ICCRA Report – Beloit, Mitchell County, Kansas Crop Circle, Sept. 9, 2006

On Saturday morning, September 9, 2006 at approximately 7 A.M., a large, single crop circle was noticed in a sorghum-sudan grass field near the small, rural town of Beloit, Mitchell County, Kansas. After a day and night of sometimes heavy rain on Friday (and into the morning on Saturday), the crop circle was spotted just after dawn by the family of H.J. Ackerman (their house is located closest to the crop circle), who then went out and took this first picture of the crop circle:

This first picture taken by the Ackerman's is notable for several reasons: (1) the photo clearly shows that there are no tracks leading out to the crop circle; (2) there are no tramlines or sprayer lines in the field to give access to potential hoaxers; (3) it shows the proximity of Plum Creek (which flows underneath the highway bridge to the right of the picture); and (4) it shows the proximity of two sets of powerlines (on both sides of the highway). Besides this photo, we also have photos from the Wallace family (the landowners) taken later the same morning, and from the local newspaper, *The Beloit Call*, all of which were taken before anyone had tracked out through the tall, thick crop to get to the circle.

The Ackerman's also noted that the circle was not there at sunset on Friday, and also that their daughter had stayed up late until 3 A.M. with a friend on Friday night/early Saturday morning, and no one in the house saw or heard anything unusual during the night, but that the circle was there at dawn.

The Beloit, Kansas crop circle is quite large for a single crop circle – 133 feet (N-S) by 132 feet (E-W). A check of the ICCRA USA crop circles report database shows that over the last 10 years (over 120 circle reports checked), the average single crop circle size is approximately 44 feet, and that there have been only two individual circles reported to have been larger than the Beloit circle – 176 feet (single circle in grass) at Green Mountain, North Carolina in 2005, and 140 feet (largest circle of more than 14 in wheat) at Rockville, California in 2003, and only two others over 100 feet.

The Beloit, Kansas crop circle is in an unusual crop for crop circles, it is Sorghum-Sudan, haygrazer [*Sorghum bicolor*], which was approximately 6-7 feet tall when the circle was first spotted. Below is a photo taken by ICCRA investigator Rich Webb showing ICCRA

investigator Ted Robertson making distance measurements of the circle. This gives a good comparison as to the height of the crop, as well as the size of the circle itself:

[Photo: Rich Webb, ICCRA]

This crop-type is used for cattle feed. There have been less than 20 reports in the USA of circles ever appearing in Sorghum, and none previously reported in our records of any in this type of Sorghum-Sudan grass mixture. Sorghum and Sudan, are types of grasses, and Sorghum in particular has stalks similar in thickness and nature to corn (maize). At the stage of growth during the Beloit event, these plants had approximately six to eight growth nodes on their stalks.

ICCRA – Beloit, Kansas – "Redness of Plants" Analysis

In some crop circles, an unusual 'redness' within the flattened plants's tissue from what appears to be an anomalous increase in the production of anthocyanin has been reported on occasion. When "redness" on the plants was reported in the Beloit, Kansas crop circle plants, an attempt was made to try and quantify in this crop circle whether or not there was an anomalous increase in the redness to the plants:

> Analysis by: Ted Robertson, Dr. Charles Lietzau
> Ted Robertson, on a suggestion by Dr. Charles Lietzau, made an attempt to quantify the amount of 'redness' that the plants in the Beloit, Kansas crop circle exhibited as compared to control plants in the rest of the field. A threshold was determined as to whether "considerable redness" was present, defined as a substantial portion of the stalks or leaves exhibiting redness and not including just small red spots. Ted Robertson examined 25 plants per sample at four locations inside the crop circle, and also from four locations (controls) that were 75 feet outside the crop circle. Here are the results:
> Circle Center: 15 of 25 plants exhibited "considerable redness"
> North Quadrant: 18 of 25 plants exhibited "considerable redness"
> East Quadrant: 8 of 25 plants exhibited "considerable redness"
> West Quadrant: 19 of 25 plants exhibited "considerable redness"
> (60 of 100 formation plants total exhibited "considerable redness")
>
> Control plants all measured at 75 feet outside the circle:
> Control 1 North: 20 of 25 plants exhibited "considerable redness"
> Control 2 East: 18 of 25 plants exhibited "considerable redness"
> Control 3 South: 18 of 25 plants exhibited "considerable redness"
> Control 4 West: 18 of 25 plants exhibited "considerable redness"
> (74 of 100 Control plants total exhibited "considerable redness")

Ted Robertson's analysis shows that there was no significant increase in the amount of 'redness' exhibited by the plants in the Beloit, Kansas crop circle. This does not mean that the previously-reported anomalous 'redness effect' does not exist or has been mis-reported in other crop circles, it just did not exist as an anomaly in this particular Beloit, Kansas crop circle. In fact, the ICCRA has previously reported this anomalous 'redness' effect in crop circles since late 2003 when we first noted and reported on it as being present at both the August 2003 Locust Grove, Ohio formation, and the September 2003 Bainbridge, Ohio formation – both formations in soybeans. We subsequently reported this effect in an RDF-type formation located at Hillsboro, Ohio in July of 2004, in which W.C.

Levengood, after examining ICCRA-gathered plant samples, then reported the anomalous presence of anthocyanin as the cause of the unusual redness on the plants. It has been reported as an anomalous effect sporadically at various crop circles since. Since anthocyanin production in plants can be a naturally-occurring process, we have to be careful and cautious about identifying an 'anomalous redness' characteristic as a marker or notable characteristic of non-man made crop circles. At this point it remains only a secondary (not primary) characteristic and must be carefully documented and analyzed to avoid being mis-identified. In the Beloit, Kansas crop circle, there was no statistical increase (or decrease) in the redness of the plants, and is most likely then the result of normal anthocyanin production in the plants at that stage of growth.

ICCRA – Beloit, Kansas – Growth Node Elongation Analysis

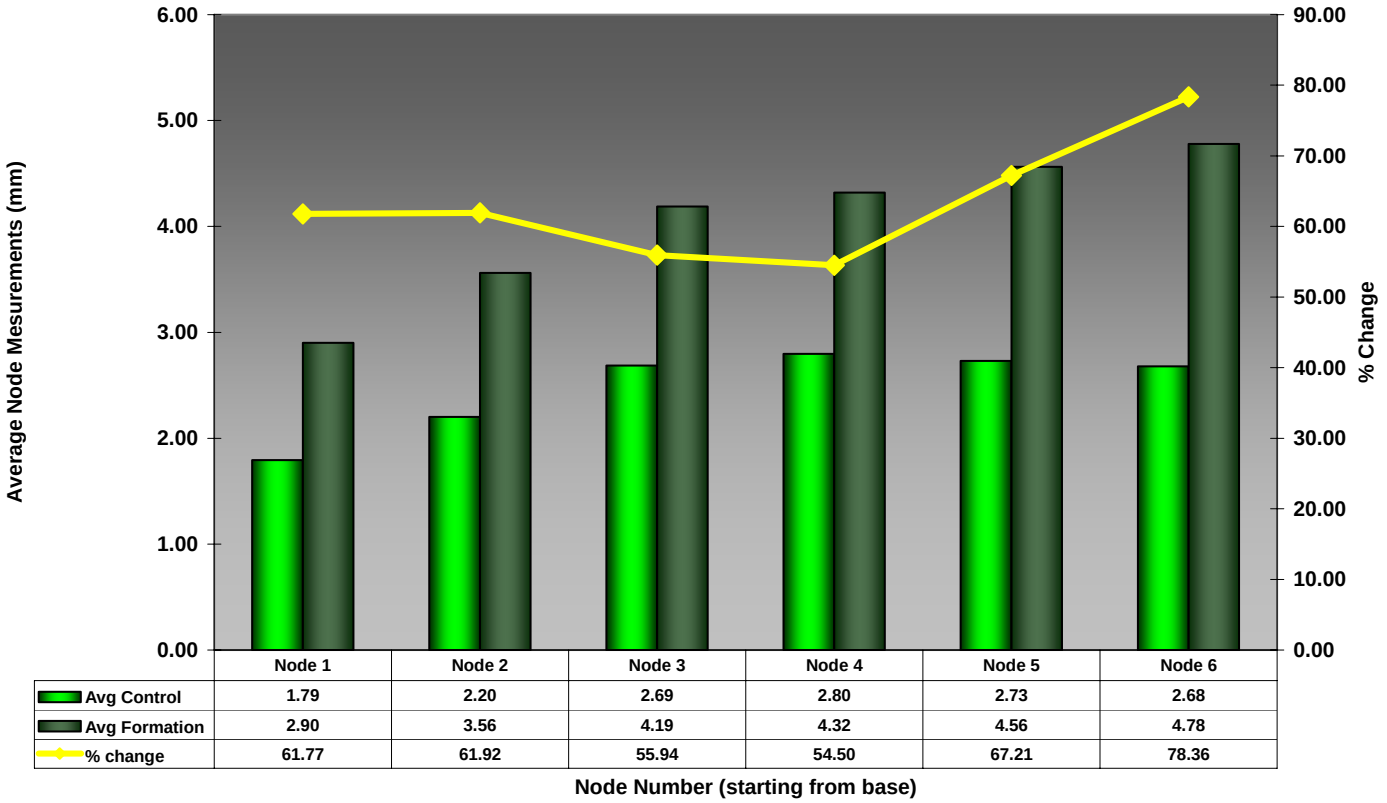
The primary identification test for determining the difference between mechanically man-made (hoaxed) and non-man made (authentic) crop circles remains the growth node elongation analysis test developed by biophysicist W.C. Levengood and published in the peer-reviewed science journal *Physiologia Plantarum* ("Anatomical anomalies in crop formation plants", *Physiologia Plantarum* 92:356-363). The ICCRA uses this node elongation test (where applicable) in the crop circles it investigates. Simply put, the "L-NEAT" (Levengood Node Elongation Analysis Test) that the ICCRA conducts collects a statistically-significant number of plant samples from a crop circle formation and compares them to a comparable amount of "control" plants taken at some distance away from the crop circle but in the same field. We measure the growth nodes on these plants and compare the two populations to determine if any difference exists. Since Levengood published his original paper, well over 200 crop circle formations have been tested in this fashion by Levengood, Dr. Eltjo Hasselhoff of the Netherlands (The Deepening Complexity of Crop Circles, 2002), the ICCRA, and others. No tested mechanically man-made formations have ever exhibited any change to the growth nodes of flattened plants using any of the typical hoaxer methods from a variety of crops. Authentic crop circles, on the other hand, do exhibit anomalous growth node elongation which can range from 15%-300% elongation to the nodes, depending upon the crop, moisture content of the plants, and time of the growing season.

ICCRA investigators Ted Robertson and Rich Webb collected a full set of plant samples and sent them to me for examination. Delsey Wilson and I measured and recorded the growth nodes of all the plants for comparison using a digital caliper. We had enough samples collected to measure each 'node group' (all node 1's, node 2's, node 3's, etc…) and get a statistically-valid comparison by node. For those considering making their own L-NEAT measurements, it isn't absolutely necessary to make measurements node group by node group on all nodes on every plant (although we did in this case to be comprehensive) to make an L-NEAT determination as to a formation's authenticity (it can be done by examining one or two nodes on a plant as a minimum), but it is important when making node measurements to measure the same node on every plant and compare them to the same node in the control plants. Oftentimes, the 'apical' node [the node closest to the tip of the plant] is used exclusively by some investigators to look for node elongation, but this node can also be the one most affected by natural node elongation due to phototropism/geotropism (plant recovery toward the sun) which begins to take place a few days after plants have been flattened. The ICCRA discards (or doesn't measure) any samples which have more than a 10° bend in the growth nodes (the approximate variable bend of a plant's stalk) to avoid any elongation which could be attributed to this natural node elongation/bending process.

In the Beloit, Kansas crop circle, every node group comparison resulted in overwhelming statistical evidence that the growth nodes measured from plants inside the Beloit, Kansas crop circle were elongated as compared to measured growth nodes from control plants gathered from standing plants in the same field. This evidence of plant changes shows that the Beloit, Kansas crop circle was not mechanically man-made, as these plant changes cannot be produced by typical hoaxer mechanical-flattening methods (i.e. using a board, garden roller, rope, or feet as tools for flattening the plants). As shown in the chart below, the formation plants' growth nodes were elongated between 54%-78% more than the standing control plants.

Beloit, Kansas Crop Circle Sept. 2006

Growth Node Measurements (Sorghum-Sudan "Haygrazer" Plants)



	Node 1	Node 2	Node 3	Node 4	Node 5	Node 6
Avg Control	1.79	2.20	2.69	2.80	2.73	2.68
Avg Formation	2.90	3.56	4.19	4.32	4.56	4.78
% change	61.77	61.92	55.94	54.50	67.21	78.36

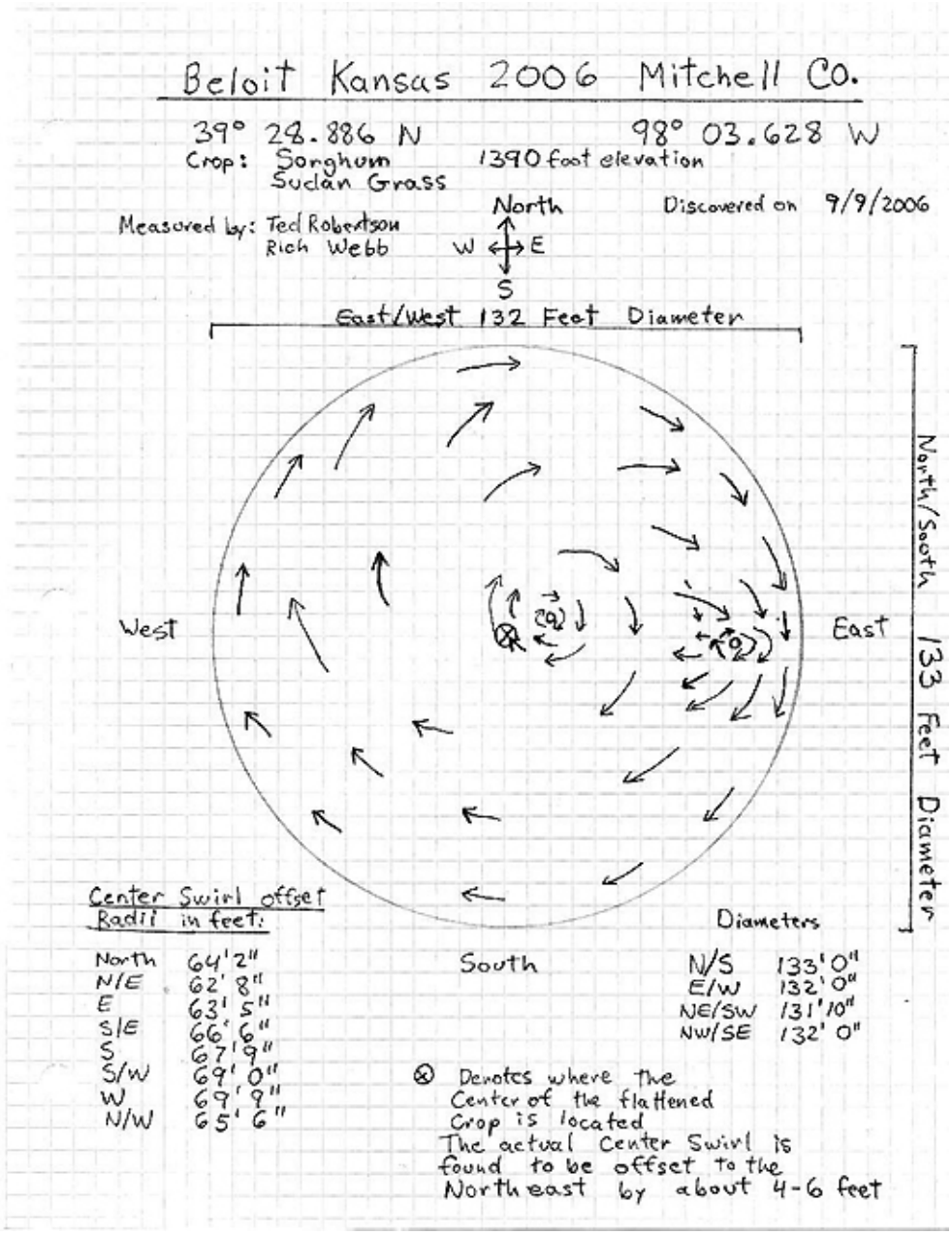
The growth node measurements were made starting with the node closest to the ground (Node 1), and up from there. No node measurements were made beyond Node 6 because in this type of plant at this stage of growth, after Node 6, the plant splits up into 2-4 branches with an additional 2-3 nodes which can be variable from plant to plant, and is not consistent across a large number of samples. For a complete statistical analysis of each node group measured, as well as the individual measurements, please see the Appendix. Here is an example of an average sized formation node next to an average-sized control plant (growth node for each highlighted in red):

[Photo: Jeffrey Wilson, ICCRA]

In all but the most extreme cases, visual checking for node elongation is completely unreliable. Actual measurements must be taken to make an L-NEAT determination, as most statistically-verifiable node elongation is imperceptible to the human eye. The full set of plant samples, as well as soil samples from the Beloit, Kansas crop circle have been forwarded on to biophysicist W.C. Levengood for further tests, including germination studies.

ICCRA – Beloit, Kansas – Additional Measurements

ICCRA investigators Ted Robertson and Rich Webb also made distance measurements of the size of the Beloit, Kansas crop circle, and identified some unusual patterns in the lay of the plants:



The formation had two swirled 'centers', with both 'centers' offset on the eastern side of the circle. Examples of crop circles with double or even triple-swirled centers have been identified in previous formations, although this effect is very rare. Ted Robertson described the lay of the stalks as being very gentle and 'fluffy':

[Photo: Ted Robertson]

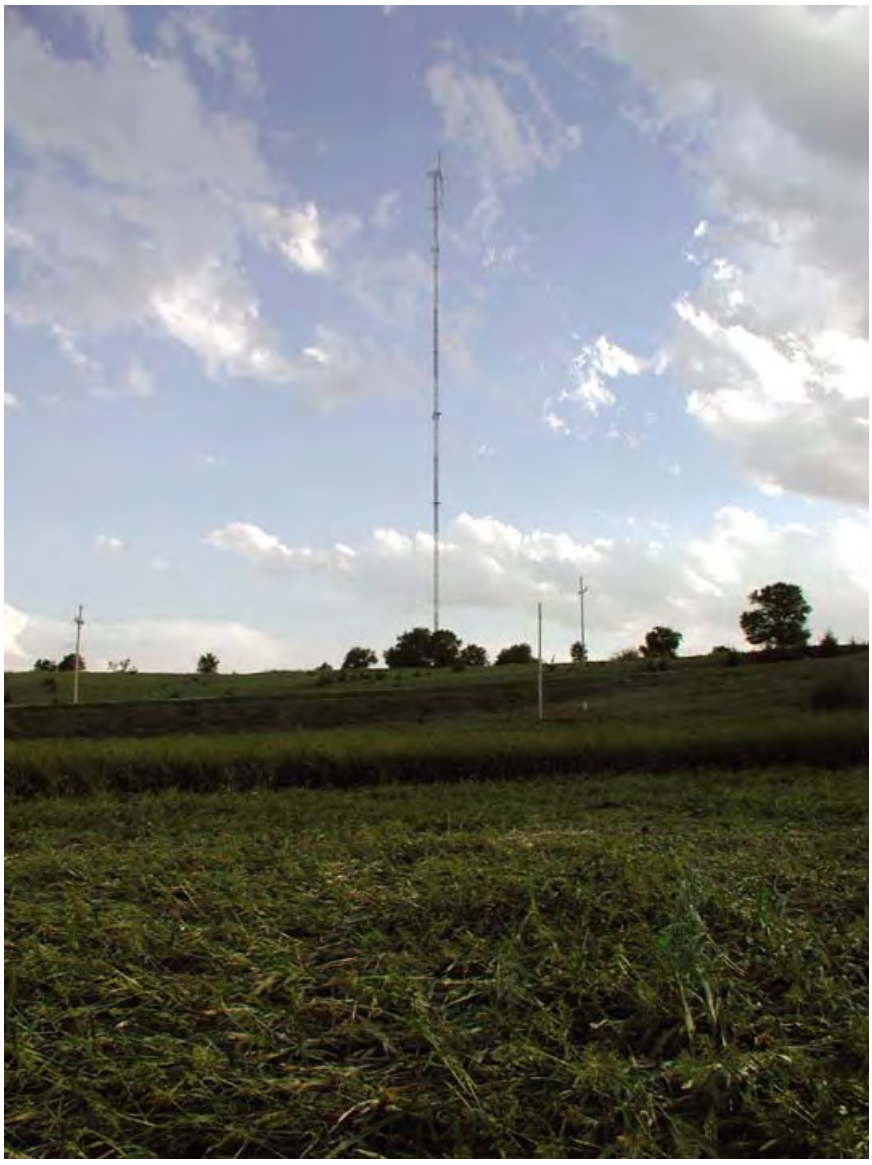
The stalks were bent down generally at the base, or within an inch or two from the soil. Ted Robertson and Rich Webb found no evidence of mechanical “crimping” marks or broken stalks, as is generally found in man-made formations with similar plant stalks such as corn (maize) , nor did they find any of the usual construction process ‘artifacts’ which are inevitably left behind by the typical mechanically-constructed hoax.

[Photo: Ted Robertson]

Ted Robertson and Rich Webb also tested to see how the plants would respond to them trying to mechanically push down stalks. Below is a photo showing two stalks, one broken at the base, and a second stalk broken up higher at about the same place on the stalk as many of the formation's plants were bent. As you can see, the mechanical attempt at flattening the sorghum resulted in a broken, splintered stalk:

[Photo: Ted Robertson]

ICCRA investigators Ted Robertson and Rich Webb also made electro-magnetic field measurements using a TriField Natural E-M meter and a TriField E-M Broadband meter (the Broadband meter measures for man-made sources of E-M, while the Natural E-M filters out most typical man-made sources of E-M radiation). The ICCRA has conducted many electro-magnetic [E-M] measurements of crop circles over the years, and has found that higher E-M fields can usually be detected inside crop circles at levels of 2-10 times higher than normal background (control) measurements – if measurements are made within the first week to 10 days after a crop circle forms. No higher E-M fields have ever been recorded when measurements were taken after that initial 7-10 day 'window of opportunity'. Unfortunately, by the time word reached us of this formation, Ted Robertson and Rich Webb did not get there within this 'window of opportunity', and were not able to record any higher E-M effects (Neither investigator had access to a Geiger counter, so no radiation measurements were conducted, but in our experience, the above mentioned time 'window' would also have applied to radiation measurements). They did manage to record (from all parts of the field) some small, but detectable levels of microwaves with the TriField Broadband meter coming from a telephone-repeater tower located on the hill across the street from the crop circle:



[Photo by Ted Robertson, ICCRA]

ICCRA – Beloit, Kansas – Additional Context

A landmark study by Glenn Broughton and Steve Page back in 1998 ("Crop Circles: The Underground Connection", *Mid-Atlantic Geomancy*, Issue 12, Winter Solstice 1998 Edition) which plotted the locations of crop circles reported in England from 1993-1998 showed that over 70% of crop circles in England were located on top of chalk or greensand aquifers. While no similar chalk-greensand geology exists here in the United States, the ICCRA has found a similarly high correlation with locations of crop circles in close proximity to water sources (approximately 95% of formations include this characteristic), including locating over the tops of limestone aquifers. As mentioned near the beginning of this report, the Beloit, Kansas crop circle is in very close proximity to Plum Creek which runs along the eastern border of the field, and the local geology for the Beloit, Kansas crop circle field is all limestone underneath the topsoil.

One additional characteristic that the ICCRA has noted is that many crop circles are reported near ancient Native American archaeological sites (at least 65% of formations), and while we could find no records of any ancient mound sites near this crop circle, we did turn up an interesting connection to both an ancient Native American site, and with an underground limestone water source. Just outside of the town of Beloit, there is a Kansas historical marker which reads:

> **Waconda (Great Spirit Spring)**
>
> Many moons ago, so runs an Indian legend, Waconda, a beautiful Princess, fell in love with a brave of another tribe. Prevented from marriage by a blood feud, this warrior embroiled the tribes in battle. During the fight an arrow struck him as he stood on the brink of a spring and he fell mortally wounded into the waters. Waconda, grief stricken, plunged after him. Believing her soul still lived in the depths, the tribes for countless ages carried their sick to drink the healing waters. Here they celebrated their victories and mourned their losses, never neglecting to throw into the spring some token for the Great Spirit.

Waconda Spring, ¾ mile south of this marker, is a mineral pool about fifty feet in diameter, set in a curious limestone basin.

Not only was this "Great Spirit Spring" set in a limestone basin, it was a rare, natural salt water spring. This limestone aquifer is quite large and not only runs from where the spring was located (which is now located under a dammed-up, artificial lake) underneath where the crop circle is located, but it stretches up into the state of Nebraska.

The state of Kansas has had over a dozen crop circle formations reported dating back to 1952. The most complex formation in Kansas has been a reported 'pictogram'-type crop circle in Kansas – located near Inman, McPherson County, Kansas in June of 1995, about 90 miles nearly due south of Beloit. It was a dumbbell type formation with an additional "key" pathway. That entire formation's length, which had a 68 foot circle connected to a 39 foot circle by a 14.5 foot long pathway (a total of about 121-122 feet) would have entirely fit inside the Beloit, Kansas single circle with room to spare.

ICCRA – Beloit, Kansas – Conclusions

The Beloit, Mitchell County, Kansas single crop circle in Sorghum-Sudan grass was one of the largest, single crop circles ever recorded in the United States. The growth nodes measured on the flattened plants inside the crop circle were 55%-78% elongated as compared to the plants left standing in the field. This primary measurement is considered by the ICCRA to be "L-NEAT" positive, and determines this crop circle to be "Authentic" (not mechanically man-made). Additional secondary characteristics, including geological, meteorological, and forensic evidence also support this conclusion.

Many thanks to the Wallace family for giving gracious permission to investigate their crop circle and collect samples for analysis and for taking the time to answer our many questions; thanks to Denielle Hardin for reporting the crop circle originally, for sending the first photos, and for tracking down important contact information; thanks to the *Crop Circle Connector* for passing along Denielle's report; thanks to H.J Ackerman and family for providing the first photo taken of the circle as well as taking the time to answer our many questions; thanks to the *Beloit Call* newspaper for sending us an early photo which also showed no tracks into the circle, and finally – thanks to all the investigators who worked on this formation, especially Ted Robertson for driving 11 hours (one-way) from Indiana and to Rich Webb for driving 4 hours from Nebraska to document this crop circle!

For additional information, please contact these members below:

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Independent Crop Circle Researchers' Association (International) [ICCRA]

The Independent Crop Circle Researchers' Association (International) [ICCRA] began as a small cooperative group of individuals in the Midwestern United States who have long pursued serious research into the crop circle phenomenon with the principle of open collaboration. This 'team' of researchers has steadily grown in number, and has now included contributions from members of the crop circle research community from around the world. Although all the researchers in this association are considered independent (and thereby retaining individual ownership of their work), the investigative community has recognized that the study of the various complexities and aspects of the crop circle phenomenon are beyond the abilities and resources of any one researcher or local group to study in sufficient depth. Hence, the need for a cooperative association and network dedicated to the widest and freest possible collection and dissemination of crop circle research.

The ICCRA recognizes the need in the research community to collect and make available as much objectively verifiable knowledge and details about crop circles as possible, and so will continue to study and document crop formations using a scientific framework.

The ICCRA is committed to working cooperatively with local farmers, respecting their property and conditions for granting permission and access to their fields, and can provide experienced consultation as to the ways they can cope with the existence of having a crop circle in their field. We are also committed to working cooperatively with law enforcement agencies to assist them in assessing and investigating reported crop circles, exposing the vandalism of crop circle hoaxers, and assisting with advice on the management of visitors to the crop circle sites.

The ICCRA began as a 'core' group of individuals cooperating as a rapid response team reacting to reports of local crop circles in order to study and document them. The ICCRA has recognized the need to expand the response network to include as many interested researchers as possible. To facilitate this network, the ICCRA has begun a researcher directory so that when a crop circle is reported, the closest local investigators will be notified. This will provide the best opportunity to investigate and document the site, and also gives the wider, international community a contact-resource for information and interaction in real time.

The ICCRA's highest priority is the sharing of information and research with the wider research community. Reporting and sharing of news and field reports of formations is being carried out through www.cropcirclenews.com. To help standardize report information, researcher access to a worldwide crop circle database with professional-level GIS mapping capability is also being developed at this website which will not only document and share the information collected in a systematic manner, but will also provide new research opportunities. This research center will also serve as a depository of

information collected on historical sites, scientific reports, photos, previous field reports, the researcher directory, and links to further crop circle resources. Many independent researchers have amassed valuable files over the years regarding this phenomenon. We encourage all such researchers to use this opportunity to enrich the wider community with your archived knowledge, while at the same time retaining ownership and credit for your years of effort.

All interested researchers, and both new and previously established organizations and networks are invited to join this cooperative and collaborative effort to locate, study, document, and share information about crop circle formations, regardless of each individual's personal hypothesis regarding the source cause of the authentic crop circle phenomenon, or their affiliations with any organizations.

ICCRA – Beloit, Kansas - Appendix

ICCRA - Beloit, Kansas Node Measurement Report

Circle first spotted: 7:00 AM, September 9, 2006 Crop: Sorghum-Sudan, haygrazer [*Sorghum bicolor*]
Samples collected by: Ted Robertson, Rich Webb Samples Measured by: Jeffrey Wilson, Delsey Wilson
*All Sample A's = control plants (collected at 100' and 200'); all sample B's = formation plants (collected from center, north edge, south edge)

VassarStats Printable Report t-Test for Independent Samples
Fri Sep 22 10:26:56 EDT 2006

Values Entered – Node 1

Sample A	Sample B
1.46	3.40
1.82	3.01
1.45	2.99
1.76	2.70
1.77	2.09
2.85	2.32
1.85	4.12
1.77	2.95
1.60	1.80
1.36	1.72
2.10	3.22
2.22	3.82
0.91	3.51
1.76	2.03
2.51	2.16
1.53	2.96
1.76	2.76
	1.91
	2.91
	3.72
	3.29
	3.10
	4.16
	2.96

Summary Data

	A	B	Total
n	17	24	41
ΣX	30.48	69.60999999999998	100.08999999999999
ΣX^2	57.867200000000004	213.37849999999997	271.2457
SS	3.2184	11.4805	26.904
mean	1.7929	2.9004	2.4412

$Mean_A$—$Mean_B$	t	df
-1.1075	-5.69	39

P		
	one-tailed	<.0001
	two-tailed	<.0001

VassarStats Printable Report t-Test for Independent Samples
Fri Sep 22 10:28:48 EDT 2006

Values Entered – **Node 2**

Sample A	Sample B
2.64	2.00
2.02	3.47
2.58	4.44
2.21	3.52
2.80	2.62
2.06	3.20
2.09	3.85
2.19	4.44
1.69	2.70
3.04	2.42
2.10	3.98
1.58	4.81
2.44	3.32
1.40	3.15
2.32	4.45
2.04	4.26
	3.98
	3.99
	4.19
	2.58
	2.72
	3.13
	4.77
	2.46
	4.72
	4.02
	2.99

Summary Data

	A	B	Total
n	16	27	43
$\sum X$	35.199999999999996	96.17999999999996	131.37999999999997
$\sum X^2$	80.30000000000001	360.155	440.455
SS	2.86	17.5405	39.0433
mean	2.2	3.5622	3.0553

$Mean_A$—$Mean_B$	t	df
-1.3622	-6.12	41

P		
	one-tailed	<.0001
	two-tailed	<.0001

VassarStats Printable Report t-Test for Independent Samples
Fri Sep 22 10:31:49 EDT 2006

Values Entered – **Node 3**

Sample A	Sample B
2.85	4.38
2.10	3.42
2.42	5.51
2.84	3.91
3.08	3.36

2.95	2.68
1.84	3.63
3.52	4.28
3.97	4.22
1.58	2.42
2.93	4.78
1.83	3.82
2.66	4.45
3.40	3.06
2.52	8.82
2.32	6.43
2.86	4.57
	4.44
	4.20
	3.90
	2.72
	3.13
	4.26
	4.59
	3.72
	4.50
	3.91

Summary Data

	A	B	Total
n	17	27	44
ΣX	45.669999999999995	113.11000000000001	158.78
ΣX^2	129.1585	515.1413	644.2998
SS	6.4674	41.2942	71.3205
mean	2.6865	4.1893	3.6086

$Mean_A$—$Mean_B$	t	df
-1.5028	-4.55	42

P	**one-tailed**	<.0001
	two-tailed	<.0001

VassarStats Printable Report t-Test for Independent Samples
Fri Sep 22 10:33:41 EDT 2006

Values Entered – **Node 4**

Sample A	Sample B
2.56	4.98
2.53	4.33
2.40	4.60
2.84	3.91
3.09	3.36
3.36	4.28
2.14	4.35
3.45	4.54
3.24	4.23
1.92	2.84
3.13	4.05
2.46	4.58
2.10	4.45
3.10	3.21
3.06	6.81
3.29	5.13
2.86	3.75

	4.05 4.83 3.93 4.80 4.25 4.59 2.64 4.86 4.96

Summary Data

	A	B	Total
n	17	26	43
Σ_X	47.53	112.30999999999999	159.83999999999997
Σ_{X^2}	136.5197	501.8767	638.3964000000001
SS	3.6314	16.7407	44.2377
mean	2.7959	4.3196	3.7172

$Mean_A$—$Mean_B$	t	df
-1.5237	-6.93	41

P		
	one-tailed	<.0001
	two-tailed	<.0001

VassarStats Printable Report t-Test for Independent Samples
Fri Sep 22 10:36:18 EDT 2006

Values Entered – **Node 5**

Sample A	Sample B
2.54 1.39 2.39 2.69 2.88 3.26 2.98 3.32 2.92 1.91 2.44 3.37 2.74 2.82 2.90 3.12	5.21 4.03 3.65 3.33 5.15 3.56 3.80 4.59 4.23 3.17 4.16 4.50 6.07 5.36 3.98 4.15 5.48 5.43 4.75 6.03 3.64 4.10 6.60

Summary Data

	A	B	Total
n	16	23	39

Σ_X	43.669999999999995	104.96999999999998	148.64
Σ_{X^2}	123.24609999999998	498.6937	621.9398
SS	4.0543	19.6197	55.4308
mean	2.7294	4.5639	3.8113

$Mean_A$—$Mean_B$	t	df
-1.8345	-7.05	37

P	**one-tailed**	<.0001
	two-tailed	<.0001

VassarStats Printable Report t-Test for Independent Samples
Fri Sep 22 10:38:26 EDT 2006

Values Entered – **Node 6**

Sample A	Sample B
2.89	4.28
2.93	4.24
2.80	3.67
2.46	3.74
2.32	4.62
	3.87
	5.18
	6.75
	4.44
	5.64
	5.32
	4.61
	3.73
	5.68
	5.09
	5.62

Summary Data

	A	B	Total
n	5	16	21
Σ_X	13.400000000000002	76.48	89.88000000000001
Σ_{X^2}	36.211	377.2142	413.4252
SS	0.299	11.6398	28.7388
mean	2.68	4.78	4.28

$Mean_A$—$Mean_B$	t	df
-2.1	-5.17	19

P	**one-tailed**	<.0001
	two-tailed	<.0001

Comment: Every node group comparison resulted in overwhelming statistical evidence that the growth nodes measured from plants inside the Beloit, Kansas crop circle were elongated as compared to measured growth nodes from control plants gathered from standing plants in the same field. This evidence of plant changes shows that the Beloit crop circle was not mechanically man-made, as these plant changes cannot be produced by typical hoaxer mechanical flattening methods (i.e. using a board, garden roller, rope, or feet as tools for flattening the plants). As shown in the chart below, the formation plants' growth nodes were elongated between 54-78% more than the standing control plants.

Beloit, Kansas Actual Node Measurements Table

Sample Name	Node 1	Node 2	Node 3	Node 4	Node 5	Node 6
Control - 200'	1.46	2.64	2.85	2.56	2.54	
	1.82	2.02	2.10	2.53	1.39	
	1.45	2.58	2.42	2.40	2.39	
	1.76	2.21	2.84	2.84	2.69	
	1.77	2.80	3.08	3.09	2.88	2.89
	2.85		2.95	3.36	3.26	
	1.85	2.06	1.84	2.14	2.98	
	1.77	2.09	3.52	3.45	3.32	
avg	**1.84**	**2.34**	**2.70**	**2.80**	**2.68**	**2.89**
Control - 100'	1.60	2.19	3.97	3.24	2.92	2.93
	1.36	1.69	1.58	1.92	1.91	
	2.10	3.04	2.93	3.13	2.44	2.80
	2.22	2.10	1.83	2.46	3.37	2.46
	0.91	1.58	2.66	2.10	2.74	2.32
	1.76	2.44	3.40	3.10	2.82	
	2.51	1.40	2.52	3.06	2.90	
	1.53	2.32	2.32	3.29		
	1.76	2.04	2.86	2.86	3.12	
avg	**1.75**	**2.09**	**2.67**	**2.80**	**2.78**	**2.63**
Formation Center	3.40	2.00	4.38	4.98	5.21	
	3.01	3.47	3.42	4.33	4.03	4.28
	2.99	4.44	5.51	4.60	3.65	4.24
	2.70	3.52	3.91	3.91	3.33	3.67
	2.09	2.62	3.36	3.36	5.15	3.74
	2.32	3.20	2.68	4.28	3.56	
	4.12	3.85	3.63	4.35	3.80	4.62
	2.95	4.44	4.28	4.54	4.59	3.87
	1.80	2.70	4.22	4.23	4.23	
	1.72	2.42	2.42	2.84	3.17	
	3.22	3.98	4.78	4.05	4.16	
avg	**2.76**	**3.33**	**3.87**	**4.13**	**4.08**	**4.07**
Formation South	3.82	4.81	3.82	4.58		
	3.51	3.32	4.45	4.45		
	2.03	3.15	3.06	3.21	4.50	5.18
	2.16	4.45	8.82	6.81	6.07	6.75
	2.96	4.26	6.43	5.13	5.36	
		3.98	4.57	3.75	3.98	4.44
	2.76	3.99	4.44	4.05		5.64
	1.91	4.19	4.20			
avg	**2.74**	**4.02**	**4.97**	**4.57**	**4.98**	**5.50**
Formation North	2.91	2.58	3.90	4.83	4.15	5.32
		2.72	2.72	3.93	5.48	4.61
	3.72	3.13	3.13	4.80	5.43	3.73
	3.29	4.77	4.26	4.25	4.75	
	3.10	2.46	4.59	4.59	6.03	5.68
		4.72	3.72	2.64	3.64	5.09
	4.16	4.02	4.50	4.86	4.10	
	2.96	2.99	3.91	4.96	6.60	5.62
avg	**3.36**	**3.42**	**3.84**	**4.36**	**5.02**	**5.01**

http://stephenville.tamu.edu/forages/fot/species/sorghumsudangrass.html

Species:	Sorghum-Sudan, haygrazer [*Sorghum bicolor* (L.) Moench.]
Cultivars:	Many
Origin:	Africa
Use:	Grazing, hay, silage
Description:	
General:	8-12 feet tall, bunchgrass.
Life Span:	Annual
Adaptation:	
pH:	5.5-7.5
Soil:	Sandy-loam.
Rainfall:	18-60 inches.
Temperature:	47 ºF (minimum).
Management:	
Seeding Rate:	25-30 lb/A
Planting Date:	April-May
Planting Depth:	0.25-0.5 inch
Seed Cost:	$10-15/A
Season of Use:	June-September
Production:	4 to 10 tons/A (hay 90% DM)

Notes: May cause **nitrate** poisoning, **prussic acid** poisoning, or **interstitial cystitis** (Horses).