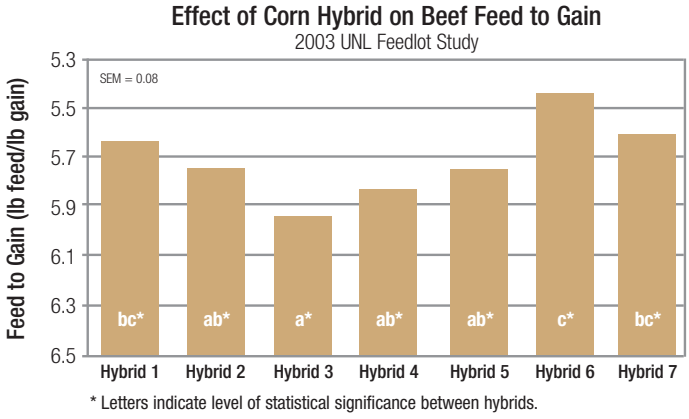
Corn Kernel Characteristics and Beef Performance 2011

The University of Nebraska – Lincoln (UNL) and Syngenta Seeds have worked jointly to determine the influence of corn kernel traits on feedlot cattle performance. The information from these trials provides answers to the following two questions.

1. Is cattle performance affected by the corn hybrid selected for feed rations?
2. What kernel characteristics of the hybrid most influence feed performance?

Beef Feedlot Study Design

- Crossbred steer calves were randomly assigned to pens.
- One of seven hybrids, each with different kernel characteristics, were fed in ration to an assigned pen.
- Rations consisted of 66% dry-rolled corn of the test hybrid with 20% wet gluten, 10% corn silage, and 4% supplement.
- Each hybrid was replicated in four pens.
- Cattle were fed for 167 days and processed at a commercial packing plant.
- Carcass data was collected and several beef performance and quality variables were calculated.



Graph 1

Kernel Characteristics Evaluated

1. Test weight
2. Weight of 1,000 kernels
3. Kernel size and shape
4. Feed constituent content (% protein, oil, starch, etc.)
5. Starch type
6. In-vitro starch disappearance
7. In-situ rate and extent of disappearance
8. Kernel hardness

Feedlot Study Results

Hybrids used in the ration statistically influenced “feed to gain” (Graph 1). Feed to gain is the average pounds of feed needed for each pound of animal gain. Lower feed to gain values are more desirable because animals consume less feed to produce the same amount of weight gain. Other animal performance variables measured but not influenced by hybrid grain characteristics include: dry matter intake, average daily gain, hot carcass weight, marble score and twelfth-rib fat.

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Best Predictors of Feed to Gain Response

- Weight of 1,000 kernels
  - Higher values correlated to better (lower) feed to gain (r^2 = -0.8135; P = 0.026).
  - Measurement is different from test weight which is weight per volume and is influenced by kernel shape and density.
- Kernel hardness
  - The Stenvert Hardness Test provided the best predictor of feed to gain response.
  - Hybrids that required less time to grind in a micro-hammer mill (r^2 = 0.8275; P = 0.022) and produced a larger percentage of soft particles (r^2 = -0.83202; P = 0.021) resulted in improved feed performance (lower feed to gain).
- In-situ rate of disappearance
  - Percent of grain digested in designated time period when placed in the rumen of live animal.

Golden Harvest® Brand Hybrid Beef Feed to Gain Ratings

Hybrid Series	RM	Feed to Gain	Hybrid Series	RM	Feed to Gain
H-6020	77	▼	H-8230	105	●
H-6058	80	▼	H-8239	105	●
H-6108	83	▼	H-8254	106	●
H-6186	83	✖	H-8265	106	●
H-6222	85	●	H-8324	106	▼
H-6314	86	▼	H-8577	107	★
H-6351	87	▼	H-8672	109	★
H-6276	88	●	H-8708	109	●
H-6467	88	✖	H-8864	110	▼
H-6455	90	★	H-8914	111	●
H-6606	91	▼	H-8928	111	●
H-6629	92	▼	H-8937	111	▼
H-6816	94	▼	H-8940	111	●
H-7029	96	●	H-8969	111	●
H-7044	96	●	H-8952	112	★
H-7105	96	✖	H-9002	112	▼
H-6931	97	●	H-9003	112	●
H-7122	97	●	H-9071	112	★
H-7162	97	★	H-9084	112	●
H-7254	97	▼	H-9014	113	●
H-7151	98	★	H-9167	113	●
H-7143	99	●	H-9173	113	▼
H-7439	100	▼	H-9180	113	★
H-7628	101	▼	H-9208	113	★
H-7633	101	▼	H-9240	113	▼
H-7647	101	▼	H-9253	113	▼
H-7652	101	★	H-9127	114	●
H-7679	101	●	H-9138	114	●
H-7540	102	★	H-9145	114	▼
H-7774	102	▼	H-9377	115	★
H-7818	102	▼	H-9392	115	●
H-7807	103	▼	H-9429	115	●
H-7891	103	●	H-9447	115	▼
H-7949	103	★	H-9574	116	●
H-8061	104	★	H-9690	118	▼
H-8211	105	●			

Rating Hybrids for Feed to Gain Performance

Golden Harvest Agronomy Up Front Research annually collects grain samples from multiple trials across the Midwest to characterize feed to gain performance. Assessments measuring 1,000 kernel weight and Stenvert Hardness Test analysis (time to grind and soft particle percentage) are conducted for each hybrid and used to assign a feed to gain rating based on the findings.

Feed to Gain Ratings

★ Hybrid is the best choice for optimizing feed to gain in a dry-rolled corn ration.

● Hybrid is well suited for use in a dry-rolled corn ration.

▼ Hybrid should only be used in a dry-rolled corn ration when packaged with “star” and/or “circle” hybrids.

✖ Hybrid is better suited to end-uses other than a beef feedlot dry-rolled corn ration.

For more information, contact your Golden Harvest Dealer or call 1-800-944-7333 (9GH-SEED). Visit us at www.goldenharvestseeds.com.

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This bulletin was developed by **Golden Harvest Agronomy Up Front Research**. Golden Harvest Agronomy Up Front Research studies and evaluates environmental and cultural practices that impact yield in both corn and soybean production to provide answers to the critical issues facing growers. In 2010, 27 research trials were conducted at 10 research locations.