

Brief Articles

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; Tadmra 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

Table 1—Seed germination of cotton varieties at 12 ± 1° C.

Variety	Germination, as percent of 25° C. check			
	Days after beginning of experiment			
	17	25	32	38
Giza 7	11	26	40	43
Tadmra 1	8	25	39	46
Pima 32	3	25	34	39
Ashmuni	15	21	21	21
Tanguis	6	19	23	26
N.C. 58	2	11	17	18
Karnak	4	10	12	14
Malaki	-	3	11	12
Pima S-1	1	3	10	14
Acala 4-42	-	2	17	21
Coker 100A	-	2	6	10
Acala 1517C	-	-	3	3

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 Giza 7, Tadmra 1, and Pima 32 showed the highest germination; Ashmuni and Tanguis were intermediate; N.C. 58 and Karnak showed a low germination; Malaki, Pima S-1, Acala 4-42, Coker 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 1517-C showed the lowest germination throughout the experiment.

Most of the *G. barbadense* varieties germinated better at 12° C. than did the *G. hirsutum* varieties, but germination of Karnak, Malaki, and Pima S-1 was somewhat lower than the best *G. hirsutum* varieties.

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³ Ludwig, C. A. The germination of cotton seed at low temperature. J. Agr. Res. 44:367-380. 1932.