A TAG FOR USE IN RECOGNIZING AND IDENTIFYING COTTON FLOWERS TO BE CROSS-POLLINATED[1]

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GENETICAL research and breeding investigations in cotton often involve making a large number of cross-pollinations. Several different crosses may be necessary, each one requiring large quantities of seed to insure adequate population size. Thus, it is frequently necessary to repeat the cross-pollinations on the same populations of female plants for several consecutive days. Since 1- to 3-day-old cross-pollinated flowers closely resemble those flowers which are to be pollinated, the person doing the pollinating must find the emasculated flowers among the foliage and then distinguish between the emasculated flowers to be pollinated and those flowers which have already been pollinated on the preceding days. In addition, the cross-pollinated flowers must be labeled for identification.

I designed a tag with a tear-off tab to facilitate the recognition of cross-pollinated flowers and to identify them. This tag, including the tear-off tab, is 7 inches long by 1.5 inches wide. The tear-off tab, which is white on both sides and perforated for easy removal, is 2 inches long. The remainder, which is the permanent identification portion, is 5 inches long and tinted a sun-fast, weather-proof red on both sides. A hole 1 and 1/16 inches in diameter is located ¼ inch from the end and from each side of the tag. Tags, on which the identification has already been placed, are attached at the time of emasculation. The person doing the emasculating pushes the flower bud and bracts through the hole so that the tag hangs around the pedicel (Figure 1). The diameter of the hole is just large enough for the bracts to pass through undamaged, but small enough so that the tag cannot be easily removed during the early period of boll development. The diameter of the hole can vary according to the size of the flower.

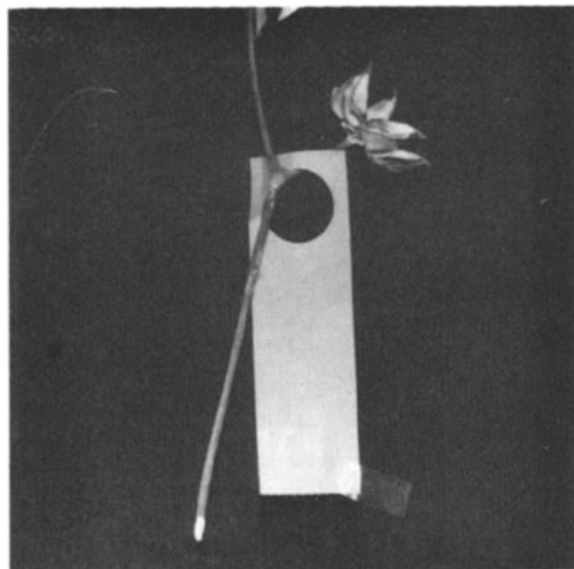Figure 1. A tag hung around pedicel of emasculated cotton flower.

Figure 2. A tag, with perforated tear-off tab removed, around pedicel of mature cross-pollinated boll from which the seed cotton has been harvested.

In my own experience, no tag has fallen off. The emasculated flowers having a tag with a white tear-off tab are easily located by the person doing the pollinating. After each emasculated flower is pollinated, the tab is removed leaving only the permanent identification part of the tag. A tagged, cross-pollinated boll, from which the seed cotton has been removed, is shown in Figure 2.

Other methods for locating emasculated flowers involve the use of brightly colored yarn, strips of cloth, paper bags, or wooden sticks. Cross-pollinated bolls are usually identified by hanging an appropriately marked string-tag around the pedicel of the flower. The above described tag can be attached quite rapidly. It is more readily located during pollination and more adaptable to the various cross-pollination schedules of breeders and geneticists. Such a tag may also prove useful and more economical than string tags in studies that require the tagging of flowers provided that the flowers can be tagged in the bud stage.

COMPUTER ANALYSIS OF INDIVIDUAL PLANT DATA FROM GENETICS EXPERIMENTS

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INDIVIDUAL plant data involving different generations from experiments that are designed to elucidate the genetic control mechanisms for presumed quantitative characters involve multitudinous algebraic and statistical manipulations. The mere time and effort involved frequently prevents complete examination of the data. Such data reduction and semi-interpretive problems are among those schemes peculiarly suited to treatment on an electronic digital computer. Exploratory experiments with plant materials may indicate fairly simple inheritance of characters, and provide evidence for errors of measurement attributable to environment and sampling. For many cases an extension of the classical segregation analysis from the usual qualitative approach to an approximation for quantitative data involving errors would be desirable.

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