GERMINATION OF SEEDS OF COTTON
VARIETIES AT LOW TEMPERATURES¹

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The ability of cotton seeds to germinate at low temperatures makes possible in temperate regions early sowing and hence earlier maturity, longer growing season, and higher yields.

Ludwig³ found marked differences in the germination of some cotton varieties at 12° C. In his experiments “Pima” gave the highest percentage of germination at this temperature. Most of the varieties tested by Ludwig, however, are now extinct, and no data are available on many of the cotton varieties currently grown.

Materials and Methods

Eight varieties of Gossypium barbadense and 4 of G. hirsutum were tested. Of the G. barbadense varieties, Pima 32 and Pima S-1 are American–Egyptian; Ashmuni, Giza 7, Karnak and Malaki are Egyptian; Tadla 1 is North-African and Tanguis is Peruvian. The G. hirsutum varieties tested (Acala 4-42, Acala 1517-C, Coker 100-A and N.C. 58) are all of the American Upland type.

Seeds of the 12 varieties were germinated in sterilized soil trays, in a refrigerated incubator, at 12 ± 1° C. There were 4 replicates of 50 seeds from each variety, arranged in randomized blocks. The seeds were examined 17, 25, 32, and 38 days after the beginning of the experiment. Every seed that showed splitting of seedcoat and elongation of rootlet was considered as germinating. Other seeds from each variety were germinated at 25° C. and served as a check. All data were calculated as percent of germination of the same variety at 25° C.

Results

The results of this experiment are presented in Table 1. At 25 days after the beginning of the experiment, Tadla 1, and Pima 32 showed the highest germination; Ashmuni and Tanguis were intermediate. Karnak showed a low germination; Malaki, Pima S-1, Acala 4-42, Cooker 100-A, and Acala 1517-C germinated very poorly.

Acala 4-42 and N.C. 58 showed a much better germination 32 and 38 days after the beginning of the experiment, and may therefore be classed as intermediate. Acala 4-42 and N.C. 58 showed the lowest germination throughout the experiment.

Most of the G. barbadense varieties germinated better at 12° C. than did the G. hirsutum varieties of Karnak, Malaki, and Pima S-1. Seed of the best G. hirsutum varieties.

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