We, the members of the Ornamental Crops Varietal Release Committee of the Nebraska Agricultural Experiment Station, hereby approve the naming of Thickspike Gayfeather (PM-K-1417) with the varietal or cultivar name of EUREKA and recommend that breeder seed of this selection be maintained by the Nebraska Agricultural Experiment Station and the foundation seed be maintained and distributed by the U.S. Soil Conservation Service Plant Materials Center, Manhattan, Kansas. Foundation seed will be available for distribution in November, 1976.

Sotero S. Salac, Committee Chairman
Department of Horticulture — May 23, 1975 (date)

R. D. Uhlinger, Committee Member
North Platte Experiment Station — (date)

M. G. Boosalis, Committee Member
Chairman, Department of Plant Pathology — May 24, 1975 (date)

K. P. Pruess, Committee Member
Department of Entomology — 5/23/75 (date)

D. P. Coyne (by M. L. Schuster)
Chairman, Department of Horticulture
Ex Officio — June 2, 1975 (date)

Sponsoring Agencies:

Robert E. Williams
Director, Plant Sciences Division
U.S. Soil Conservation Service — JUN 17 1975 (date)

Floyd W. Smith
Director, Kansas Agricultural
Experiment Station — JUN 30 1975 (date)

Thomas D. Doyle
State Engineer
Nebraska Department of Roads — July 17, 1975 (date)

The production and distribution of foundation seed of Thickspike Gayfeather (PM-K-1417) and its naming and release with varietal or cultivar name of **EUREKA** is hereby approved:

R. W. Bliss acting

H. O. Ottoson, Director
Nebraska Agricultural Experiment Station
Institute of Agriculture and Natural Rescources
University of Nebraska

7-21-75
(date)

Request For The Release Of Thickspike Gayfeather Cultivar 'Eureka' (PM-K-1417)

S. S. Salac, P. N. Jensen, and R. D. Lippert

Department of Horticulture
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
and
United States Department of Agriculture
Soil Conservation Service
May, 1975

I. Suggested Name: Thickspike Gayfeather 'Eureka'

II. Species Description: Thickspike gayfeather, Liatris pycnostachya Michx., is a herbaceous warm season perennial with 1 to several rigid, upright non-branching stems 85-170 cm. tall, from a woody corm with many fibrous roots; stems hirsute above, nearly glabrous below; leaves linear or lance-linear, lowermost narrowing to an elongate petiole, upper sessile and somewhat clasping the stems, lower to 30 cm. long, 4-12 mm. wide; inflorescence a 5-12 flowered dense spike 2-3.5 cm. thick, 12-45 cm. long, rachis usually hirsute; involucre 8-12 mm. high cylindric-campanulate with acute to acuminate spreading squarrose-tipped bracts (phyllaris); corolla rose-purple or rarely white, 709 mm. long, glabrous or hirsute or sparesely hirsute within; fruit a slender achene 407 mm. long, tapering to base, pappus 6-7 mm. long, barbellate.

III. Natural Distribution, Adaptation Range and Associate Plant Community:

A. Natural Distribution of Species - Moist and dry prairies and open woods from South Dakota to Wisconsin, south to Louisiana and Texas (Figure 1).

B. Adaptation Range of Cultivar - Nebraska, Iowa, Kansas, Missouri, Oklahoma, and Arkansas (Figure 1).

C. Associated Plant Community-Thickspike gayfeather is generally associated with the high water table prairies in the northern states to favorable upland sites in the southern states. The soil texture may vary from clay loams to sandy loams. The plant is found growing in plant communities that are indigenous to favorable sites, including big bluestem, indiangrass, switchgrass, little bluestem, eastern gamagrass, prairie cordgrass, and reed canarygrass.

Figure 1. Map showing natural distribution of thickspike gayfeather (area enclosed by broken lines) and adaptation range of cv. 'Eureka' (area enclosed by solid line).

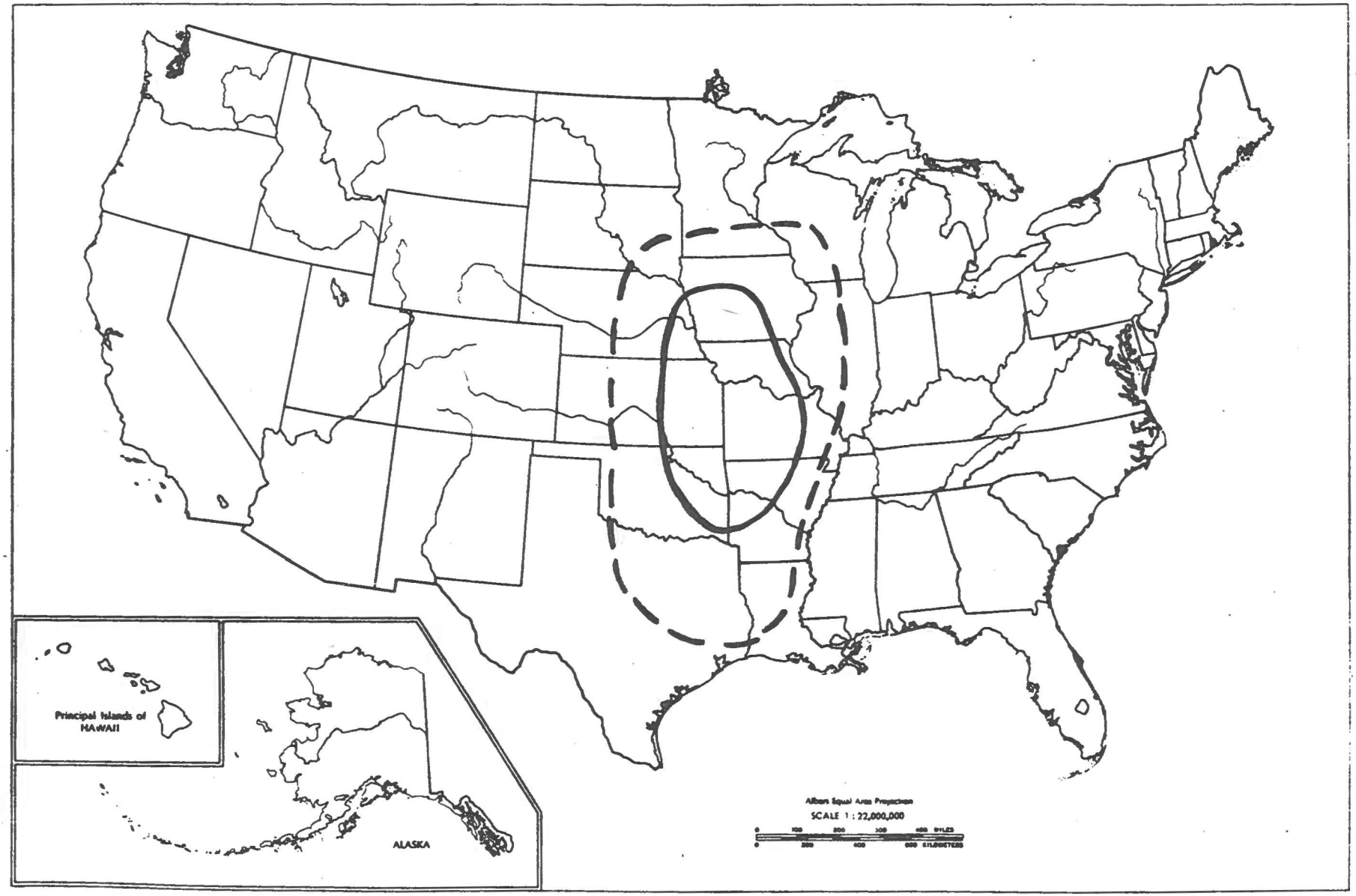

Table 1. Field performance of thickspike gayfeather, 'Eureka' and other selections over a period of three years.

ACCESSION NUMBER	ORIGIN OR SOURCE	YEAR	PERFORMANCE RATING 1/ Vigor	Stand	GROWTH (cm.) Height	Spread	BLOOMING PERIOD Start	Full	End
UN-B-1200	Buffalo Co. Nebraska	1972	3	3	21-159	3-9	7-15	8-1	9-30
		1973	3	1	113-134	9	7-12	7-28	8-29
		1974	9	3	91-113	3-9	7-12	8-1	9-5
PM-K-1097	Greenwood Co. Kansas	1972	7	3	6-18	3	7-15	7-28	9-10
		1973	1	3	24-113	12	7-14	7-28	9-1
		1974	3	5	76-171	3-9	7-10	7-20	8-28
PM-K-1417 'Eureka'	Greenwood Co. Kansas	1972	3	1	85-149	3-9	7-12	7-24	9-5
		1973	1	1	125-152	12	7-12	7-28	8-27
		1974	1	1	85-168	9	7-9	7-22	8-22
PM-K-1499	Greenwood Co. Kansas	1972	5	5	12-27	3	7-10	7-25	8-29
		1973	3	1	61-155	9	7-12	7-26	8-29
		1974	3	3	119-177	6-9	7-7	7-20	8-28

1/ Performance rating for stand and vigor where 1 is excellent, 5 is medium, and 10 is failure or very poor.

IV. Procedures Used in Developing the Cultivar:

Seed collections from selected native plants in a natural plant community were received from Leo Brown, Greenwood Co., Kansas on November 2, 1970. These were assigned accession numbers PM-K-1097, PM-K-1417 (Eureka), and PM-K-1499 and planted at the Manhattan Plant Materials Center for initial evaluation in May, 1971. Accession UN-B-1200, which was collected from Buffalo Co., Nebraska, was included in this initial field trial. Seed increase plantings of the accessions were started on June 18, 1971 to insure availability of sufficient quantity of experimental seeds.

Single row plantings (50 ft. long) of these accessions were also established at the University of Nebraska Field Laboratory at Mead, Nebraska. Data collected from these test sites were used as basis for camparing the performance of the 4 accessions.

V. Field Performance of Thickspike Gayfeather 'Eureka':

Plant height, vigor, and stand of PM-K-1417 (Eureka) was consistently superior to those of UN-B-1200, PM-K-1097, and PM-K-1499 (Table 1). The flowers of PM-K-1417 were also denser on the spike and more intensely rose-purple than those of the 3 other accessions. Differences in the length of blooming ot the 4 accessions were negligible. These differences in length of blooming seemed to be an influence of the environmental conditions rather than the genetic make-up of the plant accessions.

Test plants of the different accessions did not show any signs of disease or injury which might be attributed to pathogenic organisms or pests.

VI. Seed Production and Other Related Data of Thickspike Gayfeather 'Eureka':

All data presented in Table 2 were determined from samplings of hand cleaned seeds. Seed production under minimal irrigation and no fertilization ranged from 274 to 435 lbs./acre. Germination of less than one year old seed under

Table 2. Data on Seed production, germination, number of seed per pound, and purity of thickspike gayfeather 'Eureka'.

Year	Yield/Acre lb.	Germination %	Purity %	Number Per Pound
1972	435	68.5	95.05	129,828
1973	290	72.5	98.07	126,144
1974	274	81.5	96.78	131,266

greenhouse condition (26 ± 3 C) ranged from 68.5 to 81.5%. The number of seed / lb. ranged from 126,144 to 131,266.

The data presented may change substantially depending on the method of culture used in seed production and method used in harvesting and processing of seeds.

VII. Seed Increase and Distribution:

Foundation seed will be produced and distributed by the U. S. Soil Conservation Service Plant Materials Center at Manhattan, Kansas. Breeder seed will be maintained by the Department of Horticulture at the University of Nebraska Field Laboratory at Mead, Nebraska.

Foundation seed will be available for distribution in November, 1976.

Figure 1. Map showing natural distribution of thickspike gayfeather (area enclosed by broken lines) and adaptation range of cv. 'Eureka' (area enclosed by solid line).