The Proper Fertilizers

I am at a loss to know what kind of fertilizer is required for different varieties of flowers and vegetables. My soil is a light sand and for three years I have been putting cow manure on it, as much as I could work in, so that it is perhaps rich enough with that fertilizer. But I do not know what plants require lime or ashes or bone-meal, and so forth, and therefore cannot get the best results. Kindly give me the list of vegetables for a small family garden and the kinds of nutriment each requires. Will you please tell me the kind of fertilizer which will best produce flowers.—C. E. G., London, Ont.

In many cases it is quite impossible to tell what a soil is deficient in without experimenting, that is, applying certain fertilizers and noting the results obtained. All vegetables and flowers require three main fertilizing materials,—nitrogen, phosphoric acid and potash. A fourth may be added, namely, lime, but this constituent is generally present in ordinary soil in sufficient quantity, although some instances are known in which lime has been proven to be deficient. Where lime is lacking, the effect of an application may be most readily observed through the use of a small quantity on a small plot.

For garden crops, such as cabbages, cauliflowers, celery, tomatoes, beets, onions, carrots and potatoes, fertilizers applied at the following rates (in pounds per acre) have given good results:

Cabbage, cauliflower, celery:—Nitrogen, in the form of nitrate of soda, 200-400; phosphoric acid in the form of superphosphate 400-600; potash, in the form of muriate of potash, 150-250.

Beets and carrots:—Nitrate of soda, 140; superphosphate, 400; muriate of potash, 140.

Tomatoes:—Nitrate of soda, 120; superphosphate, 400; muriate of potash, 320.

Onions:—Nitrate of soda, 100; superphosphate, 500; muriate of potash, 160.

Potatoes:—Nitrate of soda, 100; superphosphate, 400; sulphate of potash, 200. You will notice that in the case of potatoes, the sulphate of potash is used instead of the muriate form.

All three of the essential plant food ingredients must be applied to the soil nearly in the proportions indicated in order to get the best results, but it must be remembered that no hard and fast rule can be given as to the quantities of fertilizers to apply, as these depend upon a great number of factors over which the producer has no control.

Under ordinary conditions fertilizers should be applied sometime before seeding except in the case of nitrate of soda. As this fertilizer is very soluble, and, therefore, liable to be washed out of the soil before the crop is able to make use of it, the larger part of the application should be made after the plants are singled out. The fertilizers should be sown broadcast either by hand or by a fertilizer distributor, and wherever possible harrowed in lightly. A further comment I would add here is that careful observation of the tests on his own garden will enable the producer to follow such a system of fertilizing as will give him the most satisfactory results.

For flowers or pot plants, it has been advised to apply the fertilizer in liquid form, as the plants have such a small soil space. In some cases good results have been obtained by simply applying the fertilizers and watering frequently. The following quantities per rod have, in some cases, given very satisfactory results: Three pounds of superphosphate, two pounds of sulphate of potash and two pounds of nitrate of soda.

For pot plants the following quantities may be tried: One part of nitrate of soda, two parts of acid phosphate, and one part of sulphate of potash. These should be applied once every fortnight or so at the rate of one-half to three-quarters of an ounce to the gallon of water.

In connection with these last quantities (namely, for flowers) I may say that the experimental work that has been done along this line has not sufficiently demonstrated the exact quantities of the materials to be used and I mention these amounts simply as an indication of what might be tried by way of experiment.—Prof. W. P. Gamble, Ontario Agricultural College.

The Time to Plant Ginseng

Ginseng growers recommend that ginseng be planted in the fall and not in spring. A number of enquiries about this point have been received by THE CANADIAN HORTICULTURIST. In reply to the question, Mr. J. E. Janelle, Caughnawaga, Que., writes as follows: "The spring season in Canada is not the proper time for ginseng planting. I would not recommend that seeds or plants be purchased in spring, particularly by beginners. Send your orders at any time, but they will be filled only in the fall."

The following letter was received from Mr. A. Twiner, Saugatuck, Mich: "Stratified ginseng seed planted in the fall will come up the following spring. When the plants first come up they resemble newly-sprouted beans, on account of having one little leaf stem and two leaves. During the first year, the plant attains a height of two or three inches. The work of the plant the first year, seems to be to develop the root and the bud at the top of the root, which produces the next season's stem and leaves. In the spring of the second year this bud produces a single straight stem which has two or three leaves on it and three leaves to a stem. During the second year, the plant grows four or five inches high. During the third year, the main stem has three leaf stems with generally five leaves to a stem, and the plant grows from six to nine inches in height. After the third year, some plants will have more leaf stems and leaves and they will grow higher. Last fall the writer dug a plant that was four feet one inch from the tip of the root to the top of the main stem."

Location for Ginseng

Would it be advisable to plant ginseng in the bush or woods? It is Nature's method. —H. R., Perth, Ont.

By planting ginseng in the bush it would have the natural shade, but let us see how it would work out in practice. Let us suppose that a farmer planted 1000 one-year-old roots in his wood-lot and, say, 1000 seeds. Now, nature has the birds and small animals, such as squirrels, to feed. These would be apt to take the larger share of the seed each year, and in the course of four or five years, there would be quite a number of young trees growing in that ginseng garden. We will imagine that farmer arriving in the bush some morning in September armed with a spade or fork to dig his ginseng. I think he would require an axe and pick to aid him to extract the ginseng out of a network of forest roots and bush. The orchard would be objectionable for similar reasons. The seeds would be exposed to the same enemies and the fruit falling on the beds would break the plants and the pickers would trample the beds more or less. Plant your ginseng at least fifteen feet away from trees. Tree roots rob the soil of moisture and plant food. Ginseng thrives better, grows larger and firmer and shrinks less in drying than wild roots. We can regulate artificial shade to suit existing conditions.—Wm. Gilgore, Peterboro, Ont.

Articles on the cost of growing an acre of tomatoes for the canning factory with profits are requested for publication.

The matter of drainage is very important in the market garden, for no soil, unless well drained, will yield satisfactory garden crops.

Gardeners in Canada, who have tested mulching with straw or other material between the rows of vegetables instead of cultivation, are requested to tell their opinions of the operation in a letter for publication in THE CANADIAN HORTICULTURIST.

Market gardeners in Quebec and the maritime provinces are requested to contribute articles for publication. Tell your experiences with the crop that you grow most extensively. State the condition of the market in your province, and the outlook. Send some photographs of your garden, if you can.