Crop Formation: Saskatchewan, Canada, 1996

Laboratory Code: KS-03-166
Location: Rocanville, Saskatchewan, Canada
Material: Wheat (*Triticum aestivum*) **Formed:** 9-3-96 **Sampled:** 9-20-96
Sampled By: Mr. Daniel Clairmont, Esterhazy, Canada
Formation Characteristics: Two circles about 45 ft. in diameter, with an 80 ft. separation.

Relevant Findings:

1) - examination of over 600 formation plants and over 200 controls disclosed no evidence of stem node length changes in the circles (and no expulsion cavities).
2) - the absence of any gravitropic responses indicates that the plants were mature when the energies hit the field (this was also confirmed by extensive redox testing of seeds).
3) - evidence of external vortex energies was however, quite apparent from the increased concentrations and distribution of magnetic particles in soil taken both within and outside the circles.
4) - samples taken on the North-South radii showed linear distributions of the magnetic particles, which decreased as a function of distance from the epicenters of the circles. Both circles disclosed remarkably similar linear correlations ($r>0.9$).
5) - magnetic-drag data from samples collected along NW-SE radii produced essentially flat curves (from both circles), which were suggestive of isobaric or uniform weight distributions.
6) - although the mean level of magnetic material was lower in control samples taken 100-200 ft. outside the circle formations, it was above the concentration expected in normal soil. This pattern of increased magnetic material in soil extending beyond the visual, downed crop formation, is typical of data obtained from other crop formations sampled over the past year.

Results and Discussion:

Details of the formations are shown in Fig.1 and the sampling diagram in Fig.2, attached. The following table summarizes the results of extensive node length examinations in 36 sample sets consisting of about 20 plants per group (node lengths are in mm).

	Node Length (Nl)		
Sample Groups	ave.	s.d.	N-plants examined
All Controls	3.40	0.37	201
Formations	3.43	0.48	635

Since this formation occurred at or even after full maturity (and dehydration) of the plants, the absence of any significant difference between the node lengths within the formation and the controls is understandable, due to the loss of elasticity typical in mature wheat stems. The intensity of energies involved in this event may also have been less than that present at other crop formations. [Most crop formations examined in this laboratory were formed when the plants were at an earlier stage of development.]

If the seeds were fully developed (dehydrated) when the energy impacted the field, the opportunity is presented for studying, under field conditions, the possible effects of the formation energy on completely developed embryos. The redox[1] method was used for this purpose: in twelve tests consisting of six control and six formation samples (144 sequences or data points) there was no statistical difference between the controls and formation samples (the seeds were mature).

The mature plant development was also confirmed by the complete absence of a gravitropic response in the formation plants. From our 1997 control study[2] we found that in developing plants which are flattened into the horizontal position (mechanical or otherwise) the nodes are naturally expanded. This gravitropic response results from the vertical, active transport of auxin (IAA) to the lower side of the stems where it locally increases cell growth rates, thus producing an upward bending of the horizontal plant stems[3]. At the stem nodes this gravitropism effect produces a lengthening of the node region. Since the Rocanville plants were sampled 17 days after the occurrence we would expect to find about a 40% node length increase (see Fig.2 in reference-2) originating from the gravitropic response (completely independent of the formation energies). The fact that the data in the table do not show this expected node length change in the formation plants again demonstrates that the plants were fully mature at the time the formation occurred.

From results of magnetic-drag experiments conducted on soil samples we report a completely different situation with regard to remnant energy effects. Here we found clear evidence of magnetic particle - crop formation energy interactions. A routine, laboratory procedure has been established for removing magnetic particles from soil samples collected in and around crop formation sites. **In normal soil the content of magnetic material is in the range of 0.4mg/g-soil.** In the Rocanville event we found levels considerably above this normal range. In Fig.3 are data from the N-S radius from Circle-#1, and in Fig.4 from Circle-#2, both showing almost identical linear regression curves. The uniform decrease in concentration from the epicenter to the edge of the circles indicates that the energy interactions were very smooth transients. This uniformity of magnetic particle distribution is typical of conditions within a very well organized plasma system, or in this case, two well-organized systems which act almost like "twin" systems, but not mutually interacting. Since they have the same direction of rotation we can predict from fluid dynamics[4] theory that they would be moving away from one another as they impacted the field.

From soil samples taken along NW-SE traverses the concentration patterns (as shown in Fig's 5 and 6) are completely different from those in the N-S radii. In both circles the magnetic particles are essentially isobaric (uniform) in weight, from the epicenter to the edge of the circle. Although it may seem unusual that the concentration profiles would so drastically change by

simply altering the sample traverse by 45° from the N-S radii, we have found that the energies are highly compartmentalized within the crop formations. The effects of the energies may change quite drastically within discreet, sharply defined regions inside a crop formation. If energy spill-over occurs these sharp gradients of energy may also take place outside the visible, damaged crop confines. The recently examined "Julia Set" crop formation[5] is a prime example of these complex energy distributions.

In the area around the Rocanville circles there is clear evidence of a formation energy, spillover effect. In the following Table the mean distribution of magnetic particles is listed for samples taken at various distances from the circles (magnetic particles listed as mg/g-soil).

	Magnetic Particles		
Distance From Circles	ave.	s.d.	Number Samples
1-10 ft.	10.8	2.0	4
25 - 50 ft.	10.2	0.3	2
100- 200 ft.	6.6	1.5	3

Even though there is a decrease in concentration with distance from the circles, the level in the 100 - 200 ft. range is considerably above the normal level (0.4 mg/g-soil). In some formations, as in the Paulding, Ohio study[6], it is necessary to take samples at distances exceeding ½ mi. from the formation, before finding particle concentrations within the normal range.

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REFERENCES

1) Levengood, W.C., *Redox-responsive electrodes applied during plant morphogenesis., Bioelectrochem. & Bioenergetics*, **19**, pp. 461-476 (1988).
2) *Gravitropic Responses in Simulated Crop Formations*, 1997., BLT Report No. 86, 10-14-97
3) Wilkins, M.B., Advanced Plant Physiology, 170-174 (Pitman, London, 1984).
4) Prandtl, L. & Tietjens, O.G., Fundamentals of Hydro- and Aeromechanics. 208-214 (Dover Pub., Inc., N.Y., 1957).
5) *Crop Formation: "Julia Set", Stonehenge, UK*, BLT Report No. 78, 3-20-97.
6) *Crop Formation: Paulding, Ohio.*, BLT Report No. 80, 3-31-97

Rocanville, Saskatchewan - CANADA

Formation: Two circles in wheat
Formed: Sept. 3, 1996
Found: Sept. 4, 1996
Sampling: 9/20/96, by Dan Clairmont

Field Owner: Wayne Kingdon
Rocanville, Saskatchewan

Photos: Aerial, The World Spectator
Ground shots, Dan Clairmont

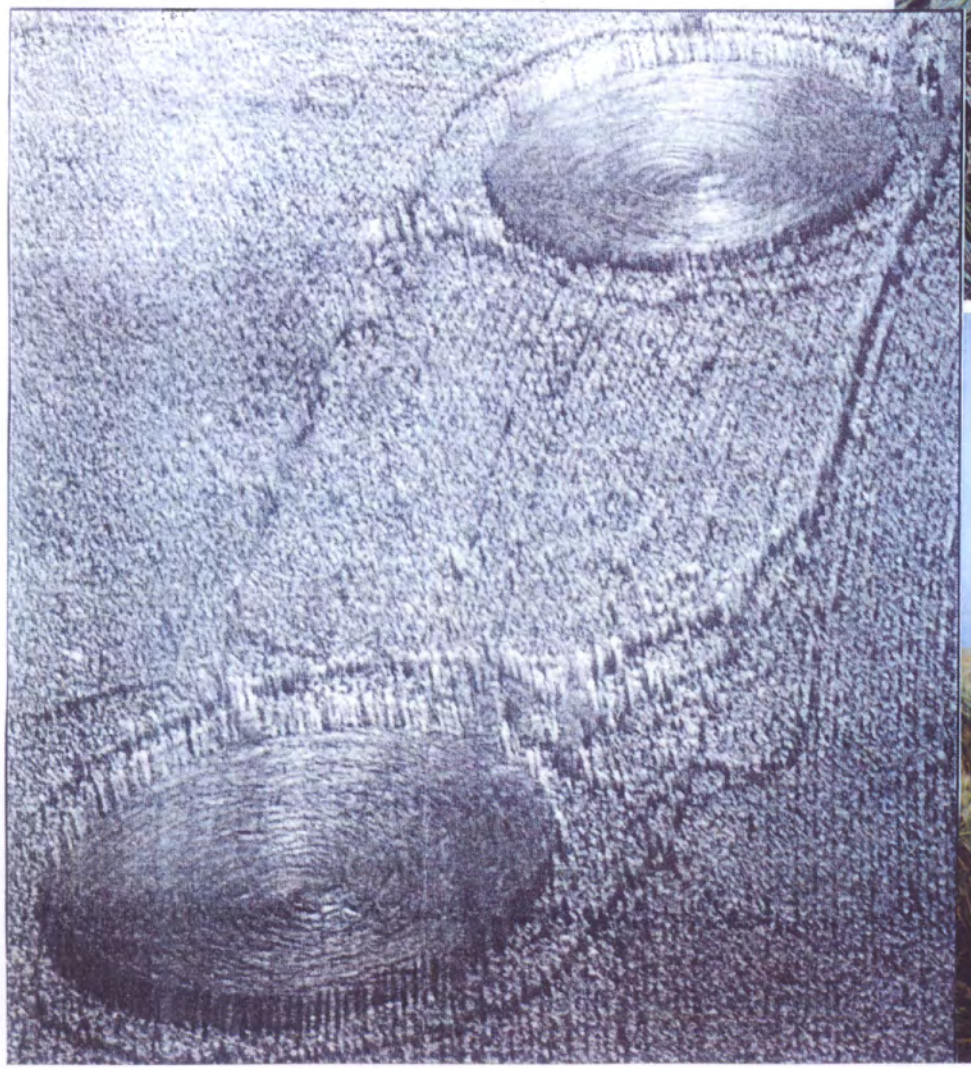
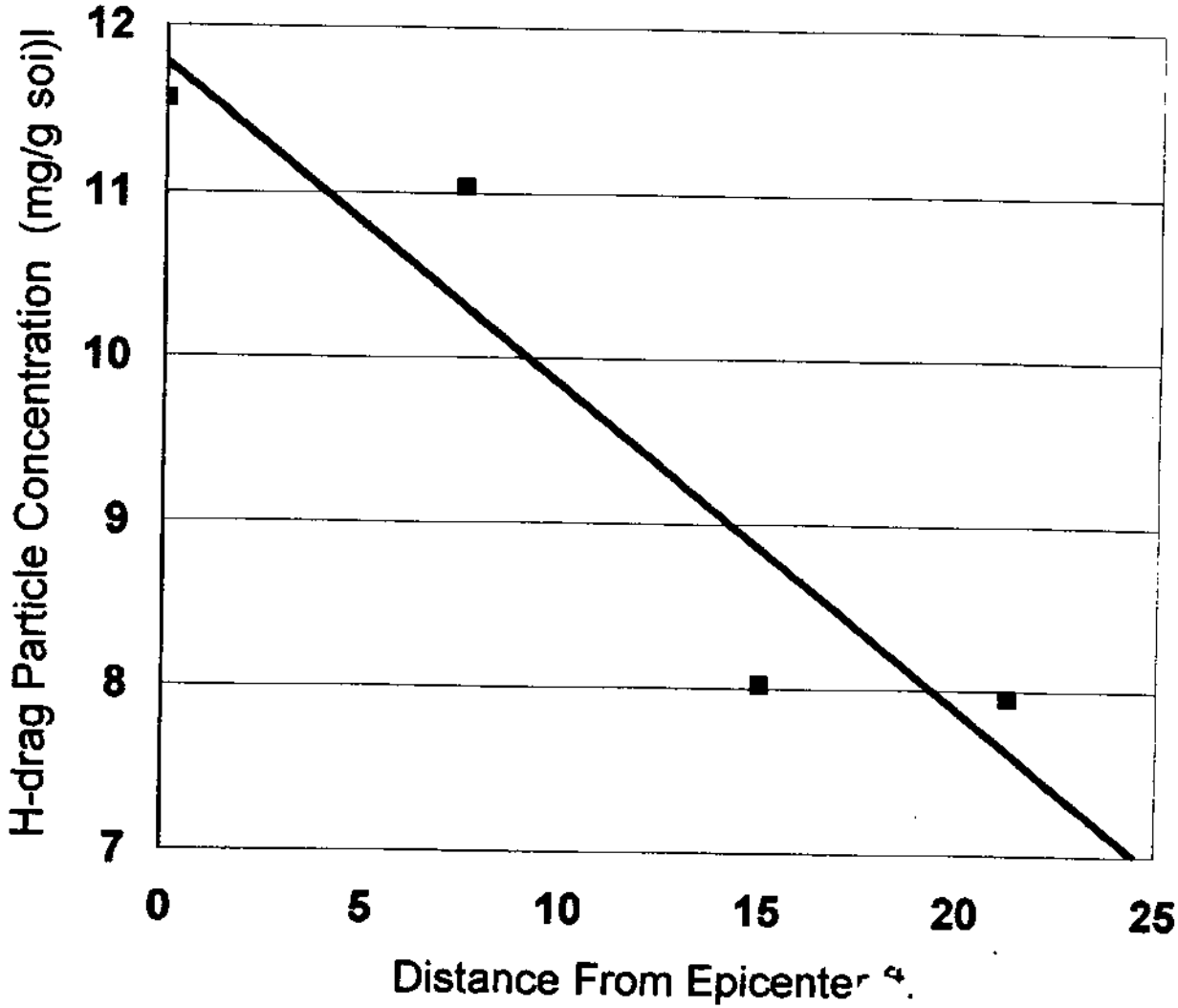


Fig 3



Circle #1

KS-03-166

R-square = 0.877 # pts = 4

y = 11.8 + -0.195x

Sample location map of Rocanville, SK. Canada crop circles
Circles created night of September 3rd, 1996
Samples taken September 20th, 1996
Investigator - Daniel J. Clairmont
Not to scale

KS-03-166

Fig. 2

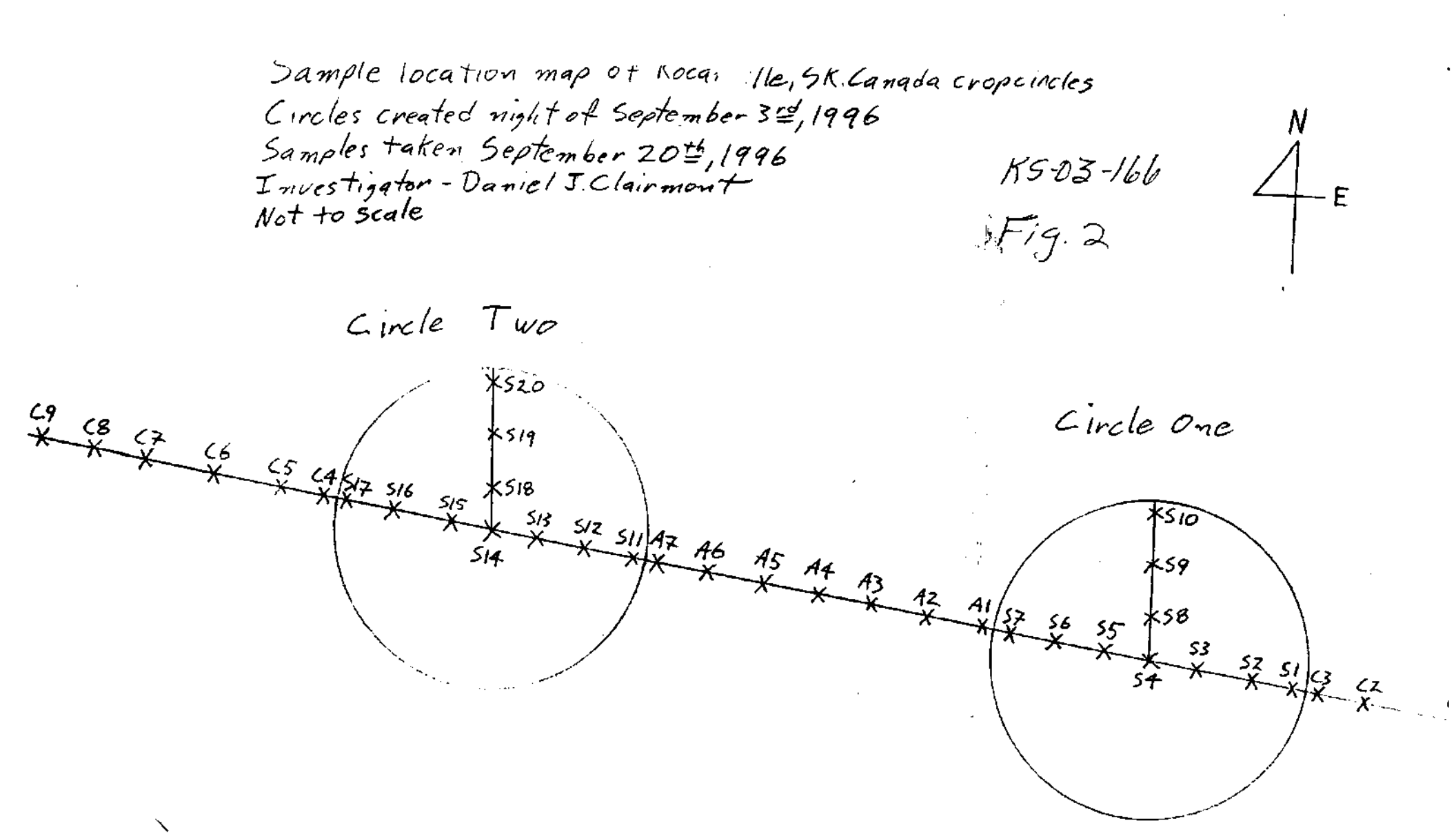
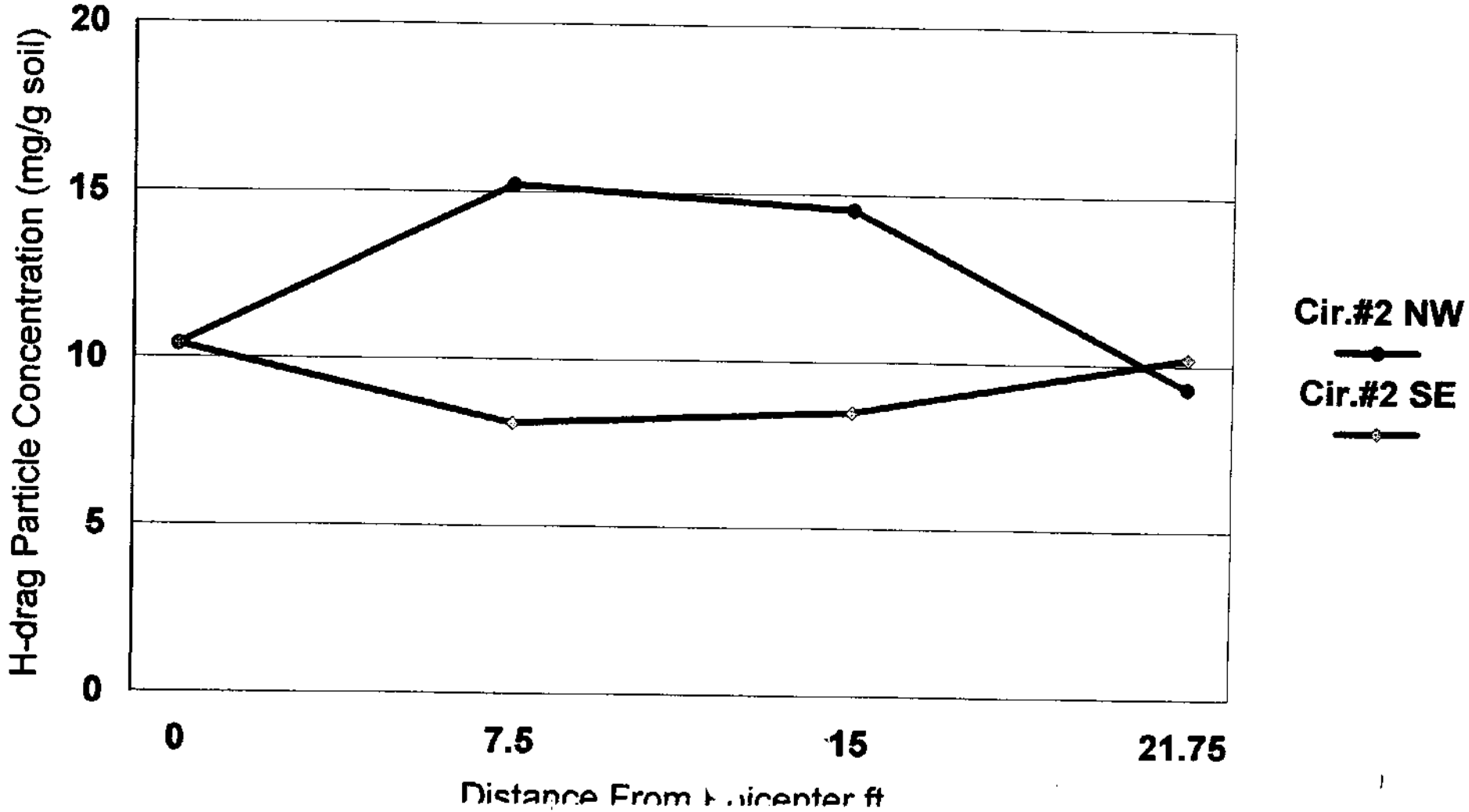


Fig 6


H-drag Particle Concentration (mg/g soil)
20
15
10
5
0
0
7.5
15
21.75
Distance From Epicenter ft
Cir.#2 NW
Cir.#2 SE