Research Report From: Pinelandia Biophysical Laboratory
Grass Lake, Michigan, 49240

Crop Formation: Wiltshire, UK 1998
Report No. 104

Laboratory Code: KS-04- 90 **Date: October 19, 2000**
Location: Cherhill, Wiltshire, UK
Material: Wheat stems *(Triticum aestivum)* and soil
Occurred: 7-15-98 **Sampled By:** Ms. Janet Ossebaard, Andraes Muller & Sven Reuss, Netherlands, on Aug.8-9, 1998
Formation Characteristics: Complex array of circles intersected by an undulating pathway (see Fig.1 for details). An unusual concentration of black insects were adhering to the heads of the plants in the circles but not observed on the plants outside the formations or control samples.

Comments: - although this turned out to be one of the most energetically complex formations examined in this laboratory, the elaborate, detailed sampling and documentation from Ms. Ossebaard, combined with recent findings from our basic, laboratory studies (work conducted in the mid 1980,s), provided sufficient material for the recognition and elucidation of the independently functioning energy mechanisms - each one producing quite different effects within the crop formations. The theory and mechanisms related to the seed growth enhancement aspect induced by one particular energy component discussed throughout this report, has been detailed in U.S.A. Patent No. 5,740,627 "Method and Apparatus for Enhancing Growth Characteristics of Seeds Using Ion-Electron Avalanches"- issued to W.C. Levengood and J.A. Burke, 1998.

Summary of Findings:

1) - within sets of five samples taken at the same precise location within each of the seven circles a significant decrease was observed in the mean seed weights. Contrary to what might be expected, decreased seed weights from plants within a formation quite often indicates increased seedling growth vigor, as is the case here.

2) - analyses of germination data obtained with seeds taken from standing plants at the centers of the seven circle formations, indicated the presence of independently operating energies - one, an Ion-Electron Avalanche (IEA) effect which produced a seed growth enhancement and the second, a component of Microwave Radiation (MR) which produces a reduction in seed vigor.

3) - the redox method disclosed mitochondria damage (MR effect) in seeds from the upright plants in the Circle #4 - sample which it should be noted, disclosed the least growth enhancement effect. This sample also displayed the maximum node length expansion which is also in accord with microwave damage.

4) - the concentration of dead flies adhering to standing plants in the center of the circles and the standing perimeter plants within the downed areas may be the result of a wide area "sweeping action" from the incoming vortex energies. The insects appear to have been sucked up into counter rotating, interacting vortices [1], where, they were carried into another field area and slammed into the wheat plants, becoming "glued" in place by gummy substances around their mouth parts.

5) - these insects were identified (Natural History Museum, UK) as the "Cabbage Root Fly" *Delia radicum*. Since it is very uncommen for insects to collect in regions (in this case a wheat field) outside their feeding-mating habitat the vortex deposit mechanism appears very likely.

6) - a precise, undulating wave pattern formed between tram related field marks, was indicative of a harmonically moving shear stress wave. By utilizing appropriate wave equations the maximum velocity of wave motion was estimated as being in the order of 12.3 mi/hr.

7) - no magnetic material found in soil samples.

Details of Research:

The delicate sampling diagram in Fig. 1 was prepared by Ms. Ossebaard and clearly indicates the location of the seven, sampled circles. The undulating, downed crop region between the tram related marks was designated as the "snake" and samples were taken as indicated. At the upper left in Fig. 1 is a diagram showing the sampling and labeling system used in each circle. It is important to note that all of the "A" samples were from upright plants taken at the epicenter of each circle.

Very intensive testing was carried out on this formation and in the final data analysis phase it became apparent that there were two independently operating, boundary condition energies within this complex. Although they are somewhat interrelated it is shown here that it is possible to quantitatively separate their influences on the plant system. As an aid in this discussion these energies are designated as--

MR- Microwave Radiation Energy - can produce heating and cessation of growth in embryonic tissue.

IEA - Ion-Electron Avalanche Energy - often produces seedling growth enhancement due to changes in free radical levels in seeds (see reference to patented method in comments section).

I.- Physiological Alterations at Sampling Sites

As shown in the data summarized in Table I, when comparing the five sample set means from each sampled circle the node lengths were increased and the seed weights decreased. The data are expressed as percent change relative to the mean of the eleven control samples.

Table I

Node length and seed weight changes at the various sampling locations (N=5 sample sets from each circle and N=3 sets from the "snake" region). Percent change relative to mean of eleven control sets.

Sample Location	Node Length Change	Seed Weight Change
Circle #1	+9% 7.4 s.d.	-17% 6.9 s.d.
Circle #2	+16% 8.9	- 17% 10.8
Circle #3	+17% 5.0	-8% 12.0
Circle #4	+21% 13.7	-15% 5.3
Circle #5	+9% 8.9	-25% 6.5
Circle #6	+17% 7.1	-33% 5.9
Circle #8	+1% 3.4	-30% 4.2
"Snake"	+21% 10.8	-21% 0.9

An important point to note in Table I is the fact that all eight sample sets show a (+) node length change and a (-) seed weight change. Based on random chance variations a chi-squared statistical analysis showed both sets of data (node length and seed weight changes) significant at the $P<0.05$ confidence level. Since there was about a three week interval between the time of formation and the field sampling, a fraction of the node length changes could be explained by gravitropic responses.[1], however, the data presented in the following section demonstrates that this is not the explanation for the node expansion.

II. - Analyses of Upright Plants at Circle Epicenters

In the "A" sample sets taken from the upright plants at the epicenter of the seven circles the node length expansion within each circle was of the same magnitude as in the four sample sets obtained from the downed plants. The node expansion in these upright plants are compared in Fig.2 with the levels in controls taken from 40 to 200 m from the formation.

The seed weights were also lower relative to the controls (Fig.3). The reason we observe these significantly lower seed weights is the fact that the formation occurred about three weeks before samples were taken. In previous studies incorporating over 250 crop formations we find that the MR component of the energy often terminates development in embryonic tissues without disrupting somatic growth. Here, during the three week period following the formation energy the endosperm in the control seeds continued to develop whereas, the plants in the formation (both upright and downed) failed to produce the full, natural level of endosperm, thus accounting for the low seed weights.

If the crop formation appears at the mid-to late stages of plant development the MR energy is not always lethal, in fact the seeds often exhibit a "super-optimum" level of development. This is precisely the case here, where as shown in Fig.4 the seeds from the upright plants possessed significantly higher growth rates than the controls (in spite of a lower seed weight). This is explained by the fact that the IEA energy component "overrides" the MR energy.

III. - Redox Variations in Formation Seeds

If Fig's 2 &4 are examined closely we find that Sample #4A exhibits the highest level of node expansion and the minimum seedling growth enhancement (just slightly greater than the controls). This suggests that this circle received a greater amount of the MR energy within the group of seven sampled circles. In other words there appears to be a direct nullifying influence by the MR on the enhancement effect from the IEA interactions. If this is indeed the case then one should find that the free radical level (produced by the damaging MR energy) is significantly higher in the seed from the #4 sample.

The redox level in seeds from circle #4 were compared with control-10 (150 ft. from formation) and with seeds from circles #3 & #6. The redox responses from circles #3 & #6 were very similar to those in the control sample, whereas the seeds from circle #4, as shown in Fig. 5, gave very high peaks during the 12 sequence test period. This clearly suggests that the MR energy produced a higher concentration of free radicals in the circle #4 plants, thus reducing the seedling vigor and to a certain degree compensating for the IEA growth stimulation influence within this particular circle.

IV. Patterns Indicative of Harmonic Oscillations

In Fig. 1 the downed crop pattern between circle #6 and the counterclockwise, downed area on the right, forms a very uniform wave pattern. From its appearance it quite likely originated from a lateral shear force propagating as a harmonically moving stress wave traveling between the tram associated lines. Under these conditions the field lines would act as the confining boundary. In certain cases this type of shear force can produce an audible, high pitched note[2] in solid materials. The lateral displacement of the shear wave is given by,

$$y = (d/2) \sin \omega t \qquad (1)$$

where d is the distance between the tram lines, t the time unit (sec.) and ω the angular displacement of the line of downed crop. For simple harmonic vibrations,

$$\omega = 2 \pi f \qquad (2)$$

where f is the frequency of the wave motion. By equating equations (1) and (2) and differentiating, the velocity of the wave formation is,

$$dy/dt = \pi d f \cos(2\pi f t) \qquad (3)$$

From this it can be readily shown that the maximum angular velocity (v_{max}) of the wave motion is,

$$v_{max} = \pi \, d \, f \qquad (4)$$

With eq. (4) we can offer a reasonable estimate of the wave velocity producing the downed pattern. From anecdotal reports there is clear-cut evidence that the crop formation time is very brief. Therefore as a first approximation let us assume that the seven oscillation waves shown in Fig. 1, are produced in four seconds at a frequency of 1.75 Hz. If we take d = 1.0 m (the distance between the field marks) we obtain from eq. (4) a maximum velocity of 5.5 m/sec. or putting it in more common terms a velocity of roughly 12.3 mi/hr. This is a wave velocity which might be reasonably expected under mild air flow conditions. A lack of turbulence and wind shear would account for this very uniform wave pattern.

V. Insects Attached to Formation Plants

In Ms. Ossebaard's field report there was an extensive account of "flies" attached to plants within the formation. The insects were primarily concentrated near the apex and seed head regions of the upright plants at the centers of the circles and circle perimeters. The field outside the downed areas was examined extensively but no flies were found.

The insects were submitted by Ms. Ossebaard to the Entomology department at the Natural History Museum, England and were identified as being the "Cabbage Root Fly" *Delia radicum* (Diptera - family Anthomyiidae). The larvae feed on the roots of Cruciferae, including brassicas. The examiner gave no explanation as to why the flies were found on wheat plants (family - Gramineae) and only in the crop formation area.

In the past, this laboratory has examined seeds which have been collected within formation sites, but were of a completely different species from the crop growing in the formation and surrounding field. Occasionally, in other formations we have found seed heads totally missing from the plant, nor were they observed on the surrounding soil surface. If the plasma vortices have sufficient energy to strip the seed heads from a plant then it is very conceivable that a turbulent energy system could literally gather up insects from one area and as the energy dissipates, deposit them in another region. As we recently pointed out in the scientific literature[1], if the energy system is composed of counter rotating vortices a reduced pressure region exists between them and this could literally suck up the insects and confine them within the closed, moving system.

The observation that the insects were adhering to the plant stems may be accounted for by the fact that many insects which feed on plant juices have sticky probosci. When the formation occurred they were literally slammed onto the wheat stems and "glued" to the surface. Although it may have appeared that the flies were feeding on the wheat stems it is rather unlikely since their feeding habitat is on plants in the Cruciferae family (Cabbage etc.) and not on plants in the grass family such as wheat.

W.C. Levengood

References

1) W.C. Levengood and Nancy P. Talbott, *Dispersion of energies in worldwide crop formations.* Physiologia Plantarum 105, pp.615-624 (1999)
2) W.C. Levengood and T.S. Vong, Dislocation type defects in glass. J. Chem. Physics 31, pp. 1104-1110 (1959)

BLT Lab Code: _____ Fig 1.

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The Netherlands

Phone: 011-31-50-314-3741 (H)

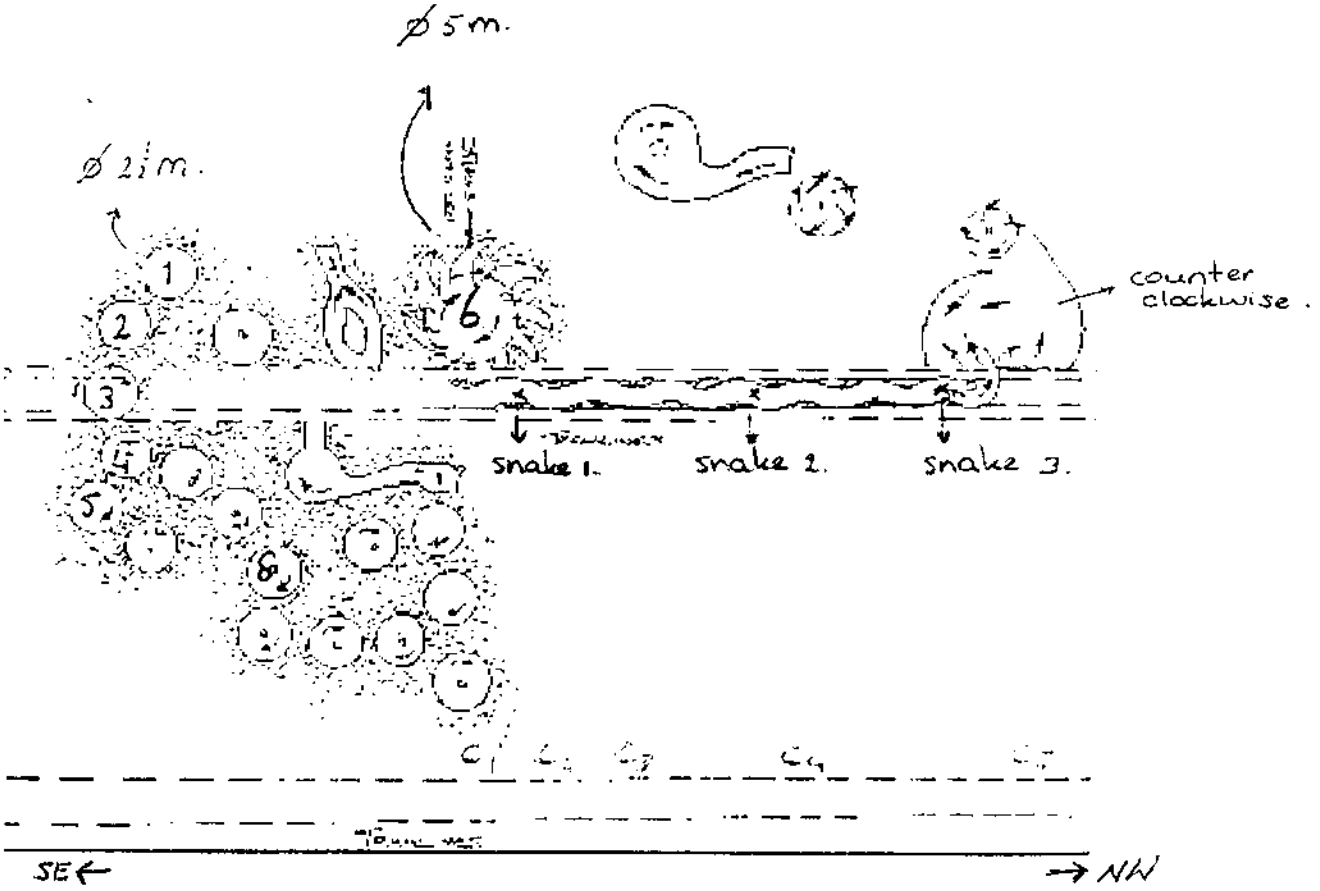
Location: Cherhill, England

Crop: Wheat (soils also sampled)

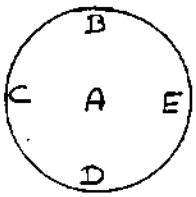
Date Formed: Between July 15 - 17, 1998

Date Found: 7/17/98

Date Sampled: Aug. 8 & 9, 1998 (approx 3 wks later)



All circles sampled as follows:



SAMPLES:

[Circles 1,2,3,4,5,8 = 2-1/2 m diam.
Circle 6 = 5 m diameter]

Circle 1 = S1A, S1B, S1C, S1D
Circle 2 = S2A, S2B, S2C, S2D
Circle 3 = S3A, S3B, S3C, S3D
Circle 4 = S4A, S4B, S4C, S4D
Circle 5 = S5A, S5B, S5C, S5D
Circle 8 = S8A, S8B, S8C, S8D

Circle 6 = S6A, S6B, S6C, S6D

CONTROLS - all taken down nearby tramline, just inc into standing crop off tram.

		PLANTS	SOILS
Control	1:	1 m. away	C 1: 1 m. away
	2:	3 m. "	C 2: 3 m. "
	3:	5 m. "	C 3: 10 m. "
	4:	10 m. "	C 4: 20 m. "
	5:	20 m. "	C 5: 30 m. "
	6.	30 m. "	C 6: 40 m. "
	7.	40 m. "	C 7: 50 m. "
	8.	50 m. "	C 8: 100 m. "
	9.	100 m. "	C 9: 150 m. "
	10.	150 m. "	
	11.	200 m. "	

Note: Circle 7 does not exist

Fig 2

Node Lengths in Crop Formation KS-04-90

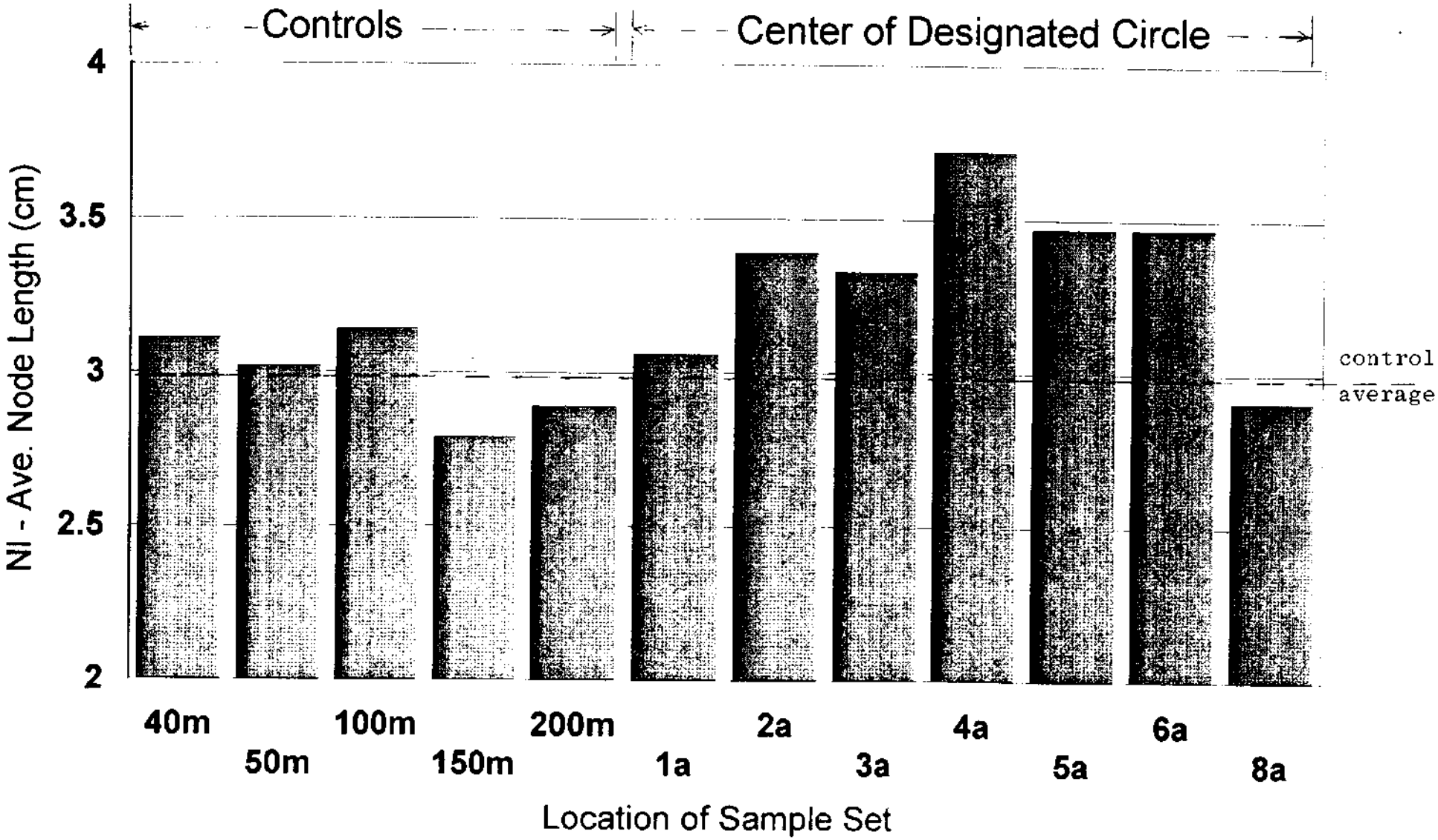


Fig 5

Redox variations in seeds from Circle #4 compared with Control (KS-04-90)