



## **E. "Kika" de la Garza Plant Materials Center**



# **King Ranch Progress Report July 2007**



## **Switchgrass**

In July 2007, we evaluated the two seed harvests of October and November 2006 along with the field observations of October 2006 (Table 1). From this data, we felt, based on vegetative biomass and vigor along with seed harvest weight, percent seed fill, and germination, that we added to further cull the existing switchgrass plants down to eight plants. These eight plants had an October 2006 mean harvest with 76% seed-fill and a November 2006 harvest of 35% seed fill.

### **Suggested Plan for Swichgrass**

- 2007 - Harvest seed from the 8 existing plants in 2007
  - Evaluate hardiness and vigor
  - Germination of test seed
  
- 2008 - Take seed harvested from the remaining 8 plants in 2006 and establish a seed increase plot
  - Evaluate at different locations versus Alamo Switchgrass for germination,
  - seedling vigor, survival, forage production, and seed production

## Switchgrass Plot Map

King Ranch - Norias Plot  
 Switchgrass 100 - Six Day Germ Plants  
 (North End) N →  
 Planted 6-30-05

30'											
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10	
20'	*	*	X	8	X	X	X	X	8	*	Plant 10
	X	X	*	X	X	X	X	X	X	*	Plant 9
	X	X	8	*	X	X	X	X	X	8	Plant 8
	X	X	X	*	*	*	X	*	X	X	Plant 7
	*	X	*	*	X	X	*	X	8	X	Plant 6
	X	X	*	*	*	X	*	X	X	8	Plant 5
	*	X	*	X	*	X	X	*	X	X	Plant 4
	*	X	X	*	*	X	X	*	X	X	Plant 3
	*	*	*	*	X	X	X	X	X	*	Plant 2
		*	X	8	X	X	8	*	X	*	Plant 1
ROAD N →											

10' rows planted at 10 plants each, 2 feet apart.

\*\*\*Note: Map not to scale.

X = 57 plants taken out before 2006 harvest

\* = 35 plants taken out before 2007 harvest

8 = 8 plants left for 2007 harvest

**Table 1: King Ranch Switchgrass**

		10-27-06 harvest				11-13-06 harvest		
		Spikelet Weight (g)	Filled Seed Weight (g)	% Filled (by weight)	100 heaviest seed (g)	Spikelet Weight (g)	Filled Seed Weight (g)	% Filled (by weight)
Row 1	Plant 1	39.22	17.55	44.7%	0.1299	3.27	0.39	11.9%
Row 1	Plant 2	10.29	3.91	38.0%	0.1310	1.42	0.26	18.3%
Row 1	Plant 3	35.23	18.24	51.8%	0.1544	4.61	0.67	14.5%
Row 1	Plant 5	18.75	6.93	37.0%	0.1441	7.30	1.14	15.6%
Row 1	Plant 6	19.67	7.51	38.2%	0.1339	3.60	0.23	6.4%
Row 1	Plant 10	9.98	4.39	44.0%	0.0943	1.79	0.28	15.6%
Row 2	Plant 1	0.69+	0.36	52.2%	0.1129	1.14	0.27	23.7%
Row 2	Plant 2	0.70+	0.04	5.7%	0.0359	2.12	0.12	5.7%
Row 2	Plant 10	0.55	0.24	43.6%	0.1193	0.78	0.06	7.7%
Row 3	Plant 2	0.17	0.01	5.9%	no seed	2.97	0.08	2.7%
Row 3	Plant 4	13.59	6.60	48.6%	0.1266	9.10	1.19	13.1%
Row 3	Plant 5	4.38	1.73	39.5%	0.1399	1.28	0.25	19.5%
Row 3	Plant 6	20.45	6.61	32.3%	0.1108	2.22	0.25	11.3%
Row 3	Plant 8	24.22	14.05	58.0%	0.1318	3.32	0.91	27.4%
Row 3	Plant 9	8.32	3.11	37.4%	0.1069	3.55	0.30	8.5%
Row 4	Plant 1	123.13	66.51	54.0%	0.1424	10.94	2.45	22.4%
Row 4	Plant 2	10.85	7.21	66.5%	0.1279	0.87	0.26	29.9%
Row 4	Plant 3	2.31	0.36	15.6%	0.0779	4.26	0.71	16.7%
Row 4	Plant 5	13.66	8.25	60.4%	0.1523	2.01	0.35	17.4%
Row 4	Plant 6	1.38	0.34	24.6%	0.0903	4.02	0.34	8.5%
Row 4	Plant 7	4.20	1.12	26.7%	0.0359	2.70	0.44	16.3%
Row 4	Plant 8	9.31	3.53	37.9%	0.1292	7.45	0.98	13.2%
Row 4	Plant 10	18.06	11.50	63.7%	0.1582	5.38	1.59	29.6%
Row 5	Plant 3	6.57	3.63	55.3%	0.1523	0.79	0.29	36.7%
Row 5	Plant 4	5.24	1.88	35.9%	0.1000	8.05	1.13	14.0%
Row 5	Plant 5	5.54	0.44	7.9%	0.0842	3.31	0.33	10.0%
Row 5	Plant 7	0.90	0.40	44.4%	0.1355	9.11	1.60	17.6%
Row 6	Plant 7	11.93	4.27	35.8%	0.1181	8.12	1.11	13.7%
Row 7	Plant 1	16.80	8.84	52.6%	0.1278	8.51	1.99	23.4%
Row 7	Plant 5	19.86	12.54	63.1%	0.1650	3.95	1.31	33.2%
Row 7	Plant 6	3.79	1.51	39.8%	0.1100	1.27	0.13	10.2%
Row 8	Plant 1	25.98	12.75	49.1%	0.1443	7.36	2.45	33.3%
Row 8	Plant 3	5.15	2.19	42.5%	0.1255	8.03	1.61	20.0%
Row 8	Plant 4	2.63	1.23	46.8%	0.1435	2.36	0.50	21.2%
Row 8	Plant 7	0.99	0.49	49.5%	0.1105	0.56	0.06	10.7%
Row 9	Plant 6	16.65	11.57	69.5%	0.1446	9.39	3.24	34.5%
Row 9	Plant 10	42.54	31.84	74.8%	0.1335	2.86	0.89	31.1%
Row 10	Plant 1	30.36	18.96	62.5%	0.1261	0.96	0.23	24.0%
Row 10	Plant 2	4.64	2.16	46.6%	0.1023	1.47	0.28	19.0%
Row 10	Plant 5	58.07	25.82	44.5%	0.1209	8.79	1.74	19.8%
Row 10	Plant 8	22.18	14.34	64.7%	0.1279	2.91	1.12	38.5%
Row 10	Plant 9	7.58	4.25	56.1%	0.1064	2.87	0.39	13.6%
Row 10	Plant 10	7.62	4.89	64.2%	0.1595	4.23	1.53	36.2%

## **Brownseed**

The PMC planted an advanced evaluation plot at the King Ranch, Norias Division in June of 2005. This consisted of the 5 accessions chosen from Beeville and a collection of Brownseed that the King Ranch brought in that they had been working with. This plot was evaluated for field performance in 2005. The King Ranch collection had the best performance. Accessions 9088644-Victoria and 9088681-Goliad also had good performance. Ergot was seen on all the accessions in November 2005. Seed was harvested in September 2005. This seed was germination tested in 2006 (Table 2). The King Ranch had a much higher harvest total than the other accessions. However it had the lowest germination percentage, it still had significantly more PLS than the other accessions.

This plot was evaluated again for field performance in 2006 (Table 3). The King Ranch collection, accessions 9088644-Victoria, and 9088681-Goliad all had good performance. Two attempts were made to harvest seed, in September and October, but all seed had shattered due to rainstorms.

Another AEP was planted at the East Texas PMC in Nacogdoches, Texas in July 2005. The plot was evaluated in November of 2005. They also reported ergot on all accessions, but to a lesser degree on the King Ranch collection. The plot performed well and had no other apparent disease or insect problems. A small sample of seed was collected in December, but this was after most of the harvest had shattered. This seed was germination tested in 2006 (Table 4). A small seed harvest was made in May and another in July of 2006. These will be germination tested in 2007.

### **Suggested Plan for Brownseed Paspalum**

- 2007 - Observe existing plot and take data at the Norias
- Harvest seed from the plot at the Norias
- Observe plot and take data at the East Texas PMC
- Harvest seed from the plot at the East TX PMC
- Run Germination test on seed harvests

- 2007 - Establish a seed increase plot(s)

**Table 2. Study Number: 77I049H Brownseed Paspalum 2005 Norias Harvest Germination – Averages Across All Four Field Reps**

	Harvest (grams)	% Germ (adjusted for fill)
King Ranch	140.7g	33
9089219	15.5	57
9088644	15.2	48
9088647	9.0	45
9088681	21.0	39
9088651	8.7	52

\*12 hours dark at 20 °C, 12 hours light at 30 °C

**Table 3. Study Number: 77I049H Brownseed Paspalum Advanced Field Evaluation 2006**

**Norias Plot (sandy soil)**

Accession Number	% Survival	Plant Vigor*	Foliage Density*	Resistance *	Uniformity *	Seed Production*	Seed Shatter*
9089219	40	6.0	6.1	5.7	5.0	-	8.0
9088644	95	3.5	3.5	4.0	5.0	-	8.0
9088647	43	5.8	6.0	5.3	5.0	-	8.0
9088681	88	3.6	3.8	4.3	5.0	-	8.0
9088651	28	5.7	5.8	5.2	5.0	-	8.0
King Ranch	100	3.5	3.5	4.0	5.0	-	8.0

\*Ocular estimate (1 = Best & 5 = Average)

**Table 4. Study Number: 77I049H Brownseed Paspalum 2005 East TX PMC Harvest Germination – Averages Across All Four Field Reps**

	Harvest (grams)	% Germ (adjusted for fill)
King Ranch	2.5	33
9089219	2.9	50
9088644	5.0	88
9088647	3.1	45.3
9088681	4.3	37
9088651	4.1	47.5

\*12 hours dark at 20 °C, 12 hours light at 30 °C

# Brownseed Paspalum Plot Map

King Ranch - Norias Plot  
Brownseed A.E.P. (South End) N →  
Planted 6-30-05

	Guard Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Guard Row 8
C4 10'	Guard Row Brownseed 9088681 10 plants	Brownseed 9064466 rep 4 10 plants	Brownseed 9088681 rep 4 10 plants	Brownseed King Ranch rep 4 10 plants	Brownseed 9089219 rep 4 10 plants	Brownseed 9088651 rep 4 10 plants	Brownseed 9088647 rep 4 10 plants	Guard Row Brownseed 9088681 10 plants
5'								
C3 10'	Guard Row Brownseed 9088681 10 plants	Brownseed 9089219 rep 3 10 plants	Brownseed 9088651 rep 3 10 plants	Brownseed 9088647 rep 3 10 plants	Brownseed 9088681 rep 3 10 plants	Brownseed King Ranch rep 3 10 plants	Brownseed 9064466 rep 3 10 plants	Guard Row Brownseed 9088681 10 plants
5'								
C2 10'	Guard Row Brownseed 9088681 10 plants	Brownseed 9089219 rep 2 10 plants	Brownseed King Ranch rep 2 10 plants	Brownseed 9088647 rep 2 10 plants	Brownseed 9064466 rep 2 10 plants	Brownseed 9088681 rep 2 10 plants	Brownseed 9088651 rep 2 10 plants	Guard Row Brownseed 9088681 10 plants
5'								
C1 10'	Guard Row Brownseed 9088681 10 plants	Brownseed 9088651 rep 1 10 plants	Brownseed 9088647 rep 1 10 plants	Brownseed King Ranch rep 1 10 plants	Brownseed 9064466 rep 1 10 plants	Brownseed 9088681 rep 1 10 plants	Brownseed 9089219 rep 1 10 plants	Guard Row Brownseed 9088681 10 plants
ROAD N→								

10' rows planted at 10 plants each, 1 foot apart. 5' spacing between reps.

**\*\*\*Note:** Map not to scale.