A COW'S STOMACH *VS* A COMPOST HEAP

A relevant question that we could all be asking ourselves is 'What is the most effective way of restoring fertility to the world's depleted agricultural soils?'

Part of the answer would probably be a wholesale redistribution of land; looking at the broader picture, the over-exploitation of land has gone hand in hand with bigger and bigger landholdings, which has reached an extreme in the multi-thousand-hectare farms under the control of modern corporations. Even if land redistribution was achieved, however, each small landholder would then still be faced with the problem of how to restore their soil to health within a reasonable timescale.

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The Cow's Stomach

The two main sources of natural fertilisers are manure and compost; they have certain things in common, and certain distinct differences. Manure traditionally comes from domesticated animals, being kept on a family smallholding - usually ruminants, such as a cow, a horse, sheep, or goats, but also sometimes a pig or poultry. Ruminants are particularly interesting because they are able to digest vegetable matter that we cannot. They have an extra part of the digestive system that provides optimum conditions for a vast variety of single-cell organisms that are capable of breaking down the cellulose in plant cell walls, and which is particularly prevalent in grasses. These conditions involve keeping a slightly higher temperature in the rumen than normal body temperature, alkaline conditions (in spite of the fact that this breakdown of cellulose releases acids), and a near absence of oxygen. Thanks to the activity of these micro-organisms, a cow, and other ruminants can completely digest grass within twenty-four hours of eating it. The resulting manure is rich in nitrogen, and other minerals, which are easily available to plant roots when it is worked into the ground, making manure a very effective fertiliser.

The Compost Heap

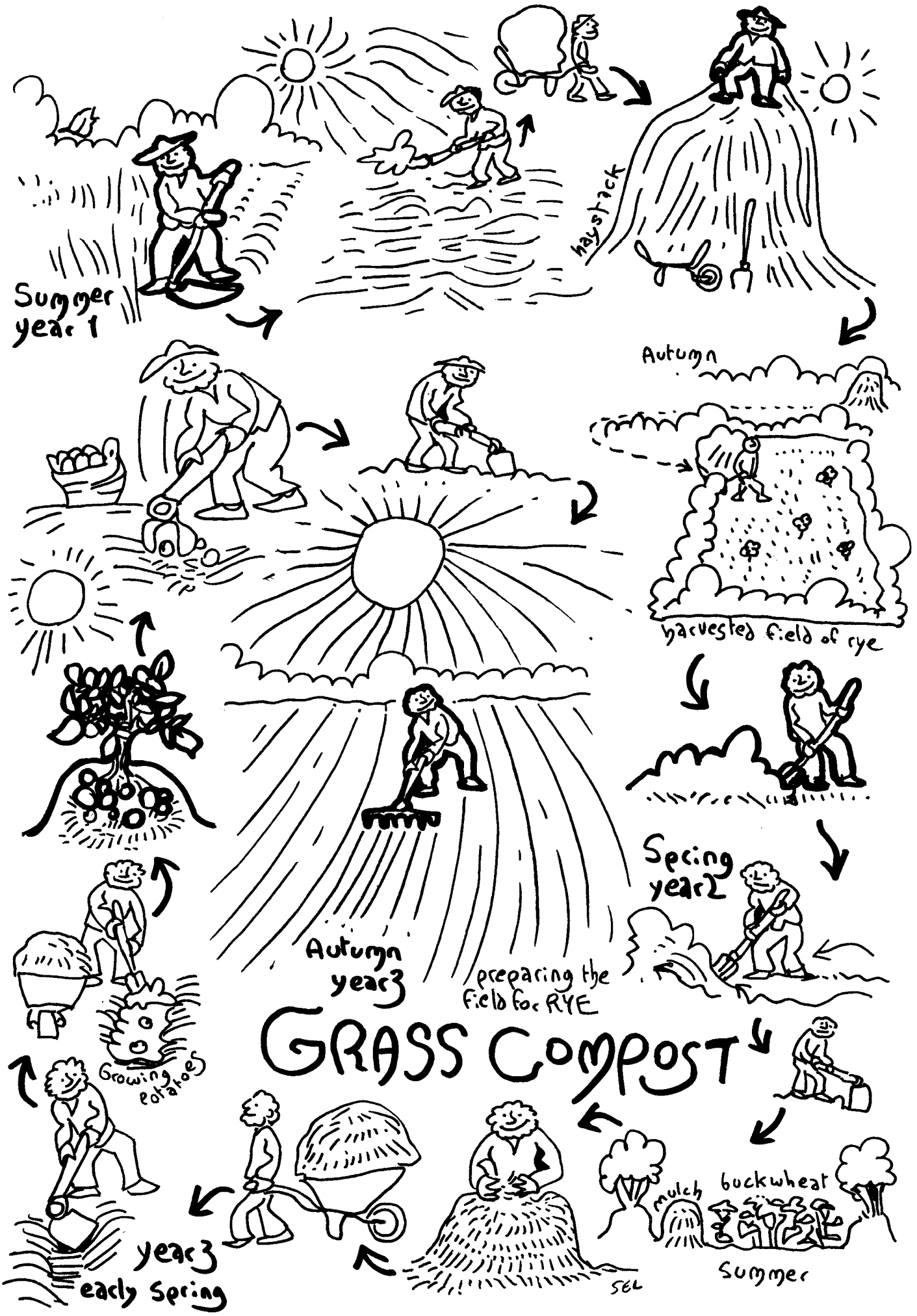
The main difference between a compost heap and a cow's stomach is that the compost heap needs oxygen. If it becomes compact and impermeable to air, there is a build-up of acids, and the heap becomes putrid; decomposition of organic material comes to a halt. In the presence of oxygen, decomposition continues, but at a much slower pace than in a cow's stomach. There are a wider range of organisms involved: micro-organisms, fungae, insects (and their larvae), worms, slugs, snails, etc., and even then the organic material is not broken down as fully as in manure. When the compost is added to the soil, the process of decomposition continues. The nutrients are not as immediately available to the plant roots as with manure, but there are other advantages.

Compost is key to re-establishing the biodiversity that is so important to a healthy garden.

The compost adds to the total amount of organic matter in the soil, making it more friable, and also nurtures a larger community of soil organisms, which in turn are the basis of all the food chains that support larger animals from insects to frogs and toads, mammals, and birds. The compost is thus key to re-establishing the biodiversity that is so important to a healthy garden. Furthermore, mineral nutrients are far from the only things that plants need from the soil. Plant roots need to be able to take up water, and they need air; the organic material, and all the associated organisms, help to de-compact the soil, aiding both aeration and water retention.

In our garden, we have, so far, focussed on compost. We scythe grass areas once a year, use the cut material as a mulch (sometimes after letting it dry in the sun, and storing it as a hay stack), lifting the mulch before sowing in the spring, stacking it as a compost heap, re-applying it after the harvest, and so on, until it has broken down enough to be worked into the soil. In the past, I suspect, less work was involved: crop fields were already rich in organic matter; straw and vegetation cut from the banks were returned each year, and some well-rotted manure was added to give a further boost.

Gareth Lewis


Summer
year 1
haystack
Autumn
harvested field of rye
Spring
year2
Autumn
year3
preparing the
field for RYE
GRASS COMPOST
Growing
potatoes
year3
early Spring
mulch
buckwheat
Summer
SEL