

Crop Formation: Chehalis, WA, 1994

Laboratory Code: KS-02-66

Material: Wheat plants with seed heads.

Formation: At Chehalis, WA on July 9, 1994.

Sampled: on 7-24-94 by ilyes, P.O. Box 1732, Port Angeles, WA 98362 (that's all you get folks, just ilyes - almost as bad as "Lefty"). Excellent field data were furnished. See Figures 1 & 2 for aerial photo and "ilyes" diagrams of these two formations, both located in the same wheat field.

Laboratory Results:

Because of the excellent sampling and field measurements, the node expansion data were previously analyzed in report #24, discussing the physics of energy distributions within crop formations. What remained was the analysis of the seed germination and vigor. At the risk of this report seeming rather disjointed, only the seed growth data are discussed.

One may summarize these seed vigor results by stating that the seedling growth rates were suppressed (relative to the controls) in all of the samples collected within both of the formations (see photograph attached). What made this unusual was the fact that even though the growth was reduced, the total germination percentages were all in the range of 95% to 100%, that is, with the exception of the upright plants at the epicenter (40% germination). These plants correspond to the extreme left point in Fig. 3 of Report #24, the sample with the most severe node expansion.

In most cases where environmental injury occurs during seed development, both the germination percentage and growth rates are reduced. This abnormal situation is further illustrated in the frequency distribution analyses in Fig. 3 and 4. The bar chart in Fig. 3 is typical of the general growth pattern one invariably finds in normal, control plants. In Fig. 4 is the distribution of plant sizes in the downed sample taken at the base of the standing epicenter (this corresponds to the left point at the end of the solid curve in Fig. 3 of Report #24). Here we see the mode has shifted from the 15 cm bar in the controls to the 5 cm bar in the formation plants, a very dramatic alteration in seedling development. All of the samples from both formations disclosed this seedling growth shift, at least to some degree.

Conclusions:

These germination data combined with the previously reported node expansion-energy absorption relationship, provide relatively conclusive evidence that very severe and complex energies were involved in these large formations. Incidentally, we anticipate that there are those who might ask, and justifiably so; if the node expansion follows the physics of energy absorption (Beer's law), why doesn't the seedling growth follow the same relationship? The reason for this lies within the complexity of the energies involved and their independent interactions with the crop formation plants. A situation, typical of a complex, chaotic system.

In the case of the node expansion the energy involved seems to be in the microwave frequencies, with the resulting alteration being expressed as a mechanical, heat produced expansion of the cell walls within the stem nodes. On the other hand the seed and seedling development involves alterations in complex physiological processes which one would not expect to follow the physics of energy absorption. These physiological alterations in seedling growth are believed to be caused by electric field energies within the formation (independent of the microwave energies). Previous work conducted in this laboratory (see 1991 reference, Bioelectrochem. & Bioenerg. 25: 225-239, as cited in Physiol. Plant. 92: 356-363, 1994) has shown that very low level electrophoretically induced currents can significantly alter seedling development. The authors would also like to express their appreciation to Mr. Barry Reynolds for sending us material from "Nexus"; much of the work cited here tends to support the above hypothesis concerning the electric field involvement.

W.C. Levensgood
Pinelandia Biophysical Lab.

John A. Burke
Am-Tech. Laboratory

CHEHALIS FORMATION: #1

CHEHALIS, WA

air: July 9-10, 1994

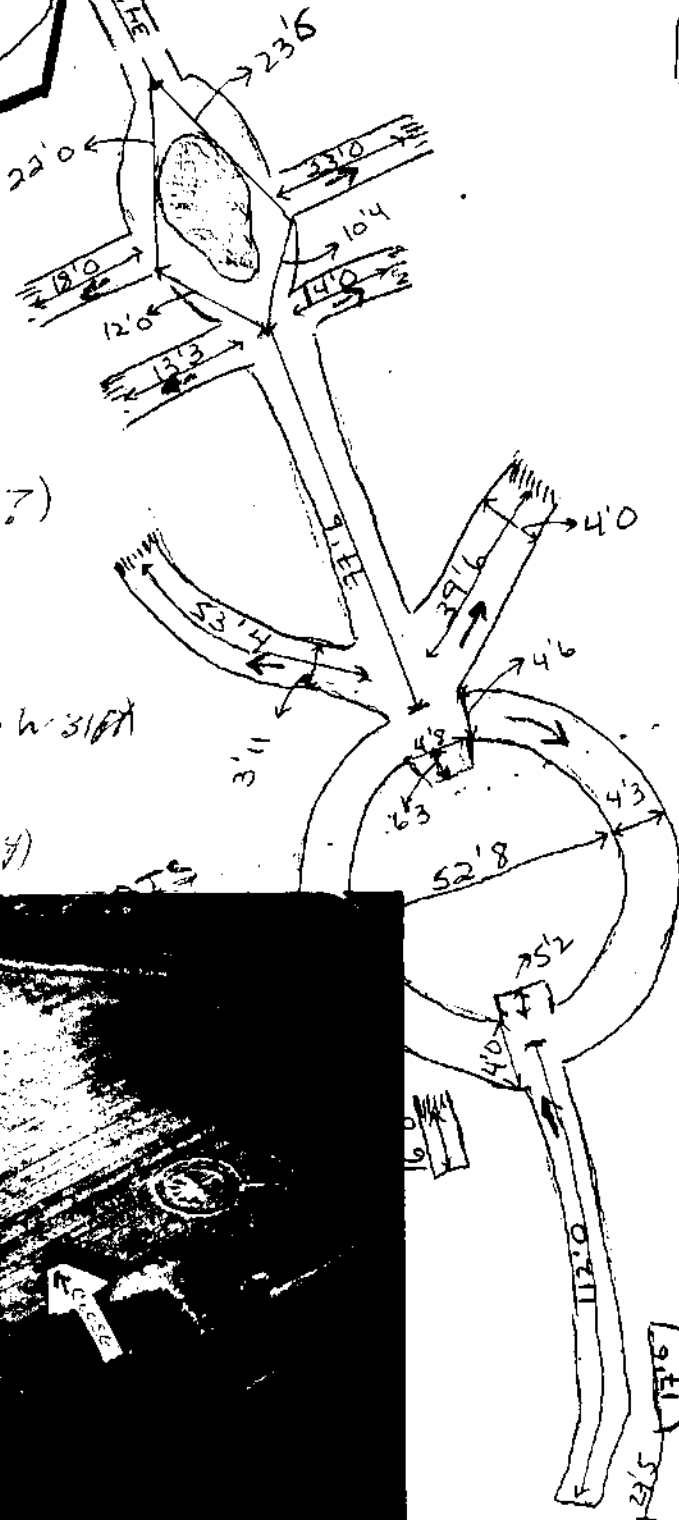
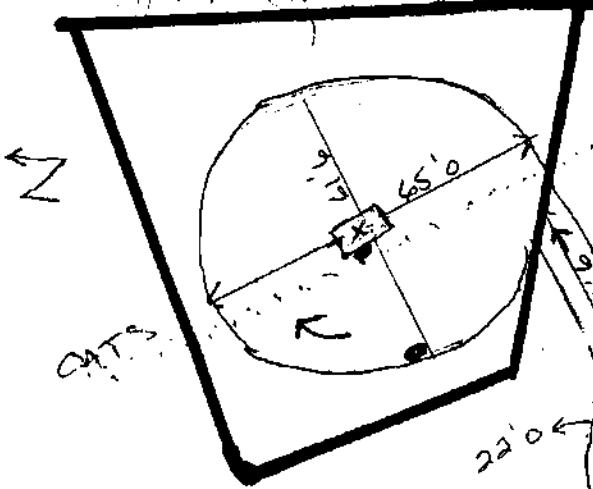
in wheat

overall length: 376'!

NOT TO SCALE

ilyy 7/24/94

AREA of SAMPLES

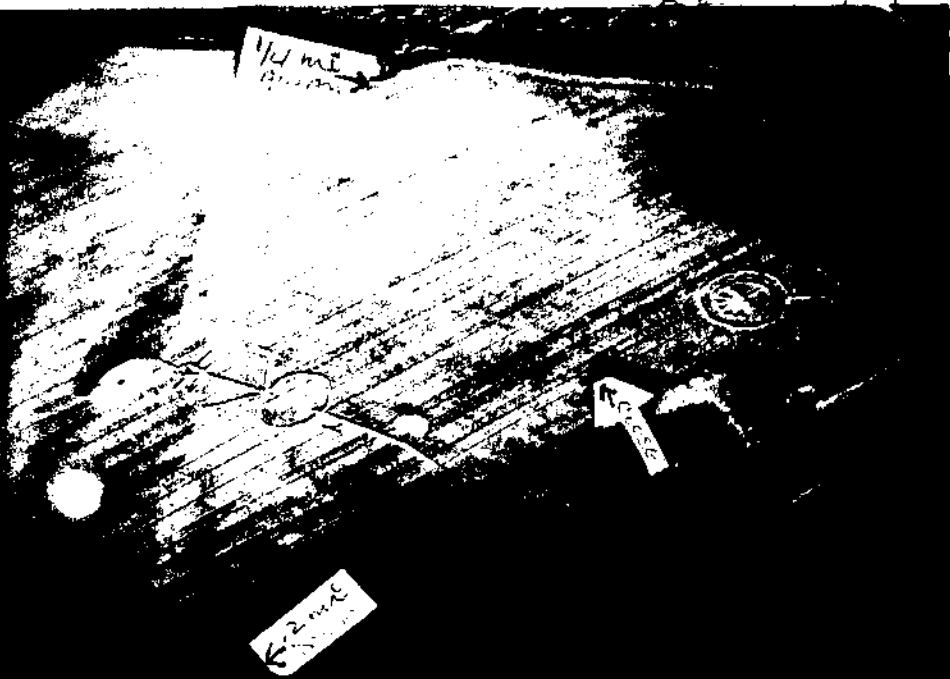


○ = CENTER of STANDING TUFT (047)

- (1) LOCATED 1/4 MI. WEST of CHEHALIS (w 64A-7) 2000 FT. from #2

MIDWAY BETWEEN STANDING TUFT & PERIMETER of RING #3 w 316A

- (2) LOCATED 1/4 MI. WEST of CHEHALIS #4 (w 60A)



ENTRANCE
LINE

→ LAY of WHEAT
SHARDS = LAID
SECTIONS

#3 - ANDREA
WILL BRING TO
YOU THURSDAY
IN PERSON

LAYS of
RADIALS
SPRAY OVER
RING

→ SPLAYS INTO
RING

SEED BELL LINE
BARE EARTH
IN RECTANGULAR
AREA - CENTER
of SPLAY
(Sample #1 taken)

← LAID AGAIN
STANDING
CROP, NOT
INTERMIXED

All Samples From
THIS FORMATION ARE
CODED w/ "W" -
eg 1w, 2w, 3w etc

"THE WEDGES"
CHEHALIS FORMATION: #2
arr July 8/9? '94
wheat

NOT TO SCALE
ilyes 7/24/94

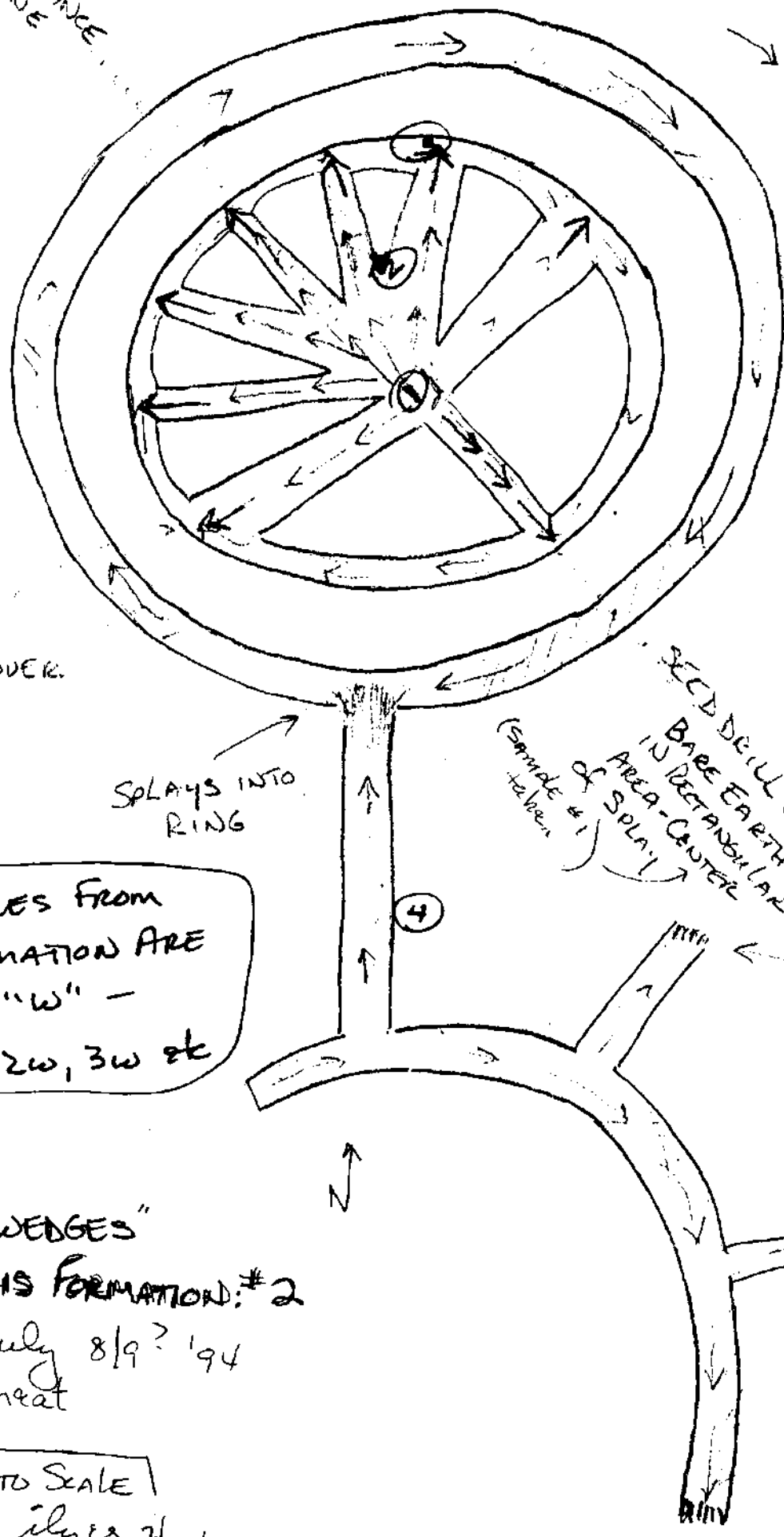
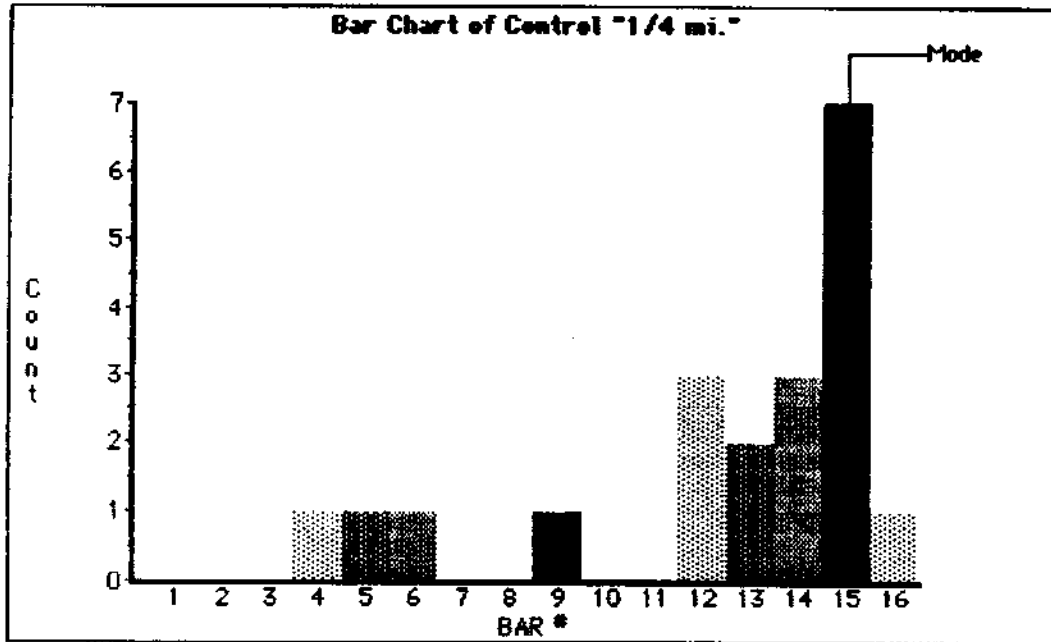


Fig. 3

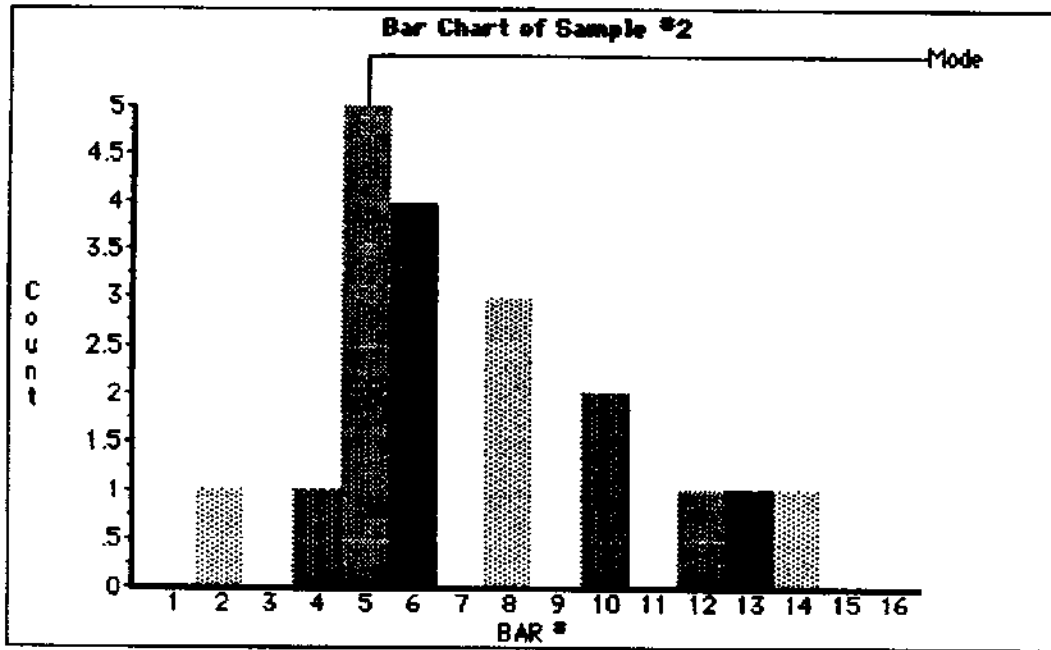
Frequency Distribution Analyses in Crop Formation KS-02-66
Seedling Height at 7-day development (1-cm interval per Bar*)



Control "1/4 mi."					
Mean:	Std. Dev.:	Std. Error:	Variance:	Coef. Var.:	Count:
11.905	3.678	.822	13.527	30.894	20
Minimum:	Maximum:	Range:	Sum:	Sum Squared:	* Missing:
3.1	15.8	12.7	238.1	3091.59	0
Kurtosis:	Skewness:				
.58	-1.337				

Fig. 4

Frequency Distribution Analyses in Crop Formation KS-02-66
 Seedling Height at 7-day development (1-cm interval per Bar*)



Sample #2					
Mean:	Std. Dev.:	Std. Error:	Variance:	Coef. Var.:	Count:
6.826	3.199	.734	10.236	46.869	19
Minimum:	Maximum:	Range:	Sum:	Sum Squared:	* Missing:
1.6	13.2	11.6	129.7	1069.63	1
Kurtosis:	Skewness:				
-.696	.551				