

# **Corn Hybrid Silage Tests in Tennessee**

## **2004**

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Variety test results are posted on UT's website at:

**[http://taes.tennessee.edu/researchprograms/Variety\\_trials/](http://taes.tennessee.edu/researchprograms/Variety_trials/)  
and  
[www.utcrops.com](http://www.utcrops.com)**

# CORN SILAGE YIELD TESTS

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**Experimental Procedures:** 24 corn hybrids were evaluated for silage yield and quality in 2004. The test was conducted at the Knoxville, Springfield, Spring Hill, and Greeneville Experiment Stations. The growing conditions and the moisture supply were very favorable throughout the growing season at all locations.

The plot size at all locations consisted of two rows 30 ft. in length and replicated three times. Yields presented were adjusted to both dry weight and 65% moisture. The plant populations as well as the planting and harvesting dates are given in Table 1.

Plots were harvested by commercial silage harvesters. A sub-sample from each plot of approximately 4 lbs was taken for analysis. Fresh weight and dried weight was recorded on each sample for determination of moisture at harvest. The samples were then ground and analyzed for nutrient content. Silage quality analyses were provided by the University of Tennessee Forage Testing Lab. Additional sub-samples from Knoxville were packed and sealed in plastic containers, ensiled for 80 days, and analyzed for nutrient content.

**Growing Season:** The 2004 season was characterized by very favorable temperatures and rainfall for corn production. Record corn yields were achieved throughout the State for a second year in a row. Adequate amounts and very timely distribution of rain, and lower day and night temperatures, compared to normal, resulted in an exceptionally good growing season for corn.

### Interpretation of Data:

The tables on the following pages have been prepared with the entries listed in order of performance, the highest-yielding entry being listed first. At the bottom of the tables, **LSD** values stand for **Least Significant Difference**. The mean yields of any two varieties being compared must differ by at least the amount shown to be considered different in yielding ability at the 5% level of probability of significance. For example, given that the LSD for a test is 1.3 tons/a and the mean yield of Hybrid A was 9.3 tons/a and the mean yield of Hybrid B was 8.2 tons/a, then the two hybrids are not statistically different in yield because the difference of 1.1 tons/a is less than the minimum of 1.3 tons/a required for them to be significant. Similarly, if the average yield of Hybrid C was 10.6 tons/a then it is significantly higher yielding than both Hybrid B ( $10.6 - 8.2 = 2.4 \text{ tons/a} > \text{LSD of } 1.3$ ) and Hybrid A ( $10.6 - 9.3 = 1.3 \text{ tons/a} = \text{LSD of } 1.3$ ).

Also, the **coefficient of variation (C.V.)** values are shown at the bottom of each table. This value is a measure of the error variability found within each experiment. It is the percentage that the square root of error mean square is of the overall test mean yield at that location. For example, a C.V. of 10% indicates that the size of the error variation is about 10% of the size of the test mean. Similarly, a C.V. of 30% indicates that the size of the error variation is nearly one-third as large as the test mean. A goal in conducting each yield test is to keep the C.V. as low as possible, preferably below 20 percent.

**Table 1. Location information from experiment stations where the corn silage variety tests were conducted in 2004.**

Experiment Station / County	Location	Planting Date	Harvest Date	Plant Population
Knoxville Experiment Station	Knoxville	4/16/2004	8/20/2004	32,234
Tobacco Experiment Station	Greenville	4/23/2004	8/24/2004	22,070
Plateau Experiment Station	Crossville	5/4/2004	9/1/2004	29,621
Middle Tennessee Experiment Station	Spring Hill	5/10/2004	8/26/2004	24,103
Highland Rim Experiment Station	Springfield	4/19/2004	9/1/2004	24,684

**Table 2. Mean yields † of 24 corn hybrids evaluated for silage at five locations in Tennessee during 2004.**

Brand	Hybrid	Dry Weight	65% Moisture	Dry Weight				
		Avg. Yield ± Std Err. (n=5)	Avg. Yield ± Std Err. (n=5)	Knoxville	Greenville	Crossville	Spring Hill	Springfield
-----tons/a-----								
Pioneer	32D99	10.6 ± 0.5	30.3 ± 1.5	7.9	11.2	10.6	10.6	12.6
Dekalb	DKC63-24 (RR2/YGCB) (Poncho 250)	10.6 ± 0.5	30.2 ± 1.4	7.8	13.4	11.3	11.3	9.2
Pioneer	33V15	10.6 ± 0.5	30.2 ± 1.4	10.3	11.3	9.1	12.0	10.2
Dekalb	DKC69-71 (RR2/YGCB)	10.6 ± 0.4	30.2 ± 1.2	10.0	10.8	10.7	10.5	10.8
NK Brand	N91-R9	10.4 ± 0.5	29.6 ± 1.4	9.6	12.1	9.3	10.6	10.4
Dyna Gro	58K22 (RR)	10.1 ± 0.5	28.8 ± 1.3	9.5	12.3	9.2	9.5	10.0
Dyna Gro	58P59 (RR/YG)	10.1 ± 0.5	28.8 ± 1.3	9.5	8.8	10.1	10.6	11.4
FFR	740	9.8 ± 0.5	27.9 ± 1.4	9.0	9.0	8.9	9.7	12.3
TN Exp	TN 0404	9.7 ± 0.5	27.8 ± 1.4	9.6	11.9	8.2	8.9	10.0
Dekalb	DK697 (Poncho 250)	9.6 ± 0.5	27.6 ± 1.5	9.9	10.6	9.9	8.9	9.0
Pioneer	31G98	9.6 ± 0.5	27.5 ± 1.3	8.9	8.3	10.7	9.9	10.4
FFR	745 Bt	9.6 ± 0.5	27.4 ± 1.3	9.1	10.4	7.6	11.7	9.3
FFR	849 CL	9.6 ± 0.5	27.4 ± 1.4	10.0	9.6	9.7	8.8	9.9
FFR	900 BT	9.6 ± 0.5	27.3 ± 1.4	8.4	9.5	10.8	9.1	10.0
Mycogen	8681 FQ	9.5 ± 0.5	27.0 ± 1.3	8.9	9.1	9.4	10.7	9.2
Dekalb	DK697	9.4 ± 0.4	26.9 ± 1.2	9.9	9.6	9.2	9.2	9.2
Pioneer	31G66	9.3 ± 0.5	26.6 ± 1.4	10.5	9.1	8.2	8.6	10.3
Dekalb	DKC64-10 (RR2) (Poncho 250)	9.1 ± 0.5	26.2 ± 1.3	8.4	9.2	10.9	10.2	7.1
Pioneer	31R88	9.1 ± 0.5	26.1 ± 1.4	7.3	10.0	8.0	10.0	10.3
Vigoro	V58YR2	9.1 ± 0.4	26.1 ± 1.2	10.3	8.7	7.6	8.5	10.6
Dekalb	DKC69-71 (RR2/YGCB) (Poncho 250)	8.9 ± 0.5	25.5 ± 1.4	9.3	7.8	8.0	9.8	9.7
Dekalb	DKC61-43 (YGCB) (Poncho 250)	8.7 ± 0.5	25.0 ± 1.4	7.6	10.1	8.9	9.9	7.3
TN Exp	TN 0405	8.4 ± 0.5	24.1 ± 1.4	7.3	10.6	7.8	10.3	6.1
Mycogen	F2F797 (Cruiser)	8.2 ± 0.6	23.5 ± 1.6	7.2	9.3	7.9	9.3	7.4
<b>Avg. (bu/a)</b>		<b>9.6</b>	<b>27.5</b>	<b>9.1</b>	<b>10.1</b>	<b>9.2</b>	<b>10.0</b>	<b>9.7</b>
<b>L.S.D.<sub>.05</sub> (bu/a)</b>		<b>1.3</b>	<b>3.6</b>	<b>2.2</b>	<b>4.2</b>	<b>3.1</b>	<b>2.2</b>	<b>2.5</b>
<b>C.V. (%)</b>		<b>16.9</b>	<b>16.9</b>	<b>13.4</b>	<b>22.2</b>	<b>19.5</b>	<b>13.0</b>	<b>13.1</b>

† all silage yields are adjusted to dry weight basis unless otherwise indicated.

**Table 3. Mean yields † and agronomic characteristics of 24 corn hybrids evaluated for silage at five locations in Tennessee during 2004.**

Brand	Variety	Dry Weight	65% Moisture	Moisture at harvest (n=5)	Crude Protein (n=4)	ADF (n=4)	TDN (n=4)	-----Ensiled for 80 days-----				Lodging (n=2)	Plant Height (n=5)	Ear Height (n=2)
		Avg. Yield ± Std Err. (n=5)	Avg. Yield ± Std Err. (n=5)					Moisture (n=1)	Crude Protein (n=1)	ADF (n=1)	TDN (n=1)			
		tons/a	tons/a	%	%	%	%	%	%	%	%	%	inches	inches
Pioneer	32D99	10.6 ± 0.5	30.3 ± 1.5	62.1	7.9	30.4	72.7	45.0	9.0	23.7	83.2	3	128	60
Dekalb	DKC63-24 (RR2/YGCB) (Poncho 250)	10.6 ± 0.5	30.2 ± 1.4	61.5	7.9	31.1	72.6	49.9	8.1	22.5	84.1	0	122	57
Pioneer	33V15	10.6 ± 0.5	30.2 ± 1.4	60.3	8.3	29.5	74.6	48.5	9.2	25.6	83.4	2	127	54
Dekalb	DKC69-71 (RR2/YGCB)	10.6 ± 0.4	30.2 ± 1.2	61.6	7.6	30.2	73.2	49.6	8.7	23.9	83.9	4	123	59
NK Brand	N91-R9	10.4 ± 0.5	29.6 ± 1.4	66.3	8.6	33.0	71.8	40.0	7.4	31.4	76.9	4	136	63
Dyna Gro	58K22 (RR)	10.1 ± 0.5	28.8 ± 1.3	61.9	8.4	28.0	74.6	50.8	8.5	21.0	85.7	9	122	59
Dyna Gro	58P59 (RR/YG)	10.1 ± 0.5	28.8 ± 1.3	64.3	8.9	28.8	74.4	43.7	8.6	24.5	84.6	5	120	54
FFR	740	9.8 ± 0.5	27.9 ± 1.4	61.0	8.7	28.0	75.0	47.3	9.0	22.1	86.2	3	119	52
TN Exp	TN 0404	9.7 ± 0.5	27.8 ± 1.4	63.7	8.4	31.8	72.2	45.5	8.5	28.2	81.0	23	127	62
Dekalb	DK697 (Poncho 250)	9.6 ± 0.5	27.6 ± 1.5	61.1	7.8	31.1	72.4	41.9	8.2	26.9	81.5	6	117	57
Pioneer	31G98	9.6 ± 0.5	27.5 ± 1.3	66.3	8.6	30.4	73.9	47.4	8.7	20.0	87.2	1	125	58
FFR	745 Bt	9.6 ± 0.5	27.4 ± 1.3	63.1	8.0	29.2	74.6	44.4	9.0	23.4	85.9	2	120	60
FFR	849 CL	9.6 ± 0.5	27.4 ± 1.4	64.9	8.7	29.1	74.1	46.1	8.7	21.3	86.2	6	119	55
FFR	900 BT	9.6 ± 0.5	27.3 ± 1.4	65.0	7.9	30.7	72.7	45.6	8.8	23.8	84.9	9	123	55
Mycogen	8681 FQ	9.5 ± 0.5	27.0 ± 1.3	64.1	8.7	29.6	73.6	43.9	9.3	24.2	84.6	2	118	56
Dekalb	DK697	9.4 ± 0.4	26.9 ± 1.2	62.3	8.5	31.5	72.4	47.5	8.1	25.5	81.9	11	120	54
Pioneer	31G66	9.3 ± 0.5	26.6 ± 1.4	59.4	8.9	25.7	76.4	51.9	9.2	18.1	89.4	2	126	55
Dekalb	DKC64-10 (RR2) (Poncho 250)	9.1 ± 0.5	26.2 ± 1.3	62.9	8.6	29.9	73.6	47.5	9.4	21.0	87.5	1	121	53
Pioneer	31R88	9.1 ± 0.5	26.1 ± 1.4	64.5	8.4	28.8	74.4	47.4	8.0	20.5	87.7	3	127	58
Vigoro	V58YR2	9.1 ± 0.4	26.1 ± 1.2	63.3	8.4	27.3	75.4	47.5	8.5	21.6	86.6	8	123	53
Dekalb	DKC69-71 (RR2/YGCB) (Poncho 250)	8.9 ± 0.5	25.5 ± 1.4	62.5	7.2	33.9	69.7	48.8	8.7	22.5	84.4	20	122	57
Dekalb	DKC61-43 (YGCB) (Poncho 250)	8.7 ± 0.5	25.0 ± 1.4	63.4	8.6	28.3	74.6	51.5	8.7	18.5	88.9	1	114	48
TN Exp	TN 0405	8.4 ± 0.5	24.1 ± 1.4	67.7	8.6	29.9	73.6	45.1	7.7	28.3	79.3	11	129	62
Mycogen	F2F797 (Cruiser)	8.2 ± 0.6	23.5 ± 1.6	68.1	9.1	28.0	75.3	43.9	9.6	27.3	80.9	14	119	57

Codes:

† yields reported are dry weight basis unless otherwise indicated, feed analysis reported on an "dry weight" basis

Ensiled silage data from Knoxville

Bt = contains a *Bacillus thuringiensis* gene for insect resistance

RR = contains a gene for tolerance to glyphosate

CL = contains a gene for tolerance to Imidazolinone class herbicides

ADF = Acid Detergent Fiber

TDN = Total Digestible Nutrients

**Table 4. Mean yields † of six corn hybrids evaluated in two environments for two years (2003 - 2004) in Tennessee.**

Brand	Hybrid	2 Year	2004	2003	2 Year Knoxville	2 Year Greenville
		Avg. Yield ± Std Err. (n=4)	Avg. Yield ± Std Err. (n=5)	Avg. Yield ± Std Err. (n=5)		
-----tons/a-----						
FFR	900 BT	9.3 ± 0.4	9.6 ± 0.5	9.5 ± 0.4	9.1	9.6
Pioneer	32D99	9.2 ± 0.6	10.6 ± 0.5	9.1 ± 0.4	8.6	9.9
FFR	849 CL	9.1 ± 0.5	9.6 ± 0.5	8.3 ± 0.4	9.4	8.7
Pioneer	31G66	8.9 ± 0.5	9.3 ± 0.5	8.8 ± 0.4	9.4	8.3
Pioneer	31R88	8.8 ± 0.5	9.1 ± 0.5	8.4 ± 0.4	8.1	9.4
Dekalb	DKC64-10 (RR2) (Poncho 250)	8.3 ± 0.4	9.2 ± 0.5	7.7 ± 0.4	8.0	8.6
<b>Avg. (bu/a)</b>		<b>8.9</b>	<b>9.6</b>	<b>8.6</b>	<b>8.8</b>	<b>9.1</b>
<b>L.S.D.<sub>.05</sub> (bu/a)</b>		<b>1.7</b>	<b>1.3</b>	<b>0.9</b>	<b>1.8</b>	<b>3.1</b>
<b>C.V. (%)</b>		<b>16.4</b>	<b>16.9</b>	<b>11.7</b>	<b>12.7</b>	<b>19.2</b>

† all silage yields are adjusted to Dry Weight basis.

**Table 5. Mean yields † and agronomic characteristics of six corn hybrids evaluated for silage in two environments for two years (2003-2004) in Tennessee.**

Brand	Variety	Dry Weight	Moisture (n=4)	Crude Protein (n=4)	ADF (n=4)	TDN (n=4)	Lodging (n=2)	Plant Height (n=3)	Ear Height (n=2)
		Avg. Yield ± Std Err. (n=4)							
		tons/a	%	%	%	%	%	inches	inches
FFR	900 BT	9.3 ± 0.4	70.9	7.1	29.3	69.7	4	127	54
Pioneer	32D99	9.2 ± 0.6	70.9	6.7	32.7	67.5	2	133	58
FFR	849 CL	9.1 ± 0.5	70.0	8.1	27.7	72.5	2	124	54
Pioneer	31G66	8.9 ± 0.5	67.7	7.8	28.9	70.4	2	129	54
Pioneer	31R88	8.8 ± 0.5	70.3	7.1	27.9	71.0	4	131	57
Dekalb	DKC64-10 (RR2) (Poncho 250)	8.3 ± 0.4	70.1	7.2	31.2	68.8	2	124	53

Codes:

† yields reported are dry weight basis, feed analysis reported on an "dry weight" basis

Bt = contains a *Bacillus thuringiensis* gene for insect resistance

RR = contains a gene for tolerance to glyphosate

CL = contains a gene for tolerance to Imidazolinone class herbicides

ADF = Acid Detergent Fiber

TDN = Total Digestible Nutrients

**Table 6. Characteristics of corn silage hybrids evaluated in yield tests in Tennessee during 2004.†**

Early-Season Corn Hybrid Entries and Traits for 2004				Herbicide		Released or	
Brand	Hybrid	Grain Color	Maturity	Tolerance	BT Gene	Experimental	Comments
Dekalb	DKC61-43 (YGCB) (Poncho 250)	Y	111	---	YGCB	R	---
Dekalb	DKC63-24 (RR2/YGCB) (Poncho 250)	Y	114	RR2	---	R	---
Dekalb	DKC64-10 (RR2) (Poncho 250)	Y	114	RR2	---	R	---
Dekalb	DKC69-71 (RR2/YGCB)	Y	119	RR2	YGCB	R	---
Dekalb	DK697	Y	119	---	---	R	---
Dekalb	DK697 (Poncho 250)	Y	119	---	---	R	---
Dekalb	DKC69-71 (RR2/YGCB) (Poncho 250)	Y	119	RR2	YGCB	R	---
Dyna Gro	58K22 (RR)	Y	118	RR	---	R	High tonnage, highly digestible
Dyna Gro	58P59 (RR/YG)	Y	117	RR	YG	R	High tonnage, highly digestible
FFR	740	Y	114	---	---	R	---
FFR	745 Bt	Y	114	---	Bt	R	---
FFR	849 CL	Y	118	CL	---	R	---
FFR	900 BT	Y	119	---	YG	R	---
Mycogen	8681 FQ	Y	118	---	---	R	Forage Quality, Silage Only
Mycogen	F2F797 (Cruiser)	Y	115	---	---	R	For better soils, Brown Mid Rib, Silage Only
NK Brand	N91-R9	Y	124	---	---	R	High Tonnage
Pioneer	31G66	Y	118	---	---	R	---
Pioneer	31G98	Y	117	---	---	R	---
Pioneer	31R88	Y	120	---	---	R	---
Pioneer	32D99	Y	118	---	---	R	---
Pioneer	33V15	Y	114	---	---	R	---
TN Exp	TN 0404	Y	Full	---	---	E	---
TN Exp	TN 0405	Y	Full	---	---	E	---
Vigoro	V58YR2	Y	117	RR	YG	R	High quality silage hybrid

Codes:

Bt, YG, YGCB = contains a *Bacillus thuringiensis* gene for insect resistance

CL = contains a gene for tolerance to Imidazolinone class herbicides

Poncho 250, Cruiser = seed treated with a systemic insecticide

† Information on this table provided by the respective seed companies.

RR = contains a gene for tolerance to glyphosate

LL = contains a gene for tolerance to glufosinate

W = white grain

## Acknowledgments

This research was funded by the Tennessee Agricultural Experiment Station and the Tennessee Cooperative Extension Service with partial funding from participating companies.

We gratefully acknowledge the assistance of the following individuals in conducting these experiments:

Experiment Stations:

Knoxville Experiment Station, Knoxville  
**Dr. John Hodges**, Superintendent  
**Mr. Bobby McKee**, Sr. Farm Crew Leader  
**Mr. Lee Ellis**, Research Assistant

Plateau Experiment Station  
**Mr. Walt Hitch**, Superintendent  
**Mr. Greg Blaylock**, Light Farm Equipment Operator  
**Mr. Sam Simmons**, Light Farm Equipment Operator

Highland Rim Experiment Station, Springfield  
**Dr. Barry Sims**, Superintendent  
**Mr. William Pitt**, Research Associate

Middle Tennessee Experiment Station, Spring Hill  
**Dr. Dennis Onks**, Superintendent  
**Mr. Roy Thompson**, Research Assistant

Department of Plant Sciences  
**Dr. Dennis West**, Professor and Grains Breeder  
**Mr. David Kincer**, Research Associate