

use of the hydrometer you can determine the exact strength and value of your mixture. All the hydrometer readings should be made in a cool liquid, as free from sediment as possible. The more sediment, the higher and more incorrect will be the reading.

The fourth form mentioned—self-boiled lime-sulphur—is used as a summer spray for controlling brown rot and scab of peaches. It is not very extensively used as yet in this country, but can be highly recommended for the above purpose, as, if properly prepared, it can be safely used on the tender foliage of the peach.

At present, get busy with your winter spraying of lime-sulphur as favorable conditions appear. Spray peaches before the buds begin to burst; apples, at the greening of the bud; pears, after the buds have opened, but before leaves have developed too far; and cherries, plums, etc., between these other fruits. W. R. D. Wentworth Co., Ont.

Vegetables in the Young Orchard

Address delivered by A. H. MacLennan, O. A. C., at Short Course in Fruit-growing, O. A. C., 1912.

The growing of vegetables in young orchards is merely a problem of market gardening, except that the welfare of the young trees must be borne in mind, and the crops not allowed to encroach upon them.

The first thing to consider is the market for the vegetables and the facilities to reach that market. When that is decided, one may plant what suits his conditions the best.

Early Potatoes.—The seed should be selected the year before, and only those hills chosen that are still green and vigorous at time of digging. This should then be stored in a light cellar, so that the potatoes may get green, and the temperature maintained at 38 degrees F., or as near to it as possible. About six weeks before planting, the temperature should be raised to 70 degrees F., and the tubers set upright, with the eye-end up, so that the best and strongest shoot may grow; the others should be rubbed off. The system of allowing only one shoot to grow will produce fewer potatoes, but all of them will be of marketable size.

The ground should be thoroughly prepared. Three or four days before planting the furrows should be run, twenty-eight inches apart, and four inches deep. This will permit the soil to warm up more quickly and deeper. If one is using commercial fertilizer, it should be placed in this furrow and covered one-half inch with soil. The sets are then carefully placed in the furrow, nine inches apart, sprouts up, and then covered with a hand rake or single-horse cultivator. Care must be taken not to break off the shoots, or one will lose more than the time gained.

Varieties.—Early Ohio (earliest, but not a heavy cropper); Early Eureka (a week later and a heavy cropper); Empire State, Green Mountain, Davies' Warrior (main crop potatoes).

Late Cabbage.—The young plants must be started in a seed-bed that can be covered, because of the cabbage fly that appears in late May and early June. A plot 8 ft. by 12 ft. will hold enough plants to set an acre. The large-headed types should be planted about 36 x 24 inches, and the smaller early types 24 x 18 inches. When transplanting to the field, about half of the larger leaf-surface should be pruned off to reduce transpiration, and a batter of clay and cow manure should be made, in which the roots of the young plants are immersed and carried to the field. They should be taken from this and planted direct. This treatment will give the plants a start in the ground, because they have both moisture and fertilizer at hand in the shape of a film of this batter adhering to their roots.

Onions.—The soil for onions should be worked down very fine and level, and rolled, because the onion grows on the surface of the ground, and the seed requires to be barely covered. First of all, the seed should be tested for germination power.

There are two methods of getting the crop into the ground:

1. The seed may be sown with a drill in rows 12 to 14 inches apart, which will require four to five pounds per acre. The seed drill should be tested, and the sowing done accordingly, so as to be sure of sowing enough and not too much. This will save much tedious work of thinning later on. This system is suitable for all the medium-sized onions. If the sowing is done properly, no thinning will be necessary, as the small percentage of smaller onions may be used for pickling.

2. The seed is started in a hot-bed or greenhouse in February, and later transferred into the field. This will give a large onion, and is suitable for the onions of the Globe type.

POULTRY.

Eggs for Hatching.

Editor "The Farmer's Advocate":

Now that the time of year is at hand when the poultryman is considering the problems of replenishing his flock, it is well that he should consider a few of the factors which are of importance in regard to the selection of eggs for hatching purposes. A great deal of the failure experienced in poultry-raising may be directly attributed to carelessness in the selection of eggs. What uniformity of results could be expected when eggs are selected indiscriminately from a large flock of mixed breeding, from an egg-gatherer, or from a grocery store—eggs of all ages, shapes and sizes!

One of the problems of the poultryman is, "Shall I set eggs from my own flock, or shall I get new stock?" It has been demonstrated time and again that, on the whole, pure-bred fowl are more profitable than are those of mixed breeding. At any rate, the appearance of the flock and the results are more uniform. At the present time, when there is so much good stock in the country, there is no excuse for anyone keeping a flock of nondescript breeding. If you have not good stock, now is the time to set about getting stock, or eggs, for the nucleus of a new flock. Securing eggs is usually the cheaper method.

Some of the factors worthy of consideration in the selection of eggs are size, shape and color. These characteristics, though more or less similar for all members of the same breed, vary with individuals, and are very easily influenced by selection. The size of the eggs produced by a flock can be very materially increased by selection of the larger eggs. Contrary to popular opinion, the size of the egg does not influence the sex of the chick produced. Eggs for hatching should weigh at least two ounces each.

Shape and color of eggs are transmittable qualities, also. Only eggs of normal shape should be set, as eggs of extreme type tend to produce abnormal chicks. This also varies with individuals. Eggs set should be of uniform color, as the color of the eggs set will be reproduced in the eggs of another generation. White eggs are constant in color, but of tinted eggs, the medium brown is preferable.

Eggs with thin, porous or ridged shells should not be set, for, as a rule, they will not hatch, and, if broken, will injure the other eggs in the nest.

Besides the external qualities mentioned above, there are certain internal qualities, which are of more importance, and which are very difficult to determine, viz., fertility and hatchability. By fertility is meant the existence in the egg of a fertilized germ; and by hatchability is meant the power of this germ to develop into a strong chick, able to leave the shell. Hatchability is an hereditary quality, while fertility is not.

Fertility is directly dependent on the two parents, male and female, but is influenced by several factors—age, exercise and condition, and time of year. Infertility is caused by placing too many or too few females with one male. The number may vary from ten to twenty-five, with good results, depending on the male. In some cases the male is known to be sterile. Eggs from young and immature stock are likely to be low in fertility. In this connection, yearling hens are usually better breeders than are pullets. Cockerels, if used, must be well matured. Low fertility often results from great disparity in vigor of the male and females.

Confinement, though tending to force egg production, is not conducive to strong fertility. Similarly, stock which is extremely high or low in condition is not satisfactory to breed from. Strong fertility may be secured only from properly-mated, mature stock, in good condition, having abundance of exercise. In the winter and spring months the fertility is not as high as in the summer.

Hatchability, or "the ability of the egg to hatch," is transmitted chiefly through the female line, and can be determined only by hatching the eggs from each individual hen. However, this quality is influenced by several external factors. Eggs from pullets which have laid heavily during the winter season do not, as a rule, hatch as well as eggs from pullets which have not had this drain upon their systems. Any forcing foods, as wet mashes; stimulants, as mustard and pepper, and especially animal foods, excepting milk by-products, appear to have a detrimental effect on the hatching power of the egg; whereas green foods have, as a rule, a beneficial action.

In pedigree-breeding, two factors are of utmost importance—high egg production, and hatchability of the egg. To determine these, trap-nests are required for at least two years. The pullets are forced for egg production during their first year, to secure the highest possible record. Only the best layers are kept the second year,

when they are used as breeders, and their eggs are tested for hatchability.

In addition to the foregoing, eggs for hatching must be fresh—not over one week old, if possible—and must not have been subjected to extremes of temperature, and also must not be seriously jarred in any way.

"What is worth doing at all is worth doing well," surely applies to the poultry business. As chickens are much more cheaply produced from good eggs than from inferior ones, how important it is that the greatest of care should be exercised in the selection of eggs for hatching.

O. A. C., Guelph.

H. B. WEBSTER.

Winter Poultry Problems.

Editor "The Farmer's Advocate":

After reading about hens that lay 258 eggs each in a year, I feel almost ashamed of my hens, in sending in a report of their year's performance. The following account is from November 1st, 1910, to October 31st, 1911. The flock consisted of 95 pullets, hatched in April and May, 1910; 5 year-old hens, and 5 male birds.

RECEIPTS.

Eggs	\$216.09
Day-old chicks	8.50
Five male birds	4.80
Old hens	34.95
Pullets	18.20
Cockerels	61.96

Total

I have 100 pullets and 5 male birds left to replace those sold. I always kill or sell all hens before the first of November, as I think the pullets are the only ones that pay for their feed and leave a good margin of profit for care, work, etc.

January was the most profitable month, \$39.10; December showed the best price for eggs, 40c.; March, the greatest number of eggs, and November the least. The eggs were all sent by express to Montreal once a week, and eggs were all non-fertile after the 15th of May. Average price for the year, 22c.

The cockerels were sold alive, at about 3 pounds in weight, and realized from 16c. for early, to 12c. for the late ones.

The chickens were all hatched by hens, and moved to coops in the orchard when about a week old; each hen was given 30 chicks. They were extra healthy, and grew into fully-matured pullets by the first of November, when they were moved into the henhouse for the winter.

I always send away for eggs for hatching the male birds I want to keep, as nothing runs out a flock as fast as inbreeding. I think, for the average farmer, the Orpingtons or Rocks are the best for winter layers, are a good table fowl, and look well either alive or dressed.

If you want winter eggs, there are three things you must have, viz., well-matured pullets, a clean, dry house, well ventilated, and plenty of suitable feed.

Is it not better to sell one dozen eggs for 40c. than two for the same money? If you don't like hens, don't keep them. Keep something you like; but if you do keep them, use them as well as you can, and they will pay you as well as any other stock kept on the farm, and are not half the hard work. T. W. L. Bruce Co., Ont.

An International Poultry Organization.

Four years ago, the Poultry Instructors and Investigators of the United States and Canada formed an association for mutual co-operation and interchange of observations and experiences. At the last meeting, held at Orono, Maine, in 1911, a resolution was adopted in favor of an association embracing poultry workers in all the countries of the world. The growth of poultry work in nearly every country has been phenomenal during recent years, and conditions warranted the undertaking. A provisional committee, consisting of representatives of the various countries, has been formed. Canada is represented by Prof. W. R. Graham, Ontario Agricultural College, Guelph, and F. C. Elford, formerly Poultry Professor at Macdonald College, Ste. Anne de Bellevue, Quebec. Prof. James E. Rice, of Cornell University; Prof. Leon J. Cole, University of Wisconsin; and Dr. Raymond Pearl, Maine Experiment Station, are the United States representatives; while England is represented by Edward Brown, F.L.S.; Prof. F. V. Theobald, M.A., and C. E. J. Walkey. Scotland and Ireland have each one representative on the committee, viz., Prof. Will Brown, Kilmarnock, and Percy A. Francis, Belfast.

Arrangements are being made for holding the first meeting of this committee in London next July. Edward Brown, F. L. S., is the first president, and Dr. Raymond Pearl is acting honorary secretary, pro tem. It is hoped that much valuable information will be broadcasted amongst poultry keepers and fanciers the world over as a result of this movement.