Pinelandia Biophysical Laboratory
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Grass Ring Formation, White Hall, Maryland 1999
Report No. 107 (revised)

Laboratory Code: KS-04-109 **September 17, 2001**
Location: White Hall, Maryland
Material: Grass and Soil **Sampled:** April 14, 1999
Sampled By: Ms. Linda Winer, Bel Air, MD
Formation Characteristics: A 20 ft. diameter ring of very lush, green grass - ring width varied from 3-5 ft. Sampled ring in a 5 acre field containing about 20 rings total.

Relevant Findings:

1) - through the application of a published, electrochemical testing procedure[1] we found that the output of tissue damaging free radicals released during the respiration cycles within the ring formation plants had been significantly reduced relative to the output in normal controls.

2) - in past studies of grass ring formations we have found that the darker green color and enhanced growth rates are due to an **Ion-Electron Avalanche** energy component within the vortex system. The theory and mechanisms related to this growth enhancement effect has been detailed in the recently issued 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.

3) - in magnetic-drag testing, exceptionally large amounts of magnetic material was found in soil samples taken at the same locations as the grass samples. Within the ring and the immediate surrounding area the level of the magnetic soil component was in the range of 130 to 286 mg/g-soil - compared with an upper limit of 0.4 mg/g-soil in normal soil.

4) - microscopic examination of the magnetic particles revealed spherically shaped black beads ranging from 5-50 micrometers in diameter. Their surface structure was typical of magnetite (Fe_3O_4) particles found in crop formations[2].

5) - these grass rings are <u>not caused by fungi</u>. The energy producing the lush, green grass rings also stimulates the growth of fungal spores in the soil.

Results and Discussion:

The sampled grass ring shown in Fig.1 has an appearance which is typical of those found at numerous sampling sites within the U.S.A. and Canada. In fact, in 1993 a number of studies

were conducted on samples collected at a park within 300 yds. of the Pinelandia Laboratory. In these early investigations we relied on a published, electrochemical technique[1] for monitoring redox activity levels during respiration cycles in tissue samples taken from the rings, then directly comparing them with normal or control samples taken well outside the ring formations.

Without exception, we found that the lush, deep green, rapidly growing plants within the rings exhibited a reduced level of damaging molecules known as "free radicals". These highly active molecules are released from the mitochondria organelles during normal respiration and if they are not rapidly neutralized they will damage the cell walls of the plant (or animal). In the tissue from the rings the output of free radicals is significantly reduced, that is, they exhibit a lower redox ratio (Rr) value. Although these redox tests are time consuming they provide direct information regarding the respiration activity in plant tissue. In Table I we summarize the redox results from four of the eight submitted grass ring samples. The data were obtained from 14 respiration monitoring cycles covering about a 90 min. period.

Table I.
Redox ratio (Rr) comparisons in a White Hall, MD, grass ring formation.

		----(Rr)----		
Test Vial	Sample Location	ave.	s.d.	N-sequences
-01	Control- 25 ft. Outside	0.926	0.530	14
-02	Within Lush Ring	0.250	0.237*	14
-03	1-ft. Outside Ring	0.417	0.304*	14
-04	Center of Ring Area	0.464	0.404*	14

*- $P<0.05$

The 14-sequence mean of the 25 ft. control sample (Vial-01) is precisely within the range obtained from normal metabolizing grass. The significant 73% reduction in the (Rr) mean from the sample taken within the lush ring (Vial-02) provides a clear cut example of a major reduction in free radical output. Although the sample taken just outside (Vial-03) and at the center of the ring area (Vial-04) do not exhibit the extremely low (Rr) level observed in the lush ring, they are still have significantly lower (Rr) levels when compared with the control. This means that the entire circular formation region was influenced by the energy, even though it is not apparent visually in the Fig. 1 photograph.

Fig. 2 clearly demonstrates the sharply defined differences in the individual respiration patterns within these grass samples. The solid line (Vial-01 controls) show the large fluctuations usually found in normal, respiring grass. The dashed line shows the free radical output from the grass within the lush, green ring (Vial-02) and one finds, not only a much lower redox level, but the peak is maintained at the high level for a much shorter period than is the case for the controls.

Magnetic Particles in Soil:

Soil samples (30-70 g) were taken at the grass collection locations - the purpose being to determine the amount, and if present, the microscopic characteristics of magnetic material. The

usual H-drag tests revealed very high levels of magnetic material in the immediate vicinity of the grass ring formation. These data are summarized in the Fig.3 bar chart. Only seven of the soil samples are depicted - one sample (No.6) was described as being "near edge of property" with no specific location given.

In Fig.3 the levels of magnetic material are expressed as mg/g-soil. The maximum level of 286 mg/g-soil was found in the sample taken 1-ft. outside the ring; this however, is not surprising. In many crop formations we find that the distribution of magnetic particles agrees quite closely with a model formulated from the physics of centrifugal forces operating within a rapidly rotating plasma vortex system. At the 25 ft. and 50 ft. locations the collected H-drag levels are much lower, but still at 20 to 100 times the amount in normal soil (the "edge of property" sample contained 41 mg/g-soil). A microscopic examination revealed the presence of spherical and irregular particles with surface structure and appearance very similar to pure magnetite (Fe_3O_4).

The presence of high concentrations of magnetic particles and the alterations in the respiration related free radical concentrations in the plant tissue, lend support to the hypothesis that the vortex energies involved in grass ring formations are in many ways quite similar to the energies in the ion plasma systems directing crop formations. In the formation of grass rings the initial boundary conditions (see pp. 621 in reference 3) appear to organize in a more consistent manner than those directing crop formations.

W.C. Levengood

References:

(1) W.C. Levengood, *Redox-responsive electrodes applied during plant morphogenesis.* Bioelectrochemistry & Energetics, **19:** 461-476 (1988).

(2) W.C. Levengood & J.A. Burke, *Semi-Molten Meteoric Iron Associated with a Crop Formation,* Journal of Scientific Exploration, Vol.9, pp.191-199 (1995)

(3) W.C. Levengood & Nancy P. Talbott, *Dispersion of Energies in Worldwide Crop Formations,* Physiologia Plantarum **105:** 615-624 (1999)

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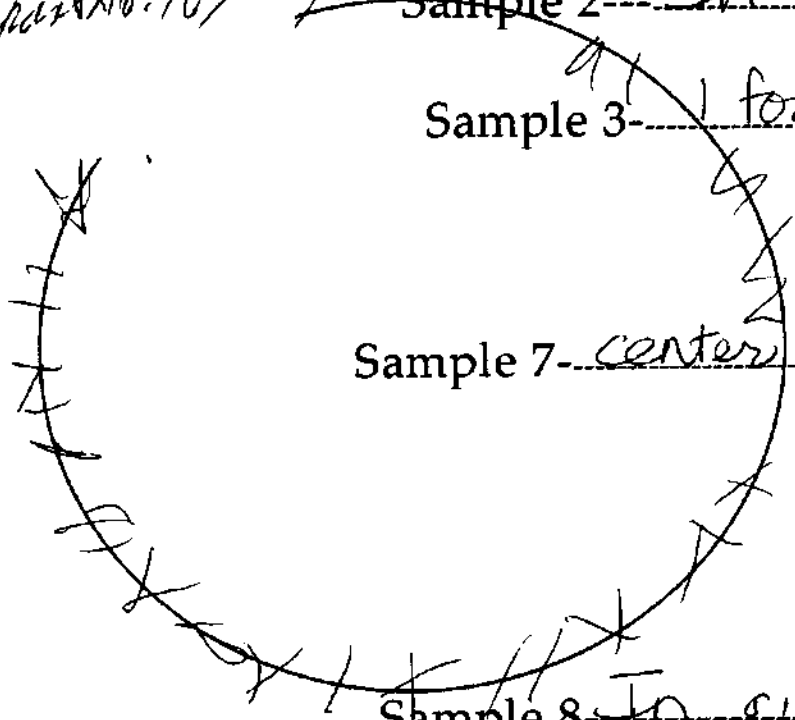
Sample 1---1 foot from ring

Fig 1
Ryan No. 107

Sample 2---In ring

Sample 3---1 foot inside ring



Sample 7---center of ring

Sample 8---In ring

Sample 4---25 feet from Sample 8

Sample 5---50 feet from Sample 8

Sample 6---Edge of Property near to

-grass

Redox Characteristics of 1999 Grass Ring Samples from Maryland (KS-04-109)

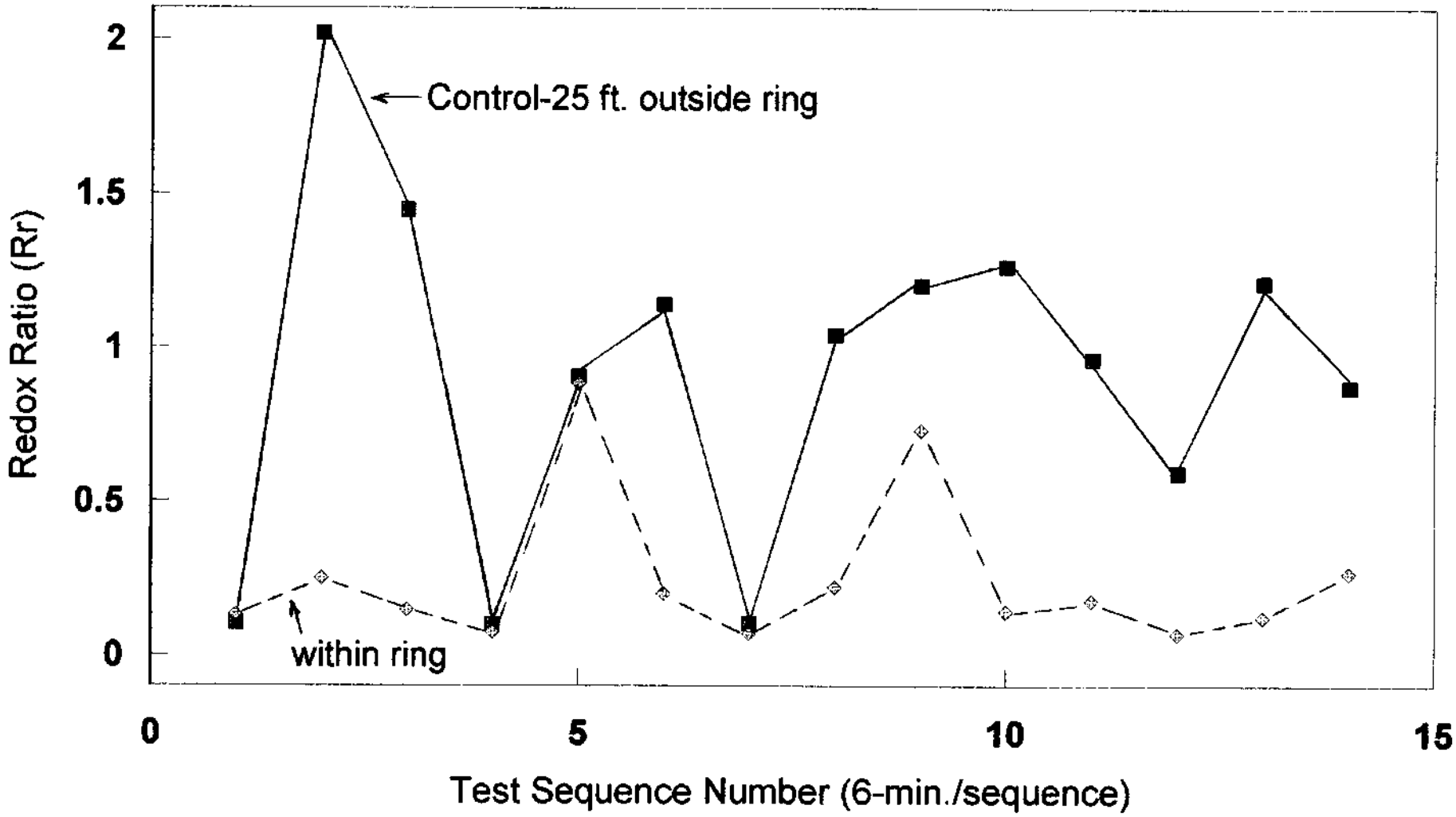


FIG. 3

Distribution of Magnetic Material in Soil Taken at a 1999 Grass Ring Site at White Hall, Maryland (KS-04-109)