THE ANSWER LIES IN THE SOIL

Graham Bell

MA FCIM FRSA DipPermInst
“Arthur Fallowfield”

Sunday afternoons in the 1960’s
Beyond Our Ken
Based on Dorset Farmer:
Ralph Wightman

AKA
Kenneth Williams
(1926-1988)
Soil is the Single Most Important Thing

“I find that a real gardener is not a man who cultivates flowers; he is a man who cultivates the soil”

Karel Capek
Except of course for Water & Air…
Soil consists of:
(the key thing is LIFE)

Minerals: Clay, Sand, Silt
Decaying organic matter (humus)
Living organisms
• Plant material
• Bacteria
• Invertebrates
• Mycelium
• Animals
Pore space: Air, Water
We neglect soils at our peril
Garden Cottage
A fifth of an acre. Tenth of a hectare.

“The size of a garden has very little to do with its merit. It is the size of the owner’s heart and brain and goodwill that will make his garden either delightful or dull.”

*Gertrude Jekyll*
Beginning in 1990
Twenty Five Years On
“Gardening is a craft, a science, and an art. To practice it well requires the enthusiasms of the true amateur and the understanding of the true student”

*Louise and James Bush-Brown*
Seven Comparative Organic Soil Samples Scotland
2014 Study Edinburgh University
Garden Cottage top in four categories of macro-nutrient
Second in two
And the same survey for Calcium...
Top again...
Justus von Liebig—why he was right and why he was wrong

- NPK defined as principle macronutrients 1854 onwards ‘Law of the Minimum’
- But what about the importance of all the other chemicals in the soil
- And what about the importance of living processes
- He invented Marmite
We are what we eat

Soft Fruit    21 species    60 varieties
Herbs        16 species    30 varieties
Vegetables   47 species    80 varieties
Salads       62 Species    100 varieties
Top fruit    10 species    90 varieties
Nuts         6 species     10 varieties
Fungi        still counting...
<table>
<thead>
<tr>
<th>2013 BY MONTH</th>
<th>YIELD RECORD BY WEIGHT (Kg)</th>
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<tbody>
<tr>
<td>January</td>
<td>1.9</td>
</tr>
<tr>
<td>February</td>
<td>3.8</td>
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<tr>
<td>March</td>
<td>3.3</td>
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<td>April</td>
<td>4.2</td>
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<td>May</td>
<td>18.2</td>
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<td>June</td>
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<tr>
<td>July</td>
<td>101.8</td>
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<tr>
<td>August</td>
<td>120.9</td>
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<tr>
<td>September</td>
<td>201.3</td>
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<tr>
<td>October</td>
<td>585.8</td>
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<tr>
<td>November</td>
<td>6.5</td>
</tr>
<tr>
<td>December</td>
<td>4.6</td>
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</tbody>
</table>
What makes this work?

- Diversity
- Polyculture
- No bare soil
- So...
- Trees
- Mycelium
- Earthworms
- And everyone else
No bare soil

Ruth Stout

“The unmulched garden looks to me like some naked things which for one reason or another would be better off with some clothes on.”

• Ground cover plants
• Leaf Mould
• Grass cuttings
• Straw
•
“One of a vast number of free outdoor restaurants operated by charity-minded amateurs in an effort to provide healthful, balanced meals for insects, birds and animals.”

Beard & Mackie: Gardener’s Dictionary
Bugs are our friends

Bugs are not going to inherit the earth. They own it. So we might as well make peace with the landlord.

Thomas Elsner
Willing Workers on Organic Farms
Mycelium

- The largest living beings on Planet Earth
- One organism measured at 965 hectares in Oregon
Martha Smith – Beds I Have Known

As I have gardened, feeling myself in some sort of deep dialogue with an unseen and silent partner, I have come to know true inner peace.
References

• Forest History of the Near East http://www.fao.org/docrep/e3200e/e3200e03.htm
• The Role of Wood in World History http://www.eh-resources.org/the-role-of-wood-in-world-history/
• Largest Fungus in the World http://www.scientificamerican.com/article/strange-but-true-largest-organism-is-fungus/
• The history of wheat cultivation in the Roman Empire / North Africa https://en.wikipedia.org/wiki/Tacfarinas
• Research at Garden Cottage http://grahambell.org/the-red-shed-nursery/garden-cottage-research/
Useful Books

• The Permaculture Garden - Graham Bell
• The Formation of Vegetable Mould – through the action of worms with observations on their Habits Charles Darwin
• Mycelium Running – Paul Stamets
• Teaming With Microbes - Jeff Lowenfels & Wayne Lewis
• Dirt- the ecstatic skin of the earth - William Bryant Logan