

IMPROVED TECHNIQUE FOR CORN POLLINATION.

PAUL WEATHERWAX, Indiana University.

Many devices have been described for the control of pollination in various plants, and a number of these have been found especially serviceable in the extensive work that has been done in corn breeding. The best points of two or three of these methods have been combined and used successfully during the past year.

The protection of the female inflorescence is made of an 8x12 sheet of typewriter paper. Its construction can best be explained by reference to the accompanying diagram. (Fig. 1.) Half an inch along one end of the sheet is folded over and pressed down along AA; one side is similarly folded along BB, and the other along CC. One of these latter folds is glued down to the other, and the result is a long, flat envelope, open at both ends and reinforced at one end by the half-inch fold.

The glue employed may be any of the common brands that are purchased ready for use; this can be rendered almost insoluble by the addition of a small quantity of any readily soluble chromate and drying the pasted article in sunlight. To make the envelope waterproof, a solution of hard paraffin in benzole is applied with a tuft of cotton. The evaporation of the benzole leaves the paper dry and smooth but impregnated with paraffin.

The manipulation of the device is simple. It is usually best to remove the lamina of the leaf in whose axil the ear is borne and to slit its sheath down the sides. The reinforced end of the envelope is then slipped over the ear and made tight by means of a tuft of cotton stuffed in from below. The top of the envelope is folded over and fastened with a paper clip, which is tied loosely to the stem of the plant. (See Fig. 2.) When the silks have appeared, the clip is removed without untying from the stalk, the pollen poured in, and the clip replaced.

As the ear continues to grow, the string by which the clip is tied slips upward on the stalk, and little further attention is required. The tuft of cotton is compressed to make room for the increasing thickness of the ear, until the latter is large enough to burst the envelope without injury to itself. By this time the silks are usually no longer receptive.

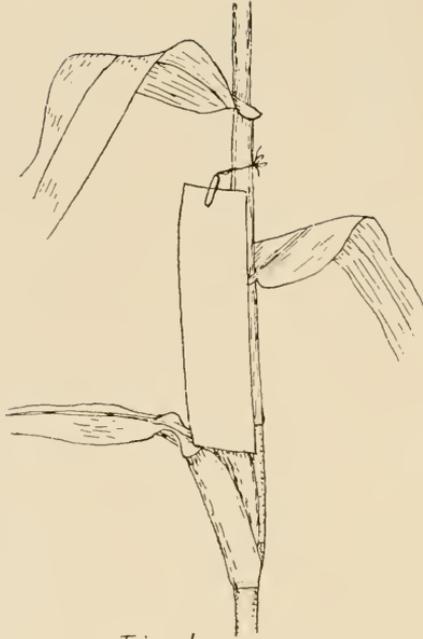


Fig. 1

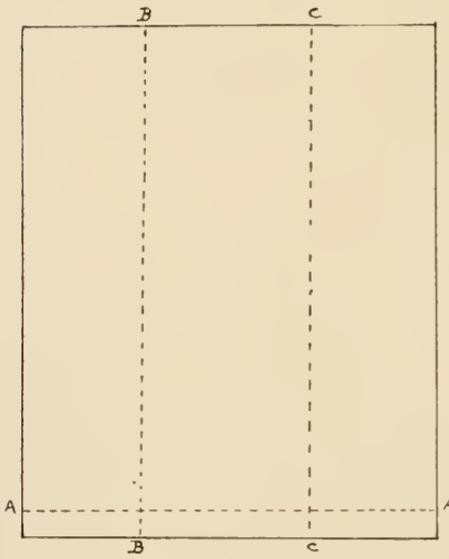


Fig 2

Technique for corn pollination.

The best method yet found for collecting the pollen is by means of ordinary paper bags, the size depending upon the size of the corn tassel. Early in the morning the bag is put over the tassel and tied or pinned around the stalk below. The anthers open soon after the sun begins to shine on the plants, and from 10:00 o'clock until noon is a good time to do the pollenizing. Pollen is shed most freely on warm, clear days.

The method here described has a number of distinct advantages when used with corn. The envelopes are easily made; after a little practice one person can make 25 or 30 in an hour. The worker is independent of the whim of any manufacturer, paper, twine, and paper clips being the only manufactured things that are necessary. The device is easily applied and easily manipulated; while the bag of pollen is held with one hand, the clip can be removed and the envelope opened with the other. The chance for contamination by stray pollen grains is minimized, for the envelope is never removed after being put in place, the silks are never touched by the hands, and the opening of the envelope exposes only a small surface for a short time. No umbrella or other protecting device is needed. The cover is well ventilated through the cotton, and the silks are protected from extremes of temperature, desiccation, or humidity. Well-filled ears have often resulted from a single pollination, and no failures have occurred which could be attributed to the lack of efficiency of the device.

While this method has been used chiefly with corn, it is capable of adaptation to other plants. The envelopes may be made in any size. When used over bisexual inflorescences to insure self-pollination, the envelope can be permanently closed at the top. A support can be provided when the plant is too small to hold the weight of an envelope large enough to cover its inflorescence.

