UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

TECHNOLOGY DEVELOPMENT AND APPLICATION, ECOLOGICAL SCIENCES

WASHINGTON, D.C.

and the

MISSOURI AGRICULTURAL EXPERIMENT STATION

UNIVERSITY OF MISSOURI

COLUMBIA, MISSOURI

NOTICE OF RELEASE OF 'ROUNTREE' BIG BLUESTEM

The United States Department of Agriculture, Soil Conservation Service, and the Missouri Agricultural Experiment Station announce the naming and release of 'Rountree' big bluestem (Andropogon gerardii, vitman). It was developed by the Soil Conservation Service, USDA, and released in cooperation with the Missouri Agricultural Experiment Station.

'Rountree' big bluestem was collected from a native stand near Moorhead, Monona County, Iowa, evaluated, selected, and increased at the Elsberry Plant Materials Center, Elsberry, Missouri, as M2-10407. It was later assigned a temporary PI No. T05067.

In 1982, it was assigned a permanent number PI-474216. It has been evaluated at Elsberry PMC in comparison with 'Kaw,' 'Champ,' and 'Pawnee' cultivars as well as many new collections from field locations.

'Rountree' has been planted in field plantings throughout Iowa and Missouri and limited plantings in southern Illinois. Advantages over available cultivars are (1) increased seedling growth rate, (2) increased leaf rust resistance, (3) superior forage production, and (4) increased resistance to lodging.

Maturity of 'Rountree' is intermediate of the cultivars being compared being equal to 'Pawnee,' twelve days earlier than 'Kaw,' and five days later than 'Champ' in flowering period.

Adaptation of 'Rountree' is excellent throughout the area planted and the area of adaptation has not been exceeded.

The primary use of 'Rountree' big bluestem is as livestock forage seeded in pure stands or in mixtures. It is also suited for environmental plantings as well.

Four classes of seed (Breeder, Foundation, Registered, and Certified) of 'Rountree' are recognized. Breeders seed and Foundation seed will be produced by the Soil Conservation Service, Elsberry Plant Materials Center, Elsberry, Missouri, under the supervision of the Missouri Seed Improvement Association.

Registered seed may be produced from the first three seed crops as first generation progeny from Foundation seed.

Certified seed may be produced from the first through the eighth seed crops as first generation progeny from Foundation seed or the first through the fifth seed crops as second generation progeny from Registered seed.

Director, Ecological Sciences and Technology Division
Soil Conservation Service
Washington, D.C.

2/24/83
Date

State Conservationist
Soil Conservation Service
Columbia, Missouri

2-14-83
Date

assoc Director
Missouri Agricultural Experiment Station
Columbia, Missouri

2/8/83
Date

PROPOSED RELEASE

OF

PI474216 - 'ROUNTREE' BIG BLUESTEM

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BIG BLUESTEM

PURPOSE:

Selection of a superior cultivar of big bluestem for the western cornbelt for pasture forage.

DESCRIPTION:

PI474216 big bluestem is a tall warm season perennial native grass rated one of the highest quality forage grasses in the tall grass prairie. It is present in native plant communities from the east coast to the cornbelt and less frequently in the western great plains.

The growth habit is upright and appears to be a bunchgrass but has short rhizomes. Plants are bluish-green and multistemmed.

Seeds are born on racemes in groups of two to five, generally three. The purplish seed and racemes are the reason for its nickname turkey foot.

The basel sheaths and leaves are covered with dense hairs and the new leaves are rolled when they emerge from the bud.

PI474216 is typical of the species with regard to height, culm size and leaf size.

ORIGIN:

PI474216 was collected near Moorhead, Monona County, Iowa and planted at the Soil Conservation Service Nursery, Ankeny, Iowa for observations as M2-9256. A later generation was established as M2-10407. The number PI474216 was assigned in 1982.

EVALUATION PROCEDURE:

Initial evaluation was made at Elsberry Plant Materials Center in replicated rod rows in comparison with other field collections and commercial varieties.

Advanced evaluation consisted of gathering data from 4' x 20' plots with four replications including three released varieties. Plots

were established in 1973 with excellent original stands. Plots have not been fertilized between establishment and 1981.

Evaluation factors were used to select a productive, disease-free big bluestem well adapted to cornbelt climatic conditions.

The summary of evaluations is presented herein.

POTENTIAL CONSERVATION USE:

The original purpose in selecting a superior cultivar of big bluestem was to provide an adapted warm season grass for livestock forage production in the cornbelt states. PI474216 meets the requirements as a forage species and is also in demand for seedings for wildlife cover on state, federal and private lands devoted primarily to wildlife management. It has been found the warm season perennial grasses are extensively used as ground nesting wildlife cover and as excellent brood rearing areas for quail, pheasant and several non-game songbirds.

The warm season perennial pastures provide excellent secondary wildlife benefits as very good cover is maintained throughout the year and the pastures are not used until after many wildlife nesting and hatching periods have passed.

Some use will be made in establishing native grass area to display the appearance of the original native prairie in parks and wildlife preserves.

AREA OF ADAPTATION:

PI474216 has demonstrated adaptability in major land resource areas; 102, northwest Iowa; 108, central and southeast Iowa to 107 in western Iowa and central and northwest Missouri; 115, southeast and east central Missouri; 116, southwest Missouri. It is expected this cultivar will be adapted throughout Missouri, Iowa, Illinois, southern Minnesota and Wisconsin as well as eastern Kansas, Nebraska, and South Dakota.

DISCUSSION:

The following summary of data is in support of the proposed release of big bluestem, M2-10407 (PI474216). PI474216 was compared to four varieties of big bluestem; Kaw, Pawnee, Champ and M1-7826 (T5068). They were compared on forage yield, leaf rust resistance, lodging, stand, seedling vigor, seed maturity and flowering dates.

Forage yields for the five varieties were obtained from 1977 to 1980 for comparison. PI474216 had the best average for the first and second cuttings. Kaw exhibited the next highest forage production (first and second cuttings) with the other varieties

producing considerably less forage production. PI474216 and T5068 had the best average for the hay cuttings.

The average ratings for leaf rust resistance from 1973 through 1980 was good for all varieties, although PI474216 and T5068 stood out somewhat better than the rest. Kaw rated moderate, Pawnee and Champ rated severe leaf rust problems in one or more years of the study.

Champ had the best rating for plant lodging with PI474216 and T5068 being almost as resistant. Kaw and Pawnee only had fair ratings in this category with severe ratings in one or more years during the study.

Stand ratings were very good for all varieties. Kaw had the best average for the period 1973 through 1980. PI474216, Pawnee and T5068 averages were very comparable and not quite as good as the Kaw.

In a study conducted in the Plant Materials Center greenhouse to determine seedling growth rate, PI474216 big bluestem performed superior to all selections included in the study.

PI474216 was selected as superior for its increased productivity, leaf rust resistance, and greater adaptation to climate in the 35-40 inch rainfall areas of the cornbelt.

Improved stands have been observed in field plantings with this selection. The seedling growth rate study supports this stand establishment by demonstrating increased seedling growth rate of both root and top growth.

TABLE 1

Project 29A058G - Modification

Weather Data Chart April - October
1973 - 1981

	1973	1974	1975	1976	1977	1978	1979	1980	1981
April	4.55	3.31	4.69	1.59	.89	4.04	5.48	2.57	4.08
May	3.56	6.23	2.49	1.80	4.08	7.62	1.63	2.42	8.72
June	5.55	3.72	1.92	1.70	3.09	1.45	1.96	2.14	8.70
July	4.97	2.94	.67	1.70	3.96	5.68	2.93	3.48	8.77
August	2.71	6.14	6.39	2.14	3.31	3.13	5.95	3.96	1.86
September	7.98	2.53	3.15	1.84	4.63	4.05	.13	4.93	1.61
October	3.52	1.29	1.51	6.39	4.21	1.68	1.56	2.62	3.00
Average	4.69	3.74	2.97	2.45	3.45	3.95	2.81	3.16	5.25

TABLE 2

Forage Yield Data - Ave. 4 Reps.
Kg/Ha
1/ 2/
First and Second Cuttings

	1977	1978	1979	1980	Ave.
Kaw	5045	4021	9174	7182	6356
Pawnee	4701	3817	5330	6930	5195
T5068	5624	3513	7875	7355	6092
PI474216	5857	4174	7203	8461	6424
Champ	4713	3003	5120	5528	4591

1/ First cutting taken in the month of July

2/ Second cutting taken in the month of September

Forage Yield Data - Ave. 4 Reps.
Kg/Ha
3/
Hay Cutting

	1977	1978	1979	1980*	Ave.
Kaw	1336	3207	8950	9940	5858
Pawnee	1476	2647	7519	8774	5104
T5068	2098	2902	10221	11287	6627
PI474216	3068	3461	9961	9904	6599
Champ	2303	3003	9046	8288	5660

3/ Hay cutting taken in the month of August

*1980 Hay cuttings were made in September

TABLE 3

FORAGE YIELD DATA FOR 1981

Kg/Ha

Fertilized Plots*

	Date Clipped	1981 Forage Yield
Kaw	6-26-81	5,547
Pawnee	6-26-81	4,790
T5068	6-26-81	6,303
PI474216	6-26-81	8,068
Champ	6-26-81	4,790

Unfertilized Plots

Kaw	7-7-81	6,984
Pawnee	7-7-81	9,076
T5068	7-7-81	9,329
PI474216	7-7-81	10,841
Champ	7-7-81	8,824

*Fertilized plots received 50 pounds/acre of nitrogen the first week of May

TABLE 4

Average Digestibility and Crude Protein Content

Big Bluestem Entries	IVDMD W/P UREA	IVDMD W/UREA[1]	Crude PROTEIN
	%	%	
Kaw	41.09	46.20	5.96
Pawnee	40.06	45.54	5.84
T5068	41.78	46.45	6.34
PI474216	37.85	43.69	5.59
Champ	40.62	45.63	6.46
Entry Average	40.28	45.50	6.04
LSD .05	2.18	1.85	6.04

[1]Urea added when protein may be low.

TABLE 5

Crude Protein

Big Bluestem	% Crude Protein		
	Replications		
Entries	2	3	Average
Kaw	5.89	6.02	5.95
Pawnee	5.90	5.79	5.84
T5068	6.18	6.51	6.34
PI474216	5.45	5.73	5.59
Champ	6.62	6.29	6.45
Average	6.01	6.07	6.04

TABLE 6

In Vitro Digestibility Without Urea

Big Bluestem	% IVDMD				
	Replications				
Entries	1	2	3	4	Ave.
Kaw	41.24	41.09	40.64	41.40	41.09
Pawnee	36.88	40.85	40.83	41.66	40.06
T5068	40.79	41.47	42.54	42.32	41.78
PI474216	37.78	37.96	38.24	37.43	37.85
Champ	39.06	39.93	41.63	41.87	40.62
Average	39.15	40.26	40.78	40.94	40.28

TABLE 7

In Vitro Digestibility With Urea[1]

Big Bluestem	% IVDMD				
	Replications				
Entries	1	2	3	4	Average
Kaw	46.91	46.28	45.74	45.89	46.20
Pawnee	43.23	46.27	45.74	46.93	45.54
T5068	45.58	47.44	47.17	45.60	46.45
PI474216	41.92	45.41	44.68	42.76	43.69
Champ	42.80	45.63	47.07	47.01	45.63
Average	44.09	46.21	46.08	45.64	45.50

[1]Urea added when protein may be low

TABLE 8

Leaf Rust Resistance - Ave. 4 Reps.

	1973	1974	1975	1976	1977	1978	1979	1980	Ave.
Kaw	5.3	3.5	5.5	3.0	2.0	2.0	1.0	3.0	3.2
Pawnee	6.0	4.0	6.5	3.5	1.5	1.0	1.0	6.0	3.7
T5068	2.3	2.0	1.5	3.5	3.0	1.0	1.0	2.5	2.1
PI474216	2.0	3.5	3.0	2.5	1.5	1.5	1.0	4.8	2.5
Champ	7.0	6.5	6.0	2.5	1.0	1.0	1.0	5.0	3.8

Ratings: 1-Excellent
3-Good
5-Fair
7-Poor
9-Failure

Varieties		Ratings
Kaw	----------	3.2
Pawnee	----------	3.7
T5068	----------	2.1
PI474216	----------	2.5
Champ	----------	3.8

TABLE 9

Lodging Rating - Ave. 4 Reps.

	1973	1974	1975	1976	1977	1978	1979	1980	Ave.
Kaw	2.5	8.5	5.5	7.0	6.5	7.0	5.0	1.8	5.5
Pawnee	2.0	9.0	5.0	5.0	4.0	6.5	5.0	2.0	4.8
T5068	1.5	1.5	1.0	3.5	3.5	3.0	2.5	1.3	2.2
PI474216	1.5	3.5	1.0	3.0	3.0	3.0	2.0	1.0	2.2
Champ	1.0	1.5	3.5	1.5	1.0	4.0	1.0	1.0	1.8

Ratings: 1-Excellent
3-Good
5-Fair
7-Poor
9-Failure

Varieties	Ratings
Kaw	5.5
Pawnee	4.8
T5068	2.2
PI474216	2.2
Champ	1.8

TABLE 10

Stand Rating - Ave. 4 Reps.

	1973	1974	1975	1976	1977	1978	1979	1980	Ave.
Kaw	1.0	1.0	1.0	3.5	1.5	3.0	2.5	2.5	2.0
Pawnee	1.0	1.0	1.0	3.0	2.0	3.0	4.0	4.0	2.4
T5068	1.5	1.0	1.0	3.0	3.0	3.5	3.5	3.5	2.5
PI474216	1.5	1.0	1.0	3.0	1.5	3.5	4.0	4.0	2.4
Champ	1.0	1.0	1.0	5.0	3.5	4.0	3.0	3.0	2.7

Ratings: 1-Excellent
3-Good
5-Fair
7-Poor
9-Failure

Varieties	Ratings
Kaw ---------	2.0
Pawnee ---------	2.4
T5068 ---------	2.5
PI474216---------	2.4
Champ ---------	2.7

TABLE 11

Planting Date: 2-12-82

Project 29A058G - Modification
Seedling Growth Rate

Date First Seedling Emerged

	Big Bluestem			
	Pawnee	PI474216	T5068	Kaw
Rep 1	2-24	2-22	2-25	2-24
Rep 2	2-24	2-22	2-28	2-24
Rep 3	2-24	2-20	2-25	2-26
Rep 4	2-24	2-20	2-26	2-25
Rep 5	2-24	2-23	2-25	2-25
Rep 6	2-24	2-24	2-25	2-25
Rep 7	2-24	2-23	2-27	2-28
Rep 8	2-23	2-23	2-26	2-25
Ave.	2-24	2-22	2-26	2-25

TABLE 12

Project 29A058G - Modification
Seedling Growth Rate

Average Emergence Date of Five Seedlings in Each Pot

	Big Bluestem			
	Pawnee	PI474216	T5068	Kaw
Rep 1	2-24	2-22	2-26	2-26
Rep 2	2-24	2-22	3-2	2-26
Rep 3	2-24	2-20	2-26	2-28
Rep 4	2-24	2-20	3-1	3-1
Rep 5	2-24	2-23	3-2	2-27
Rep 6	2-24	2-24	2-26	2-26
Rep 7	2-24	2-23	2-28	3-2
Rep 8	2-23	2-23	3-1	2-25
Ave.	2-24	2-22	2-28	2-27

Table 13

Project 29A058G - Modification
Seedling Growth Rate

Date Five Plants Per Pot Reached an Average Height of 10 Cm

Planting Date: 2-12-82

	Big Bluestem			
	Pawnee	PI474216	T5068	Kaw
Rep 1	3-23	3-19	3-21	*
Rep 2	3-23	3-22	4-1	4-14
Rep 3	3-25	3-18	3-26	*
Rep 4	3-28	3-16	3-24	3-29
Rep 5	4-1	3-22	3-28	*
Rep 6	4-7	3-19	3-26	3-27
Rep 7	3-29	3-15	3-31	3-31
Rep 8	4-15	3-22	3-31	4-6
Ave.	3-31	3-19	3-27	4-8

*Pot had not reached 10 cm height before 48 day evaluation.
An estimated date was used in average.

TABLE 14

Project 29A058G - Modification
Seedling Growth Rate

Height and Number of Leaves Per Pot, 42 Days After Planting

	Big Bluestem							
	Pawnee		PI474216		T5068		Kaw	
	Cm Ht.	# Leaves	Cm Ht.	# Leaves	Cm Ht.	# Leaves	Cm Ht.	# Leaves
Rep 1	11.8	4.6	13.5	5.4	12.6	4.8	6.8	3.6
Rep 2	11.4	4.4	12.1	5.2	8.1	3.4	6.7	3.6
Rep 3	10.6	4.0	13.9	5.2	10.2	4.4	4.2	3.4
Rep 4	9.4	3.6	14.5	5.0	10.6	4.2	8.9	3.2
Rep 5	10.4	3.8	12.2	4.8	9.2	4.2	4.8	2.8
Rep 6	7.8	3.8	11.6	4.2	10.3	4.0	9.7	3.6
Rep 7	9.4	3.4	14.2	4.6	9.2	3.6	8.4	3.6
Rep 8	6.7	3.2	11.9	4.4	9.6	3.6	4.6	2.6
Ave.	9.7	3.9	13.0	4.9	10.0	4.0	6.8	3.3

TABLE 15

Project 29A058G - Modification
Seedling Growth Rate

Height, Number of Leaves, and Weight 48 Days After Planting

			Big Bluestem			
			Pawnee	PI474216	T5068	Kaw
Rep I		Ht (cm)	12.800	13.200	10.200	7.800
		# Leaves	5.200	6.400	4.800	4.600
	Top Wt.	Green	1.027	1.130	.692	.590
	Grams	Dry	.196	.212	.132	.121
	Root Wt.	Green	.210	.774	.461	.422
	Grams	Dry	.080	.110	.070	.061
Rep II		Ht. (cm)	12.100	16.300	11.900	5.500
		# Leaves	5.200	6.800	4.200	4.200
	Top Wt.	Green	.503	1.551	.597	.372
	Grams	Dry	.141	.313	.140	.074
	Root Wt.	Green	.232	1.052	.156	.106
	Grams	Dry	.029	.119	.049	.030
Rep III		Ht. (cm)	12.000	13.200	11.700	6.900
		# Leaves	5.400	4.800	5.200	3.000
	Top Wt.	Green	.749	.580	.750	.248
	Grams	Dry	.164	.166	.137	.042
	Root Wt.	Green	.140	.088	.308	.127
	Grams	Dry	.080	.056	.070	.013
Rep IV		Ht. (cm)	10.700	13.600	10.300	10.400
		# Leaves	4.200	5.000	4.200	4.600
	Top Wt.	Green	.470	.904	1.403	.232
	Grams	Dry	.112	.247	.107	.072
	Root Wt.	Green	.080	.503	.497	.110
	Grams	Dry	.027	.107	.072	.062
Ave.		Ht. (cm)	11.900	14.100	11.000	7.700
Four		# Leaves	5.000	5.800	4.800	4.100
Reps.	Top Wt.	Green	.687	1.041	.861	.361
	Grams	Dry	.153	.235	.129	.077
	Root Wt.	Green	.166	.604	.481	.191
	Grams	Dry	.054	.098	.065	.042

TABLE 16

Project 29A058G - Modification
Seedling Growth Rate

Height, Number of Leaves, and Weight of 4 Reps, 70 Days After Planting

			Big Bluestem			
			Pawnee	PI474216	T5068	Kaw
Rep I		Ht. (cm)	22.500	37.700	29.000	15.600
		# Leaves	21.000	18.200	18.400	12.400
	Top Wt.	Green	10.075	8.592	9.253	4.110
	Grams	Dry	2.380	2.180	2.049	.842
	Root Wt.	Green	8.837	9.100	10.078	4.905
	Grams	Dry	1.270	1.068	1.239	.432
Rep II		Ht. (cm)	20.200	40.800	24.700	20.700
		# Leaves	12.400	18.800	20.800	11.200
	Top Wt.	Green	4.719	12.976	7.342	3.410
	Grams	Dry	1.099	3.065	1.803	.917
	Root Wt.	Green	3.094	10.395	6.357	3.762
	Grams	Dry	.486	.653	.896	.700
Rep III		Ht. (cm)	17.800	28.600	22.200	21.400
		# Leaves	25.400	14.600	17.600	12.200
	Top Wt.	Green	6.960	5.740	6.117	4.631
	Grams	Dry	1.700	1.750	1.650	1.180
	Root Wt.	Green	6.682	10.982	5.127	5.983
	Grams	Dry	.909	.961	.758	.458
Rep IV		Ht. (cm)	18.000	32.200	23.900	18.500
		# Leaves	12.800	16.200	15.800	9.300
	Top Wt.	Green	2.805	11.412	10.160	2.527
	Grams	Dry	.742	2.909	2.351	.570
	Root Wt.	Green	1.133	12.704	8.112	1.712
	Grams	Dry	.320	1.359	1.010	.280
Ave.		Ht. (cm)	19.600	34.800	25.000	19.050
Four		# Leaves	17.900	17.000	18.200	11.400
Reps.	Top Wt.	Green	6.140	9.680	8.218	3.670
	Grams	Dry	1.480	2.476	1.963	.877
	Root Wt.	Green	4.937	10.795	7.419	4.091
	Grams	Dry	.746	1.010	.976	.468

TABLE 17

Flowering Dates

	1974	1975	1976	1977	1978	1979	1980	Ave.
Kaw	7/29	7/28	8/15	7/14	8/13	8/15	8/4	8/4
Pawnee	7/28	7/28	7/21	7/13	8/5	7/23	7/19	7/24
T5068	8/18	8/15	8/12	7/16	8/25	8/16	8/8	8/11
PI474216	7/24	7/28	7/30	7/4	7/30	7/23	7/23	7/23
Champ	7/24	7/28	7/13	6/27	8/1	7/16	7/21	7/18

Varieties	Date
Kaw ---------	8/4
Pawnee ---------	7/24
T5068 ---------	8/11
PI474216---------	7/23
Champ ---------	7/18

TABLE 18

Seed Maturity Dates

	1974	1975	1976	1977	1978	1979	Ave.
Kaw	9/7	9/8	10/6	9/13	9/11	9/10	9/14
Pawnee	8/24	9/8	9/24	8/15	9/8	9/10	9/5
T5068	9/4	9/19	10/10	10/6	10/5	10/10	9/29
PI474216	9/3	9/26	9/23	8/16	9/6	9/10	9/9
Champ	8/15	8/28	9/24	8/16	9/6	9/5	8/31

Varieties	Dates
Kaw ---------	9/14
Pawnee ---------	9/5
T5068 ---------	9/9
PI474216---------	9/9
Champ ---------	8/31

TABLE 19

Big Bluestem

Seed Quality Tests
Undebearded Seed Vs. Debearded Seed

Year of Seed	Undebearded			Debearded		
	Purity	Germination	Test Date	Purity	Germination	Test Date
1980	87.37	71.00	1981	98.27	77.00	1981
1979	80.73	71.00	1980	92.54	73.00	1980
1979	87.19	79.00	1981	92.30	86.00	1981
1978				90.71	66.00	1981
1978 (reclean)				91.90	64.00	1979
1978				91.90	50.00	1978
1977				77.13	59.00	1981
1977 (reclean)				95.10	74.00	1979
1977				52.00	78.00	1977
1976				90.50	64.00	1979

Seed of big bluestem was very successfully processed with the debearder and separated easily from foreign matter and other plant parts with a three-screen fanning mill. Seed quality was increased when processed in this matter as reflected in the above chart.

TABLE 20

SEED YIELD KG/HA

Andropogon gerardi - big bluestem

Seed Year	Kg/Ha
1973	236
1974	198
1975	200
1976	253
1977	117
1978	259
1979	224
1980	106
1981	173
Nine Year Average	196

FIELD PLANTING DATA:

Field size plantings have been made with landowners in Iowa and Missouri since 1972. Excellent stands have been attained when proper establishment procedures have been used.

Thirteen such plantings have excellent stands and production has been good. No measured production has been made other than estimates.

Plantings range from northwest Iowa to southeast Missouri. Adaptation appears to be good at all locations.

SEED PRODUCTION:

A field was established in 1969 in 36 inch rows. Rows are maintained by rototilling. Weed control is by rototilling and application of Aatrex at two pounds actual chemical per acre and Lasso at two quarts per acre. Occassional hand application of Roundup is used for spot treatment of perennial grasses invading certain areas of the field.

Fertility maintenance has been by test soil results for P_2O_5 and K_2O. Nitrogen application should not exceed about 50 pounds per acre as excess nitrogen increases the natural tendency of big bluestem to lodge before seed harvest.

The fertilizer is broadcast about mid-May and incorporated with the rototiller.

Seed is harvested from the standing plants by direct combine. Seed is then immediately dried in a forced fresh air bin dryer, debearded and separated from inert material with a fanning mill.

SEED QUALITY:

Seed quality test results are presented in Table 18.

METHOD OF ESTABLISHMENT:

At the present time a spring planting in late May or through June is most desirable. A fine clean, firm seedbed is required for good results. A grass drill with depth bands and press wheels is desirable to most effectively plant this seed. The seedbed must be rolled prior to drilling the seed.

A seeding may be made by broadcasting the seed on a cleantilled seedbed then rolled with a corrugated roller to firm the soil and lightly cover the seed to 1/4 to 3/4 inch depth.

Early results are showing fall dormant seedings may be possible by drilling or broadcasting the seed in October - December into fall

Early results are showing fall dormant seedings may be possible by drilling or broadcasting the seed in October - December into fall seeded spring oats. Only plot studies have been made and field size plantings have not yet been attempted.

Seeding rates of five to eight pounds per acre are used on good seedbeds, ten to twelve pounds per acre on less desirable sites and poor quality seedbeds.

PROPOSED METHODS OF CULTIVAR MAINTENANCE, INCREASE AND DISTRIBUTION:

Breeders and foundation seed will be maintained by the Soil Conservation Service at the Elsberry Plant Materials Center. Seed propagation will be limited to three generations from breeder seed: foundation, registered and certified.

It is proposed that the planting established in field #11 at the Elsberry Plant Materials Center serve as a source of breeder seed.

Foundation seed will be produced under the supervision and standards developed with the Missouri Seed Improvement Association. The standards require isolation, inspection and prior land use specifications be met.

Registered seed will be produced as first generation progeny of foundation seed. Registered seed may be produced from the first three seed crops.

Certified seed is to be produced from a field established from registered or foundation seed. A maximum of five seed crops may be harvested and sold as certified seed. Five certified seed crops may be harvested and sold from a field established from foundation seed in addition to the three seed crops of registered seed. Eight seed crops of certified seed may be harvested and sold from a field established from foundation seed.

Registered and certified seed must meet the state standards in the state where the production field is located.