

The Bishop Radish 1978 experiment

In these stressful times, it is healing for the soul to contemplate the beautiful cycles of the Moon and their relation to the zodiac. Here we look at increases in crop yield that are related to these cycles.

A startling re-validation of the ancient notion of the Four Elements emerges, from these late-twentieth-century experimental studies.

So Selene's Sphere does, after all, affect vegetable growth, in a way that remains bafflingly mysterious. All moon-gardening calendars in existence seem to use the notion of 'trigon' – a triangle of three zodiac signs/constellations, that have the same 'Element.'

In 1978 Colin Bishop sowed radish seed twice a day, for over one month, in his allotment in Cardiff. Four different rows were sown each day, two in the morning and two in the afternoon, each time sowing fifteen radish seeds in five-foot rows. In all, 156 rows were sown over 39 consecutive days during April and May. Each row had comparable soil and light exposure. The radish were all harvested after only six weeks of growth, and received no watering, so that the yields were small. Not one morning or evening sowing was omitted, nor were any rows eaten by birds or slugs - such continuity is important for statistical analysis. Mr Bishop's decision to sow this large number of rows derived from questions which arose from earlier experiments, concerning the nature of the celestial influence operating in vegetable growth.

'Root-Day' sowings

In the following data analysis, the two a.m. sowings were averaged together, as were the two p.m. sowings, giving in all 78 rows. The Figure shows the yields, for a.m. and p.m. sowings, with the solid line at base indicating the Sidereal Earth Moon-signs: i.e., yields of the rows sown when the Moon was standing in one of the three Earth-element sidereal signs, Taurus, Virgo or Capricorn, were compared with others. If you're not familiar with the sidereal zodiac, think of it as a best-fit of twelve equal divisions upon the irregular twelve constellations around the ecliptic. One adds on 25° to the tropical 'signs' to obtain the sidereal divisions. Grouping the data as Earth-day sowings versus the rest, gave:

Mean weight of radish (roots only) per plant, for each row

Sidereal Earth-element

3.26±1.7 (n=17)

Others

2.15±1.2 grams (n=61) - a 32% excess

That is a large effect and one which is statistically significant at around one in a thousand, ie there is a one in a thousand likelihood of getting such a result by chance. A 't-test' is used to ascertain this. The 34 rows sown in root-days had a mean yield of 3.3, while the remaining 122 rows averaged 2.1.

If instead we divide the data using the unequal Biodynamic constellations (as used in Maria Thun's calendar, eg), this gives:

BD Earth-element

2.84±1.9 (n=23)

Others

2.15±1.5 (n=55) a 15% excess.

The *number* of Earth sowings has greatly increased. This is because the boundaries used in the Bio-Dynamic farming calendar, similar to those fixed by the International Astronomical Union in 1928, allocate considerably more than their fair share of space to the three Earth-constellations. Thus, the Virgo constellation (element: Earth) stretches out some 46° of the ecliptic as compared with 30° for the sidereal sign of Virgo. The percentage excess in this element, as compared to other sowing-times, has dropped considerably however, indicating that those times of the lunar month where the Moon was in front of an Earth-constellation, but not an Earth-sign, did not give an excess in yield.

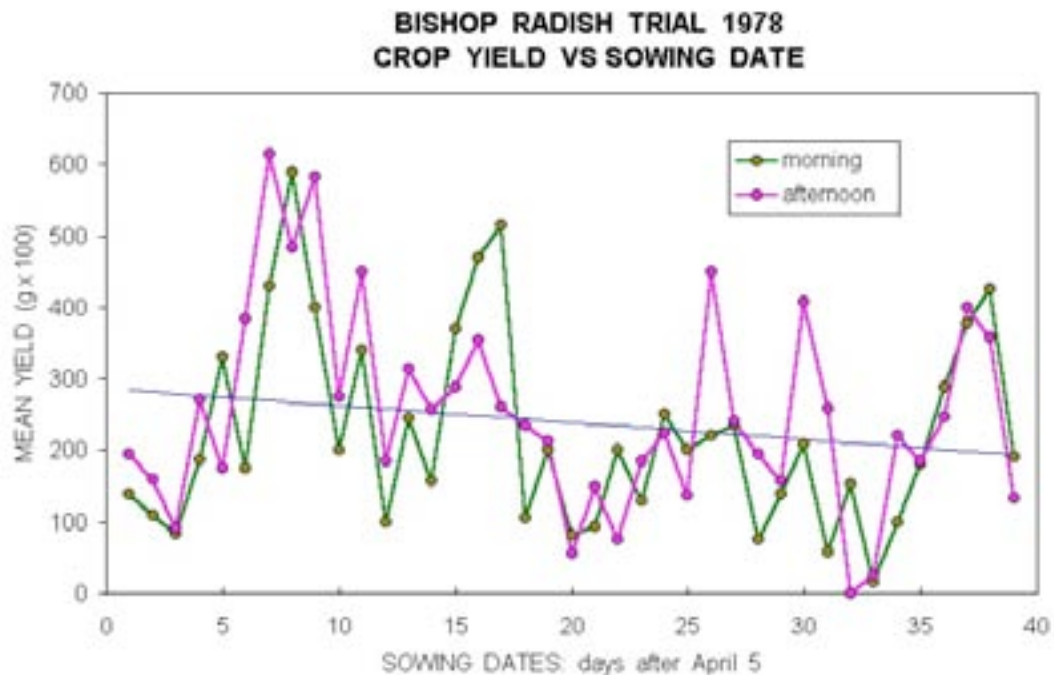


Fig 1

Next, two steps of transformation were applied to the data. The afternoon-sowings gave on average 13% more weight in the radish (roots) as compared with the morning, so this was evened out: yields of the morning sowings were scaled up by half of this amount, and those of the pm sowings were scaled down by this same amount. Then, a trend-line was put through the data, indicating the seasonal trend in yield (see figure) and this was subtracted out. Thus, this was twice-transformed data, whose average value now becomes zero.

Four elements

These yields were then plotted against the moon's (sidereal) longitude at sowing, to give Figure 2. This is a 'third harmonic' dial, a graph spanning one-third of the zodiac, 0-120°: it covers four signs, each of 30°. It starts from Zero Aries, so that Taurus (sidereal) is 30° - 60°, and then after reaching 120° it returns to zero, so that the next Earth-sign (Virgo) again scores 30° - 60°. Thus each of these four-element divisions has three of the twelve zodiac Moon-signs overlaid on it. Get the idea? So, the data-points we have just analysed can all be seen in the 'Earth' section. The graph shows how a *minimum* in yields appear opposite to the Earth-element in the Water 'signs.' So, in the unlikely event that you wanted minimum-yield rows of radish, you'd sow in the Pisces, Cancer or Scorpio Moon-constellations/signs.

We can think of this as a four-element graph. Or, we could say that it covered nine days in time, because that's how long the Moon takes to go one-third around the Zodiac.

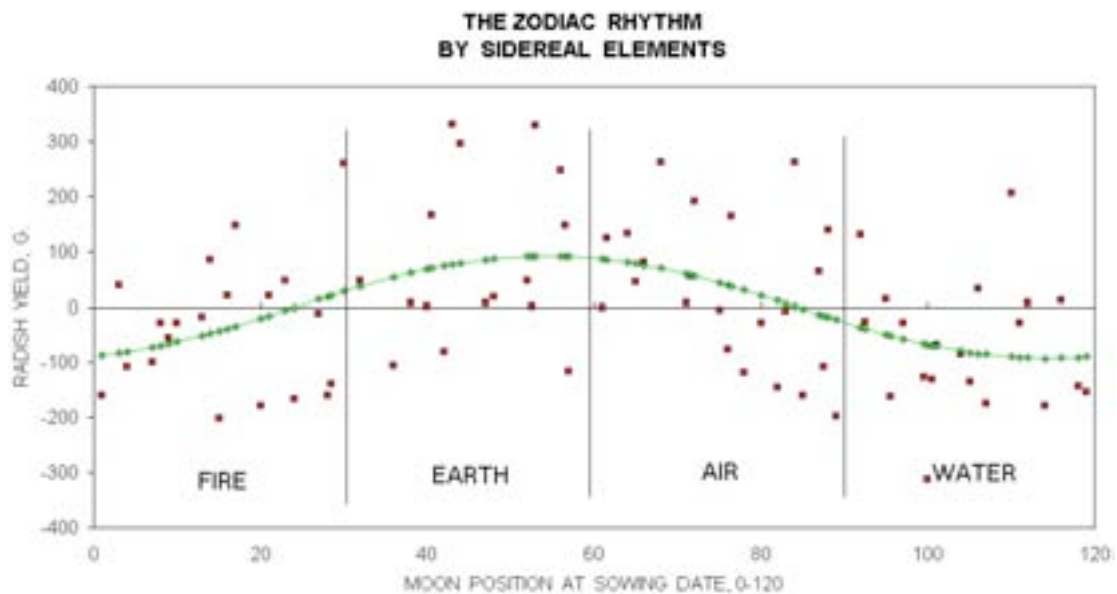


Fig 2

Sidereal Waveform

Then, we put a best-fit sinewave through this data. Neat, eh? I like this bit! In theory the waveform should be centred on the Earth-element trigon but here its a bit askew. Its amplitude is 36% of the mean yield – that is our best estimate of how large the effect, the ‘Thun effect,’ really is. It means that if this effect were to work generally (which it may not, of course) then farmers could expect that much yield increase from using a Moon-calendar. Let’s notice that this waveform approach is complimentary to the ‘four-box’ model. It makes no assumptions about where the zodiac boundaries should lie. It’s a *third harmonic* waveform, i.e. it goes through three cycles per sidereal month.

Geomagnetism

I tend to regard this data-set as the Rosetta Stone of lunar gardening. As the years went by, I realised that no-one else was likely to perform such a meticulous experiment. So, it is worth examining thoroughly. Next I looked at geomagnetism. This fluctuates a great deal from day to day, in direction and magnitude. I obtained ‘local’ daily geomagnetic index data (from Edinburgh) and plotted the same 78 data-points as before, and it showed quite a good correlation. I’ve never seen anyone else look at crop yield from this viewpoint however.

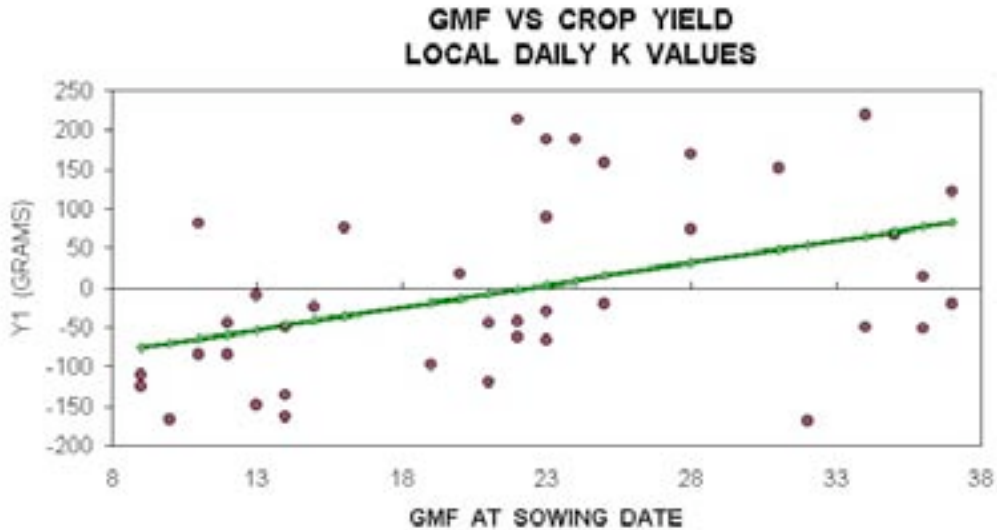
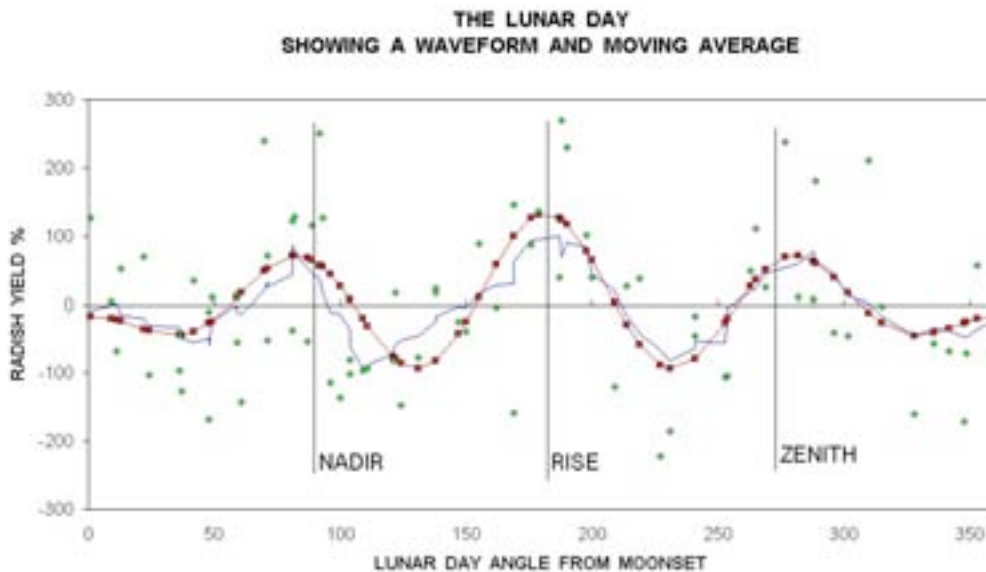


Figure 3

This suggests that enhanced crop yields may be obtainable on days of higher GMF. The magnitude of the effect, (comparing the difference from one end of the regression line to the other) is 48%. This is not quite as large as the sidereal Moon effect, however it would be well worth trying to see if it replicates on other sets of data.

The Lunar Day

Colin Bishop carefully recorded the time of each sowing. I obtained times of moonrise and Moonset for each day and thereby made a rough estimate of the Moon's angle in the sky as it rose and set every 24.8 hours. There are lunar-gardening traditions which say, sow with the rising Moon. Can the time of lunar day affect seed germination? The graph shows how the greatest perturbation (i.e., increase in final yield) was centred on the hour of Moonrise. It also shows lesser peaks around the times of Moon culmination (the highest point in its daily motion) and Nadir (lowest point). I've put a moving average and also a waveform (or rather a combination of two waveforms) through this distribution, which may help.



A more sophisticated analysis could be worthwhile, to compare properly these several factors. I believe that the 'silver axioms' will come to be used by the farmers and gardeners of tomorrow, as the basis for a new cosmo-agriculture. Time-experiments need to be done with care and patience, to reveal these.

N.Kollerstrom, October 2005-10-10

For copies of this data, send A4 SAO to the author at 9, Primrose Gardens, London NW3 4UJ (there is quite a bit more data recorded such as date of first leaves opening and total weight of radish top and bottom).