and other infection. Also endeavour to prevent young turkeys from mingling with the chicken flock.

There is always a danger of under-feeding growing turkeys because of their habit of roaming. Unless they get an extra feed at night when they return to the buildings they are likely to develop a framework with but very little fleshing. This is likely to make later fattening work very disappointing.

In fattening, restrict the range. As turkeys fatten, they roam less. In some cases they me be confined to a yard or building. They should never be put into fattening crates.

Continue hopper feeding both hard grain and dry mash and give one feed a day of soft crumbly mash, adding boiled potatoes, turnips or carrots. Give milk to drink, if available. Whole grains, boiled or soaked, adding the dry mash amd boiled vegetables, will also make a very good fattening mash. Wheat, oats and barley, in about equal parts, are satisfactory as a fattening ration. Oats give the desired white color to the carcass; for that reason it is recommended that a larger proportion of oats be fed than of barley. These feeds should be ground. Whole grains may also be used to lend variety. Corn is a good fattening feed, and on farms where grown its use is desirable, but it has a tendency, if fed in

abundance, to produce yellowness of fat. For this reason it should be fed only in combination with other grains.

RATIONS FOR DUCKS AND GEESE

Moist mash feeding should be followed almost entirley in feeding and fattening ducklings and goslings. Any of the farm grains, fed singly or in combination, ground fine, adding milk or water and finely cut green feed, will make a good growing ration. Keep clean sand or gravel available to the birds at all times. Feed five times daily on the start, the three or four times a day. To force growth and market early, put 10 pounds of meat meal in every hundred pounds of mash. To fatten, restrict range or confine in yards or pens, cut down on green feed, give wet mash twice daily and give plenty of milk or water to drink.