‘CHET’ SAND BLUESTEM AND ‘VERL’ EASTERN GAMAGRASS: 
NEW CULTIVARS FOR THE SOUTHERN PLAINS 
AND EASTERN UNITED STATES 

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Abstract

‘Chet’ sand bluestem, *Andropogon hallii* Hack., and ‘Verl’ eastern gamagrass, *Tripsacum dactyloides* (L.) L., were released by the USDA-Agricultural Research Service (ARS) in cooperation with the Oklahoma Agricultural Experiment Station and the USDA-Natural Resources Conservation Service (NRCS). Chet is a medium-stature sand bluestem recommended for pasture, hay, complementary rangeland-forage production systems, soil stabilization, or reclamation of marginal croplands in the central and southern Great Plains of the United States. Verl is recommended for pasture or hay in the eastern and southern United States where appropriate management is used to prevent damage to the plant stands.

Introduction: Chet sand bluestem and Verl eastern gamagrass were released by the USDA-ARS in cooperation with the Oklahoma Agricultural Experiment Station and the USDA-NRCS in August 2004 and February 2005, respectively. Each cultivar is registered by the Crop Science Society of America (Springer et al., 2005, 2006) where additional information is available about their breeding, selection, and testing.

Chet is a medium-stature sand bluestem recommended for pasture, hay, complementary rangeland-forage production systems, soil stabilization, or reclamation of marginal croplands in the central and southern Great Plains.

Verl is unique among eastern gamagrass cultivars in that it is a fertile triploid (2n = 3x = 54) and is recommended for pasture or hay in the eastern and southern United States.

Sand Bluestem: Chet was derived from a collection of sand bluestem and big bluestem (*Andropogon gerardii* Vitman) that consisted of 158 accessions received as seed from the USDA-ARS North Central Regional Plant Introduction Station. The entries of this collection were originally assembled at Kansas State University, Manhattan, by Dr. Kling Anderson. Big bluestem and sand bluestem can intercross and produce progeny with high reproductive fertility. Three phenotypic mass selection cycles were made before the release of Chet sand bluestem.

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Field evaluations of Chet were conducted in small plots in the central and southern Great Plains in 2001-2003 at the USDA-ARS Southern Plains Range Research Station at Woodward, OK; Oklahoma State University, Perkins Research Station, Perkins, OK; and the USDA-NRCS Plant Material Centers at Manhattan, KS; Knox City, TX; and Nacogdoches, TX. Averaged across these locations, the forage dry matter yield of Chet was 5700 lbs/acre which was 8.8% greater than ‘Woodward’ sand bluestem ($P < 0.05$). The seasonal average crude protein (CP) averaged 6.4% and in vitro digestible dry matter (IVDMD) averaged 51%. Neither the CP nor IVDMD were significantly different from Woodward sand bluestem in this field trial ($P > 0.05$).

Seed yields were evaluated at Woodward and Perkins, OK, in small plots in 2001-2002. The seed yield of Chet averaged 53 lbs pure seed/acre and was 59% greater than that of Woodward sand bluestem ($P < 0.05$). In replicated grazing trials during 2000-2003 at the USDA-ARS Southern Plains Experimental Range near Ft. Supply, OK, the average daily gain of stocker cattle was 2.5 lbs/d over a 62 d grazing period and was not significantly different from Woodward sand bluestem ($P > 0.05$).

Chet was named for Mr. Chester L. Dewald, Research Agronomist, USDA-ARS Southern Plains Range Research Station, Woodward, OK. Mr. Dewald was instrumental in the breeding and selection of this cultivar prior to his retirement and death.

### Eastern Gamagrass: Verl
Verl is unique among commercial eastern gamagrass cultivars in that it is a fertile triploid ($2n = 3x = 54$) that reproduces predominantly via apomixis. It was produced from a controlled pollination of a gynomonoecious sex form (GSF) diploid ($2n = 2x = 36$) with a monoecious tetraploid ($2n = 4x = 72$).

Verl was selected for its high seed set, pollen fertility, and forage production from 243 F1 progeny resulting from the cross GSF-1 (PI 483447)/WW-1724 and was registered as germplasm line FT-II (Dewald et al., 1992). Its seed set averaged 68%, caryopsis weight averaged 2.43 mg, and pollen stainability averaged 18%. In addition, 95% of the open-pollinated progeny from Verl were identical in appearance to the maternal parent indicating a high degree of apomictic reproduction.

Field evaluations of Verl were conducted in small plots in the eastern and southern United States from 2001 to 2003 at the USDA-NRCS Plant Materials Centers at Brooksville, FL; Manhattan, KS; Coffeeville, MS; Elsberry, MO; Corning, NY; and Knox City, TX and the USDA-ARS Southern Plains Range Research Station at Woodward, OK. Averaged across these locations, the forage dry matter yield of Verl was 7075 lbs/acre which was 11% greater than ‘Pete’ eastern gamagrass ($P < 0.05$). Depending on the length of growing season and the amount of available moisture, Verl can be harvested 2-to-4 times per year on a 45-d harvest interval. The seasonal CP averaged 9.5% and IVDMD averaged 52%. Neither the CP nor IVDMD were significantly different from ‘Pete’ in field trials ($P > 0.05$).

In a replicated seed production experiment at Woodward in 2001, Verl produced 159 lbs pure seed/acre. This was significantly greater than Pete eastern gamagrass ($P > 0.01$) which produced 109 lbs/acre. Similarly at Woodward in 2003, Verl produced an similar seed yield of 152 lbs/acre from a 0.62 acre seed increase block.
Verl is susceptible to feeding damage from the maize billbug, *Sphenophorus maidis* (Chittenden) and the southern corn stalk borer, *Diatraea crambidoides* (Grote). These insects reduce seed production of eastern gamagrass as their populations increase in the field (Maas and Springer, 2005; Maas et al., 2003). Verl is possibly susceptible to *Rhizoctonia*, *Pythium*, and *Bipolaris* species. These organisms were recovered from dying plants at Coffeeville, MS, in April 2003, but inoculations of these organisms would be required to verify if they were the causal organisms responsible for death of the plants.

Verl was named for Mr. Verl H. Louthan, retired Agricultural Research Technician, USDA-ARS Southern Plains Range Research Station, Woodward, OK. Mr. Chet Dewald and Mr. Louthan were active in the breeding of eastern gamagrass, characterizing its biology, agronomic potential, and the development of this cultivar (Figure 1).

**Seed Storage and Availability:** Seed of Chet and Verl are deposited in the National Plant Germplasm System where it will be available for research purposes, including the development and commercialization of new cultivars. Appropriate recognition is requested if this release contributes to the development of a new breeding line or cultivar. Pedigreed seed of Chet and Verl is limited to Breeder, Foundation, Registered, and Certified classes. One generation of seed increase will be allowed for each seed class. Breeder seed is maintained by the USDA-ARS. Foundation seed is under the direction of the Oklahoma Foundation Seed Stocks, Inc., Department of Plant and Soil Sciences, Oklahoma State University, Stillwater, OK 74078. U.S. Plant Variety Protection was not sought for either cultivar.

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**Literature Cited:**


Figure 1. Mr. Chet Dewald (left) and Mr. Verl Louthan (right); both men were active in the selection and breeding of Chet sand bluestem and Verl eastern gamagrass.