

Home Course In Modern Agriculture

VI.—How Plants Are Propagated

By C. V. GREGORY,
Agricultural Division, Iowa State College
Copyright, 1909, by American Press Association

IN order to continue to raise crops from year to year we must propagate the plants in some way. There are two principal ways of doing this—by seeds and by divisions of the plant itself. The most important of these is by seeds, as it is in this way that most of the ordinary farm crops are multiplied.

In order to understand this process we must first learn how the seeds are formed. The tassel of the corn is the male flower and the silk the female. Some plants, such as certain varieties of strawberries, have only female flowers and must be planted in alternate rows with varieties which have both kinds of blossoms. In other plants the male and female flowers are combined in one. This is the case with the apple and many other fruits. In the apple the stamens, or male parts, grow in a ring around the pistil, or female part, which is in the center of the flower. The top of a stamen, which is expanded, is called the anther. This contains a yellow dust, the pollen.

The upper portion of the pistil is called the stigma. From it a tube called the style leads downward to the ovary. This ovary contains one or more egg shaped cells called ovules. Each of these ovules is capable of developing into a seed if fertilized with a pollen grain. When a grain of pollen alights on a ripe stigma it is held by a sticky substance secreted there. It soon germinates and sends a long, threadlike projection down through the style to the ovary. This slender projection enters the ovary, and the resultant union of the male and female elements causes a seed to develop. One pollen grain is required for each ovule, and each ovule develops into a separate seed. There are many thousand pollen grains produced by each stamen, and as there are several stamens for each pistil you will see that a great excess of pollen is produced. This is one of nature's methods of making reproduction very certain.

In flowers like the apple the pollen may sometimes fall directly on the stigma in the same flower. More often, however, the stamens and pistils ripen at different times. The object of this is to prevent self fertilization, which, if long continued, will weaken the vitality of the coming generations. Cross pollination—that is, the fertilization of the ovule of one flower by the pollen from another plant—unites the strength of both parents and produces larger, harder seed.

This has been proved by many experiments. If the tassels are pulled from a row of corn before they have time to shed their pollen, the silks must necessarily be fertilized by pollen from other stalks. The cross pollination will cause the detached rows to produce heavier and larger ears. If this process is continued from year to year the yielding power of that particular strain will be considerably increased.

In such plants as corn the wind carries the pollen for rods in every direction. The air in the cornfield is so filled with the yellow dust that there is seldom any danger that the silks will fail to catch more than plenty to fertilize each of the many ovules that are to form the future kernels.

Some plants, however, are not so fortunate in this respect. The pollen of fruit trees is carried to some extent by the wind, but not nearly so much so as that of corn. In such plants as

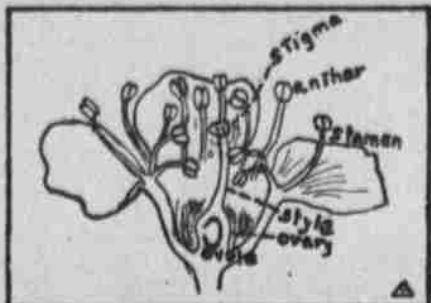


FIG. XII.—SECTION OF CHERRY BLOSSOM SHOWING MALE AND FEMALE PARTS.

clover the stamens are at the bottom of a slender tube, from which they cannot escape unaided. Plants of this nature are dependent on insects to transfer pollen from one flower to another. In order to attract these insects the flowers secrete a sweet nectar, which collects in the bottom of the tubes of which the flowers are composed.

Ants, flies, butterflies and bees are very fond of this nectar and in collecting it carry the pollen of one flower to the stigma of another. Bees are most important in doing this work because they gather so much more of the nectar than do the other insects. They often carry home some of the pollen, too, which can be seen sticking in yellow balls to their hind legs, but enough is always brushed off to fertilize the flowers which they visit. The blossoms of red clover are so large that the short tongues of ordinary honeybees cannot reach to the bottom. It is upon the larger bumblebees that this crop depends for its ability to produce seed.

Indeed, it is so entirely dependent upon them that the crop of clover seed is in direct proportion to the number of bumblebees in the neighborhood. It is anything but pleasant to run into a big nest of bumblebees with a mower or rake, but before you build a fire over them stop to think whether you want a crop of clover seed or not.

Some beekeepers are developing strains of honeybees with exceptionally long tongues. Some of these are able to obtain honey from second crop clover, which has smaller blossoms than the first crop. When these strains of bees become a little better developed and more widely distributed the usefulness of the bumblebee will be over.

In the case of small grain cross fertilization is impossible, since the flower is inside of a closed hull. Two varieties of wheat may be planted in adjoining fields or even in the same field without the slightest danger of mixing. Varieties of corn, on the other hand, often mix when as much as forty rods apart.

The selection of seed corn will be taken up in the next article. The best method of selecting small grain is by means of the fanning mill. By running through three or four times as much seed as is needed all the small grains may be sieved out and the light ones blown over, leaving only the heaviest, strongest ones for planting.

Grain that is intended for seed should be stored carefully in order that it may go through the winter uninjured. The chief enemies of stored seed are moisture, insects and rats and mice. The seed should be dry when stored and kept where moisture cannot gain access to it. Dry seed will stand almost any amount of freezing without injury.

There are a number of insects that damage seed grain by burrowing into the germ. If the seed room is tight, they may be killed by fumigating with carbon disulphide used at the rate of a pound to each thousand cubic feet of space. Place this in an open dish on

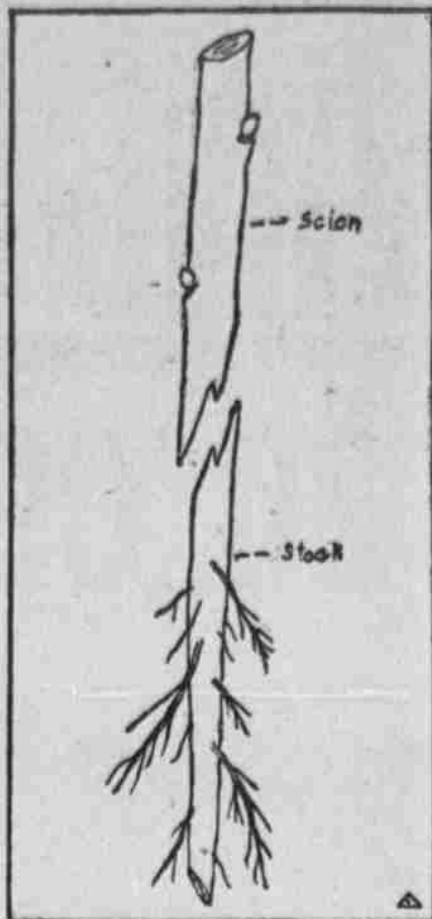


FIG. XIII.—THE STOCK AND SCION READY TO BE UNITED.

top of the seed, close the room tightly as possible, and in a few hours the insects will be exterminated. Care should be taken not to go near the room with a light, as the gas is explosive. This same treatment is also fatal to rats and mice, unless they have some way of escaping from the room. If possible the seed room should be so well built that these pests cannot get into it.

The second method of plant propagation is by division—that is, by planting parts of the plant itself. Potatoes are propagated in this way almost entirely. If small willow and poplar branches are stuck into the ground, they will grow into trees. Apple and other fruit trees are propagated either by grafting or budding. Apple trees may be raised from seed, but the fruit of seedling trees is usually worthless. By taking a part of the tree and growing another from it, it will, of course, bear the same kind of fruit.

Grafting consists of joining pieces of small branches or scions of the tree which is to be propagated to pieces of roots or stocks. The roots of yearling seedlings are used for stocks. The scions, which should be about the size of a lead pencil, should be cut in the fall and packed in sand. The grafting can be done at any time during the winter. All that is necessary is to cut the lower end of the scion and the upper end of the stock at an angle, as shown in Fig. 13. These are then carefully fitted together and tied with a little common string. The essential point is to be sure to have the cambium layer of the scion join that of the stock. This cambium layer is the thin, light brown portion between the bark and the wood. It is the point where growth takes place.

The completed graft, which should be eight to ten inches long, is again packed in sand. In the spring the grafts are planted in a row in the garden and left until they are two or three years old, when they may be transplanted to their permanent place in the orchard.

Why Goldie Wants to Know

The probate judge of Lancaster county, Nebr., is in receipt of the following communication from a woman who seems to entertain grave doubts as to her condition, whether married or unmarried:

"coffee vill kans feb 8-1909

"probate judge Dear sir I would please ask if george conklin has got a divorce or has put in a bill for it please rite and let me know for I am his wife Mrs goldie conklin please ancer soon to Joplin, mo."

State agency for Auto pianos. Hear them play at the Bennett Co. piano store, Alliance.

When You Buy BUY AT HOME

The Home Merchants merit your support, they are the mainstay of the community, and when you buy of Home Merchants, buy of those who advertise.

A. D. NEW AUCTIONEER

ELLSWORTH, NEBR.

Col. New has had 25 years' experience and is one of the most successful auctioneers in the northwest.

Dates made at this office

Wm. James,

Exclusive
Dealer in

COAL & ... WOOD

'Phone Alliance,
No. 5. Nebraska.

NOW IS THE SEASON OF
COUGHS and COLDS

Expert Prescription Druggist

F. J. BRENNAN

Al Wiker

AGENT FOR

Grand Island Granite and Marble Works

All kinds of Granite and Marble
Tombstones and Monuments.
Lower prices and less
freight than from firms
farther east

H. NELSON,

Painting, Paper Hanging
and Kalsomining

Phone 641 Alliance,
Nebr.

If You are in Need

OF ANY OF THE FOLLOWING ITEMS:

- A Majestic Steel Range
- A first-class Hot Air Incubator
- A De Laval Cream Separator
- A new Model A Wind Mill
- A first-class job of Plumbing
- Any kind of Tinwork

Call on **Acheson Bros.**
Phone 98

They carry THE GOODS, and Prices ARE RIGHT

Special Announcement to Cattle-Raisers

PANHANDLE STEERS

White Faced Short Horn

We are now selling White-Faced and Short-Horn Pan Handle Steers; yearling, one, two and three-year-olds, in lots of from 100 to 5,000. Our prices range as follows:

Yearlings, \$19 to \$23 }
2-year-old, \$24 to \$27 }
3-year-old, \$29 to \$32 }

Delivered to any stations in
Nebraska, Wyoming or
South Dakota. \$1 more for
Nebraska cattle to River.

Deliveries from May 10 to June 10

We can sell these steers on time at 8 per cent with good security. Carry steers until 4 years old.

Come and see us now to be sure you get your cattle

Watkins & Feagins

Rooms 18 and 19, Rumer Bldg.

Alliance, Neb.

Palace Livery Barn

C. C. SMITH, Prop.
(Successor to S. H. Desch)

ONE BLOCK WEST OF THE NE V ZBIDEN BUILDING. 'Phone Good turnouts, strict attention to our business, and courteous treatment to all has won for us the excellent patronage we enjoy. Try us.

ALLIANCE HOSPITAL

GRADUATED NURSES IN ATTENDANCE
HOSPITAL STAFF—Dr. Bellwood, Dr. Bowman, Dr. Hand, Dr. Copsey
Open to All Reputable Physicians.

Address all communications to

THE MATRON, ALLIANCE HOSPITAL,
Alliance, Nebraska.

First-class
Views and
Commercial
Work

Alliance Art Studio
M. E. GREER, Prop.
Artistic Portraits a Specialty
ALLIANCE, NEBR.

Enlarged
Portraits
In Every
Style

RED RIVER OHIO SEED POTATOES

We have a car of Red River Ohio Seed Potatoes that will arrive here about April first. Come and see us and give orders for what you want. The price will be right.

Beal Brothers

**You know the kind
of Separator**

You Want—You'll Find it in
the Quality Line of Empires

**Take Your Choice of Style, Price
and Size**

All Backed by a Guarantee as Good as a Government Bond

I have just received direct from the factory a CAR LOAD of the
latest improved 1909

Empire Cream Separators

in the different Styles, Sizes and Prices, from \$50.00 up. If you are thinking of buying
a Cream Separator or have one to trade call and see me at the Alliance Creamery. I
also carry a complete line of REPAIRS for the Empire machines.

W. E. SPENCER
Gen'l Agent for Western Nebraska