

## FATTY ACID VARIATION IN SEEDS OF *TRIPSACUM DACTYLOIDES*

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*Tripsacum dactyloides* (L) L is a monocious member of the tribe Andropogoneae. The species has a geographical range from southern New England to Paraguay, South America. Three cytological races are known including  $2n = 36, 54$  and  $72$ . The plants of any cytological race may have pubescent or glabrous leaf sheaths and blades which may be narrow (1–2 cm) or broad (2–3.5 cm). Anderson<sup>1</sup> suggested that the morphological variation in *T. dactyloides* might have originated from intraspecific allopolyploidy. Cutler and Anderson<sup>2</sup> indicated that the species is divided into five geographically defined races including populations from west of the Pecos River, Texas, Central Illinois, prairie and plains states, southeastern United States, and the Atlantic Coastal states.

TABLE 1 THE PER CENT FATTY ACID COMPOSITION OF SEED LIPIDS OF 18 CLONES OF *Tripsacum dactyloides*. ALL SAMPLES CONTAINED TRACES OF C18:3

UI No *	2n=	Leaf width	Pubescence	C16:0	C18:0	C18:1	C18:2	Location
1347	36	Narrow	Glabrous	11.7	2.0	37.1	49.1	Stonington, Illinois
1323	36	Narrow	Glabrous	9.7	1.1	31.9	57.3	Carlinville, Illinois
1328	36	Narrow	Glabrous	8.7	1.0	27.6	62.7	Stonington, Illinois
1345	36	Narrow	Glabrous	10.2	1.7	34.3	54.3	Manhattan, Kansas
1320	36	Narrow	Glabrous	6.9	1.4	32.3	59.4	Shabonier, Illinois
1318	36	Broad	Glabrous	6.2	0.9	31.2	60.7	Alma, Illinois
1331	36	Broad	Glabrous	7.5	1.0	30.1	60.7	Urbana, Illinois
1334	36	Broad	Glabrous	8.3	1.3	37.0	54.1	Opdyke, Illinois
2783	54	Narrow	Glabrous	19.3	2.1	35.8	42.7	Santa Claus, Indiana
2825	54	Narrow	Glabrous	15.1	2.0	41.7	41.0	San Augustine, Texas
1722	54	Broad	Glabrous	14.1	4.2	26.0	55.0	Santa Claus, Indiana
1734	54	Broad	Pubescent	7.6	1.2	33.8	57.4	Herrin, Illinois
2824	54	Broad	Pubescent	8.8	2.1	35.1	54.0	San Augustine, Texas
1359	72	Broad	Glabrous	8.5	1.1	29.6	61.0	Huey, Illinois
1735	72	Broad	Glabrous	7.7	1.1	31.7	59.5	Freeman Spur, Illinois
1730	72	Broad	Glabrous	7.7	1.1	32.1	59.1	Horseshoe Lake, Illinois
1729	72	Broad	Glabrous	7.7	1.3	32.6	58.2	Horseshoe Lake, Illinois
1365†	72	Broad	Pubescent	10.1	3.3	34.4	47.6	Diboll, Texas

\* Refers to voucher specimen numbers at the Crop Evolution Laboratory Herbarium, Agronomy Department, University of Illinois

† Sample contained 4.5% of an unidentified fatty acid methyl ester, appearing between the C16:0 and C18:0 peaks on the chromatograph

<sup>1</sup> ANDERSON, E (1944) *Ann Mo Bot Gdn* **31**, 317

<sup>2</sup> CUTLER, H C and ANDERSON, E (1941) *Ann Mo Bot Gdn* **28**, 249

The objective of this investigation was to determine if seed fatty acid composition could be correlated with chromosome number, leaf morphology, or geographical origin. The fatty acid composition and description of eighteen clones of *T. dactyloides* are presented in Table 1. No geographical correlation could be made with fatty acid composition. Plants with  $2n = 54$ , and glabrous leaves were higher in C16:0 than the other cytological and morphological groupings. Fatty acid variation may be a useful adjunct in certain systematic studies, but it has a restricted value in *Tripsacum* as a chemotaxonomic character.

#### EXPERIMENTAL

**GLC** Fats were extracted from caryopses with redistilled light petrol and methyl esters of fatty acids were prepared.<sup>3</sup> Mixtures were separated on a 15% DEGS column at 200°. Components were identified by comparing  $R_f$  of known fatty acid methyl esters to those of the components in the mixture. An electronic integrator was used to determine per cent composition. Extracts were analyzed in triplicate and reported as averages.

**Cytology** Pollen mother cells were fixed in 95% EtOH-HOAc- $\text{CHCl}_3$  (6:3:1), and stained with acetocarmine using a squash technique. Chromosome numbers were ascertained from cells at diakinesis and anaphase I.

**Plant materials** Plants were grown at the University of Illinois for at least 1 yr prior to the collection of seeds for analysis.

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<sup>3</sup> SINGH, B. B., HADLEY, H. H. and COLLINS, F. I. (1968) *Crop Sci.* **8**, 171.