**Conducted by Professor Henry G. Bell**

Henry G. Bell

The object of this department is to place at the service of our farm readers the advice of an acknowledged authority on all subjects pertaining to soils and crops.

Address all questions to Professor Henry G. Bell, in care of The Wilson Publishing Company, Limited, Toronto, and answers will appear in this column in the order in which they are received. As space is limited it is advisable where immediate reply is necessary that a stamped and addressed envelope be enclosed with the question, when the answer will be mailed direct.

**S. J.:—What is the best mixture of grass seeds for muck soils? How many pounds timothy and clover would you advise sowing per acre? Which is the best nurse crop, oats or barley?**

Answer:—I would recommend the following as a grass mixture for muck soils:

| | |
|---|---|
| Red top | 12 pounds |
| White clover | 4 pounds |
| Rye grass | 4 pounds |
| Total | 20 pounds per acre |

On a muck soil barley would most likely be the best nurse crop since it ripens early, does not make as heavy a growth and is more shallow-rooted that are oats.

**B. M.:—1. Is it advisable to sow flax seed with mixed grain? I have an acre and a half seeded to clover last spring which did not make a good stand. Would sowing some sweet clover on it next spring improve it for hog pasture?**

Answer:—1. It is not customary to sow flax with mixed grain. Flax growers in the middle west sow the flax seed much the same as they do small grain. However, since the flax ripens in a season of from 80 to 100 days, the seeding may be delayed until after the other grain is planted. A late spring frost is usually very injurious to this crop. 2. I do not believe that the sowing of sweet clover seed on your poor stand of clover would quickly improve it for hog pasture. Would rather recommend sowing a mixture of common red clover and alsike clover on the patch just before the snow goes off. Would put 4 pounds of common red and 2 pounds of alsike. If the ground is comparatively hard, as soon as it is dry enough in spring I would harrow it so as to work the clover seed into the soil. However, the thawing and freezing of early spring should bury the seed sufficiently deep.

**J. J.:—1. What is the best annual pasture mixture? 2. Is the yellow eye a good variety of beans? 3. What crop would be best in an orchard to produce feed for calves about the first of June?**

Answer:—For a good annual pasture mixture, Prof. Zavitz of Ontario Agricultural College is recommending the following:

| | |
|---|---|
| Oats | 51 lbs. |
| Early Amber Sorghum | 30 lbs. |
| Common red clover | 7 lbs. |
| Total | 88 lbs. per acre |

If this mixture is sown during the first week in May, it is usually ready for pasture about the 20th of June. The College has obtained good results from this pasture. 2. Yellow Eye beans of a good yielding strain are looked upon as a valuable variety. They are noted for their short vines. At the Station it was not as high a yielder as Pierce's Improved Pea and Scolfield Pea. 3. The best crop in an orchard to produce feed early in June for calves is a mixture of rye and clover, about a bushel of rye to six pounds of common red clover seed. This is seeded as soon as the ground will work in spring, and about the early part of June it should be sufficiently well developed to form fairly good pasture.

**S. Y.:—1. What quantity of beans should be sown to the acre? 2. What value has ground limestone on black muck, on sandy soil, on clay, and on well-manured garden land? 3. Do you advise the use of commercial fertilizer with corn? How is it best applied? 4. Is sweet clover a profitable crop, as good as alfalfa? Does it make good pasture? How much should be sown per acre?**

Answer:—The quantity of beans usually sown to the acre varies from 3 to 6 pecks, 3 pecks of the smaller seeded varieties and as much as 6 or 8 pecks per acre of the larger varieties. 2. Ground limestone corrects soil sourness on all soils. When applied to heavy clay soil it has a slight flocculating effect, that is, it gathers together the crumbs of soil in a little coarser form. Burnt lime is stronger in this flocculating effect than is the ground limestone; however, the chief effect of limestone on any soil is to correct the soil sourness. 3. The use of commercial fertilizer on corn has given good results in Ohio, Indiana, Missouri and other important corn growing states. Purdue Agricultural Experiment Station, in circular 25 says: "Experiments in eleven representative counties have shown an average gain due to fertilizers on corn of 7.7 bushels per acre. The average cost of fertilizer was $1.38 per acre, leaving a net profit of $1.71 per acre, or $1.24 per dollar invested in fertilizer. (The foregoing financial statement was made on old prices for both corn and fertilizers. Refigured on present prices, it would show even a greater advantage at the present time for fertilization.)" Similar data could be given for Ohio, Missouri and other state tests. Corn fertilizer is best applied through the fertilizer dropping attachment of the corn planter. Indications are that up to 500 pounds per acre can be most economically applied in this way. If you do not have a fertilizer attachment for your corn planter, the fertilizer can be distributed broadcast over the ground with a lime spreader, and then thoroughly harrowed into the soil before the corn is planted. 4. Sweet clover on poor soil is a profitable crop. It is not as profitable a crop as alfalfa, since it does not make as good quality crop as hay, and there is a characteristic odor and taste to it that makes the crop distasteful to livestock for some time. Sweet clover is relatively high in protein. It makes a ranker growth than does alfalfa, and if not cut and handled most carefully, it makes a tough woody hay. Some people claim fair results from sweet clover pasture; however, the concensus of opinion is not distinctly in favor of the crop for this purpose. The amount of seed to sow per acre will depend entirely upon the quality. If the seed is first-class, from 10 to 15 pounds per acre is considered a good seeding. It is valuable as a green manure, since it adds not only organic matter but some nitrogen to the soil.


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# SUCCESSION PLANTING IN THE GARDEN

**Now is the Time to Make Plans For The Spring Production Campaign.**

By S. A. Hamilton

Owing to the fact that a number of vegetables mature early in the season, and in order that the soil may be made to produce its maximum amount of output, the art of succession planting has come into great vogue among good gardeners, who have brought it to a perfection little thought of fifty years ago, when the soil was planted once for the season and when the early crops were picked the land was allowed to "lie fallow," as it was called.

This would be considered very wasteful now in the home garden, as it is possible to obtain at least two plantings from a large part of the garden. The gardener should not plant his seeds of lettuce, radish or spinach all at one time. It is better to make several plantings, a week apart, as this will materially lengthen the season for these vegetables. This can also be done with beets, peas, beans, corn and other vegetables. But in addition to this is the power the gardener has of obtaining two crops from the same portion of soil for all those planted early in the season.

In intensive gardening it is not necessary to wait until all the early crops are picked before commencing to set out the second succession. Among such crops as lettuce, radishes and spinach, as soon as a few plants are removed for use, plants of such kinds as head-lettuce, cabbage, cauliflower, brussels sprouts and others can be set between.

These will grow side by side, and as soon as the last of the first crop to occupy the ground is out of the way, the ground will need to be cultivated for the second. When the onions come out the tomatoes can go in, or a few onions can be removed at a time to make room for the tomato plants at the right distance apart. In this way other combinations can be worked out by which a late crop can be interplanted with an early one.

Certain principles should be kept in mind when rotating crops the same season. The succeeding crops in type and growth should differ as widely as possible from the plants they succeed. This will better insure against the attacks of insects and diseases which may have attacked the first crops and that the second crop will have sufficient nourishment.

It is not considered good practice to have root-crops, such as the carrots and beets, nor plants of the same family, as the cabbage and brussels sprouts, or tomatoes and peppers, follow each other, but instead divide your plants into separate groups, such as root crops, fruiting-crops and foliage crops, and alternate them.

In order that you may plan to use your garden to the best advantage in laying out the successions, I give below tables of vegetable groupings for this purpose:

These crops occupy the ground all season:

| | |
|---|---|
| Rhubarb | Cucumbers |
| Pole beans | Melons |
| Snap beans | Eggplant |
| Carrots | Peppers |
| Tomatoes | Onions (winter) |
| Parsnips | Leeks |
| Salsify | Late potatoes |
| Late corn | |

However, it is possible to intercrop among these when they are young such vegetables as radish, lettuce and beets for sauce.

The following are used as succession crops:

| | |
|---|---|
| Onion sets | Parsley |
| Spinach | Turnips |
| Lettuce | Kohl-rabi |
| Peas | Radish |
| Dwarf beans | |

All of the following early crops can be followed by others:

| | |
|---|---|
| Onion sets | Spinach |
| Early beets | Early corn |
| Lettuce | Early cabbage |
| Early turnips | Radish |
| Early carrots | |

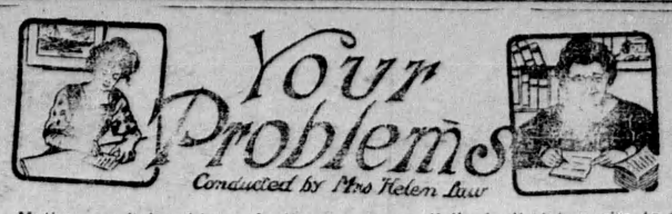
By this you will see that the next above are both early and succession crops.

As a guide to the late crops which may follow early ones, I give the following table:

| | |
|---|---|
| Late beets | Late cabbage |
| Celery | Kale |
| Cauliflower | Late peas |
| Turnips of the flat type | Brussels sprouts |
| | Endive |
| Late spinach | |

There is considerable knack in getting in the succession crops at just the right time. When the succession crops are put in as seed, time them so that you can sow the seeds between the first crops so that they will be above ground and barely crowding the first crops when the latter are ready to come out. This will prevent a hiatus between the picking of the first crop and the appearance of the second crop above the ground.

It is not feasible to grow succession plantings without a supply of vegetable plants of certain kinds at hand just when you need them. On this account the person who is handy to a dealer in plants has a decided advantage over those who have not. The gardener who has a small hotbed or cold-frame is in a still better position in this respect, and he should aim to so bring them to maturity that they will be just right for the succession plantings.




Mothers and daughters of all ages are cordially invited to write to this department. Initials only will be published with each question and its answer as a means of identification, but full name and address must be given in each letter. Write on one side of paper only. Answers will be mailed direct if stamped and addressed envelope is enclosed.

Address all correspondents for this department to Mrs. Helen Law, 235 Woodbine Ave., Toronto.

Mrs. H. E. A.:—It most decidedly would not be advisable for you to buy a pound of flour more than you actually need at the present time. It is a most unpatriotic thing to do and would lay you open to the charge of hoarding. The Canadian Food Controller has already issued a warning against hoarding. Even aside from its disloyal and selfish aspects, don't you think it is short-sighted policy? Ten to one your flour gets damp or musty, which makes your offence doubly serious. Such waste as this is unpardonable when one of the greatest of existing needs is for white flour. You would be well advised to buy your flour in small quantities just when you need it. Of course you are aware that the millers are now making standard flour and that it is so good that it can scarcely be distinguished from the kind they made before. Canadians have really nothing to grumble about in the kind or quantity of flour at their disposal, but their practical patriotism may be measured by the manner in which they use or abuse their privileges.

Brandon:—Yes, indeed, the hotel regulations have been productive of excellent results. Reports from representative hotels and restaurants all over the country indicate that there was a saving of more than 50 per cent., in the consumption of bacon in December, 1917, as compared with December, 1916; 40 per cent. in the consumption of beef and 25 per cent. in the consumption of white flour. In a number of cities the consumption of fish has been largely increased. The public eating places of Toronto are using 27 per cent. more fish than they did in December, 1916, while an increase of 19 per cent. is reported from Ottawa.

A Rural Pedagogue:—You and all your sisters have an excellent opportunity to do the most useful kind of work in food conservation and production, Miss Pedagogue. In fact, the teacher in the rural school has a better chance than most people to give practical assistance. You can influence scores of children who, in turn, will influence their parents. Why not give the kiddies a daily talk about food? Tell them of the misery of many of the children in Europe—children who were as happy and as well-fed as they until the Germans marched into Belgium. Then try and impress upon them their responsibilities until each child believes that he or she is responsible for helping to feed a French or Belgian child. Have a school garden this year. Make plans for it now, And, if there is sufficient ground near the school, why couldn't they raise chickens or even a pig? You might possibly get a farmer in the neighborhood to give a piece of land not too far from the school for the children's use. They would delight in the work, especially if a picture of the misery abroad is kept constantly before them, providing an incentive to their youthful industry. Write to the Food Controller's Office for any information you want. If you wish to be put on the mailing list just say so and you will receive The Canadian Food Bulletin and the various reports that are sent out. They will help you in your work and the teacher in the rural school never had a more sacred duty resting on her shoulders than now. Every one of her genus is needed to stimulate production, to minimize waste. The principal of one Canadian High School has written in to the Food Controller's Office asking for fifty copies of The Canadian Food Bulletin, He said: "We would be glad to use them for reading and composition purposes and so interest the pupils and, through them, their parents, in matters which are of such vital importance at the present time."

Housewife:—You would not be disappointed if you tried potato products in bread-making, provided you went about it in the right way. Potato starch, dried potatoes (potato flour) and fresh cooked potatoes can all be used successfully with flour in making palatable, nutritious bread. In making ordinary potato flour bread one-fifth of the quantity of flour is replaced by potato flour—that is to asy, riced potatoes ground. It is necessary to add somewhat more liquid than is required in making the kind of bread to which we are accustomed. The loaf does not rise quite as high but the texture and flavor are excellent. Riced potatoes may be used for making mashed potatoes or potato cakes by soaking them in three times their volume of boiling milk or water and seasoning to taste. You would be well advised to use potatoes as much as possible. They are plentiful and they make meat go a long way.

Flora:—It is possible that Canada may yet be on rations. Baron Rhondda, the British Food Controller, has announced that the time has come for compulsory rationing in Britain, and the sugar card system has been in force for a considerable time. "The food wanted by mankind does not exist," says Baron Rhondda. "The word 'shortage' is not strong enough for the situation. To put the matter bluntly, the whole world is up against a nasty thing, familiar to the people of India, called 'famine.'" That gives an idea of the seriousness of the situation, doesn't it? It also points clearly enough to the main issue—food production, unprecedented food production. And it is just here that Canada can be of the greatest use to the Motherland and her Allies.

INTERNATIONAL LESSON
FEBRUARY 24.

**Lesson VIII.—Jesus Teaching By Parables: The Growth Of The Kingdom—Mark 4. 21-34.**
**Golden Text, Isa. 11. 9.**

Verse 21. The crudest form of lamp used by the peasants is a terra-cotta saucer with its edges pinched together, to make place for the wick. Light is not to be covered up, but to be set forth. The word given by the Master is not to be kept in secret, but to be sent abroad to others. The things of the Kingdom are not mysteries to be hid away; they are not secrets which may not be understood. On the contrary, they are to be made known for the illumination of men. "Ye are the light of the world." The Christian life is not to be cloistered, but to shine forth. Not a nunnery or a monastery, but the highways of men is the place for a Christian disciple.

22. That it should be manifested—Truth is for great ends. Eventually it is to come forth so that the world may share in the revelation. This manifestation is not sudden, but silent and gradual, from a faint glow on the horizon, until the heavens are filled with the light.

24. Take heed what ye hear—If you wish to know the mysteries of the Kingdom give careful attention to the word that is taught you, and be not inconsiderate or thoughtless hearers.

25. He that hath to him shall be given—This is a fundamental law of the Kingdom. Knowledge grows from more to more. The gift of insight, when used brings larger insight, while failure to seek to know leads to the blunting and deadening of the power to perceive the truth. The only condition for knowledge of the truth is seeing, knocking, asking, and ever searching. Thus there is an ever increasing richness in the life of the inquiring soul. A man who has much knowledge will be continually adding to that knowledge, and on the other hand, he who has but little, unless he add to it his store will tend to decrease.

26. As if a man should cast seed upon the earth—This parable is peculiar to Mark. The interest centres here in the seed, which has life in itself and will produce according to its own laws if only it be given an opportunity.

27, 28. Should sleep and rise night and day—He has done all he can do when he casts the seed into the soil, and can now only go about his usual duties, leaving the seed to mature, to the sun, air, and rain.

29. When the fruit is ripe—When the process is completed comes the harvest. Thus the kingdom of God grows, silently, secretly, by orderly and successive stages, a spiritual order moving according to its own laws and reaching marvelous results.

30. How shall we liken—All nature may be laid under tribute to illustrate the spiritual movement of the kingdom of God and become full of symbols of spiritual realities. We are not to think of the natural world and the spiritual world as two separate and distinct kingdoms. Rather the entire universe is spiritual in that back of all is God, who is not outside of nature, but present in his world, overseeing the steady development of his kingdom.

31. Like a grain of mustard seed—In the earth. In Matthew the seed is sown "in his field" (13. 24). In Luke, "in his garden" (13. 19). The seed is not indigenous to the soil, but it comes from without the soil. The kingdom of God is not of human origin, though the divine germ must develop in human life and civilization. Less than all the seeds—With the Jews "small as a grain of mustard seed" was an expression for something exceedingly small. The ordinary mustard plant as we know it is seen to-day in the fields about the sea of Galilee.

32. Great branches—This mustard plant, however, must be different from the plant described in the text. Some writers tell of a mustard tree in Judea which attains to a great height, "as tall as the horse and his rider."

33. Many such parables—Of which Mark gives us only a selection. Small in its beginnings, silent and gradual in its unfolding, great in its consummation—like the mustard seed—such is the kingdom of God. They were not to despise the insignificant beginnings, for great was to be the future of the small seed placed in the human soil by the divine Sower. What madness to send forth a group of unlettered peasants to conquer the world! Yet, behold to-day, the outspreading branches of the kingdom of God in the earth!

34. Without a parable spake he not unto them—Not that he limited himself thereafter to parabolic teaching. Expounded—How careful he was that they should understand his great mission! Yet, they did not and could not fully grasp the significance of his wonderful message. "O fools and slow of heart to believe" was the language he used even during the last few days he was with them. It was at this same interval that he said to them, "I have many things to say unto you, but ye cannot bear them now." They were to wait for another expounder, the Holy Spirit, who was to take up his message and show them its supreme significance.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The dairyman's problem this winter is serious. Some of the feeds used commonly have increased from twenty-five to 100 per cent. in cost during the year. The prices received for dairy products have not kept pace with the prices for feeds. So what is the dairyman going to feed?

First of all, it is important that some succulent feed be given a dairy cow at all seasons of the year. This can easily be done during the summer months, but in winter it is difficult. There is no better means of furnishing a succulent feed in winter than through the use of corn silage. It must be remembered that corn silage is not a complete ration for it is high in carbohydrates and low in protein content. Furthermore, experience has shown that silage should not be fed as the only roughage in the ration. It is always advisable to feed some hay and the legume hays, such as alfalfa, clover, or soy bean, are best adapted for use in producing milk.

A good ration of roughage would be what silage and legume hay the cows will readily consume. This will probably be about thirty to forty pounds of silage and eight to ten pounds of legume hay for a good-sized animal.

In addition to the roughage the dairy cow should receive a grain mixture. Corn, even at its present price, is one of the cheapest and best sources of digestible food and can hardly be left out of the ration. While it is a valuable feed and is very palatable, it must not be fed as the only grain in the ration because corn, like silage, is relatively high in carbohydrates and in low in protein. Silage and corn should furnish the greater part of the food nutrients in the ration, with a small amount of a high protein feed added to give the necessary protein. Cotton seed meal and linseed meal are the usual sources of protein. Corn and cottonseed meal mixed together would furnish the necessary nutrients but the mixture of these two grains is so sticky and pasty when it reaches the stomach that the digestive juices cannot readily act upon it. It is advisable for this reason to lighten it in some way, and this is usually done by feeding it on the silage with which it becomes mixed when eaten, or by adding a light feed such as wheat bran or beet pulp to the mixture.

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