

GARDEN PRACTICE

# Green manures

Andi Clevely explains why and how green manures can be used to improve garden soil, regardless of conditions, season or soil type. Photography by Tim Sandall

**THE PREMISE OF** green manuring has great appeal. What could be more sustainable than sowing seed on a fallow plot and turning resulting crops into the soil to improve fertility and structure? Most green manures are quick and easy to grow but it is vital to understand your needs and site conditions to get the best from them.

The technique is an important part of contemporary organic, environmentally friendly approaches to gardening, but has a long agricultural pedigree. Green manuring is mentioned in Chinese manuscripts 3,000 years old, while 1st-century Roman farmer Columella recommended lupins as a substitute for manure. Extensive research, especially in the USA, confirms green manures offer substantial benefits.

Green manures add organic matter to soil, and are said to improve texture and fertility as they decompose, especially summer-grown leguminous plants (plants from the pea family) which can make 40–60 percent of their high-nitrogen content available to a follow-on crop. Many accumulate other nutrients: buckwheat, lupins and clover, for example, help circulate phosphorus, important for root and shoot growth.

Deep-rooted plants such as alfalfa and field beans transfer minerals from the subsoil to the topsoil rooting zone. They loosen and aerate the subsoil, roots of lupins and red clover in particular penetrating to 1.8m (6ft) deep. Green manures act as cover crops, suppressing weeds by competing for space, light and food, and shielding the soil surface against effects of extreme weather.

### Practical considerations

Although the principle of turning in plant residues as a soil conditioner and substitute for bought fertiliser is well established, good results depend on your circumstances and what you want to accomplish.

● **Season** Matching purpose with time of year can be crucial. Tender phacelia, for example, grows fast in spring and summer as a sappy ‘catch crop’ wherever ground is vacant for a few weeks; autumn-sown hardy tares (vetches) grow all winter, protecting soil against deterioration and nutrient leaching, and only bulk up in late spring.

● **Site** The strategy works well in the kitchen garden, where green manures can fill intervals between crops, provide ground cover over winter or rest the soil as an extended fallow crop. It fits less easily in the flower garden except locally as ground cover or a break between seasonal bedding.

● **Soil** Different green manures suit specific soil types: lupins prefer acid soils where lime-loving tares and vetches might sulk; alfalfa grows in dry conditions but not waterlogged ground; field beans like clay whereas clover does best in light soil (for more detail see table, p597). Distinguish between nitrogen-fixing plants intended to raise levels of nitrates in the soil and bulky or deep-rooting crops which mostly improve the soil structure (such as alfalfa, which may do both); all-round soil improvement will result if a mixture is grown.

### Evaluating plants

Other factors will affect the choice of green manure. The amount of available time will determine the derived benefits. Prolonging plant growth (until flowering if possible) increases bulk for digging in, although two to three weeks should elapse for some decomposition and soil settlement before sowing or planting. Phacelia, lupins and red clover have blooms that benefit wildlife, but beware of self-seeding, which may lead to weed problems. Mustard hosts the same pests and diseases as fellow brassica crops.

No-dig gardeners can use green manures by trampling or cutting topgrowth while

soft and sappy, leaving this as a surface mulch through which transplants can be dibbled (although this may attract slugs). Cutting foliage for compost or mulching is a useful way to rejuvenate long-term green manures, such as field beans, clover and alfalfa which may regrow once mature unless well dug in.

Despite these necessary precautions the concept of using green manures is sound and its practitioners enthusiastic – some of whom regard even weeds as short-term cover crops or sow surplus sunflower and vegetable seeds such as peas, beans and roots as alternative green manures. Regardless which you go for, this is certainly a technique well worth trying out. ■

Andi Clevely, gardener and author, works in mid-Wales, where green manuring is one of the best ways to improve the stony shale

● Suppliers include most seed companies



Green manures, such as phacelia, can be a more sustainable alternative to regular fertilisers and manures



**1 Sowing** Broadcast seeds or sow in rows in a prepared seedbed at the recommended rate – between 4 and 30g per sq m (1/8–1oz per sq yd)



**2 Seedlings** Unlike most other crops, allow green manure seedlings to grow unthinned for fast ground coverage and maximum weed suppression



**3 Turning in** Trample or cut down plants and dig them into the top 10–15cm (4–6in) of soil. Leave the ground for two to three weeks before planting or sowing again

SOWING PRINCIPAL GREEN MANURES			
name	benefits / cultural notes	when to sow	time in ground
alfalfa	<i>Medicago sativa</i> : hardy perennial; fixes nitrogen, good subsoiler; avoid acid soil	April–July	3–24 months
buckwheat	<i>Fagopyrum esculentum</i> : half-hardy annual; fast growth in poor soil	May–July	1–3 months
field beans	<i>Vicia faba</i> : hardy annual; limited winter nitrogen fixing for heavy soil	September–November	5–6 months
lupin	<i>Lupinus angustifolius</i> : hardy annual; nitrogen fixer for light and acid soils	March–August	2–4 months
mustards	Various <i>Brassica</i> species: half-hardy annuals; fast, bulky, smother weeds	March–August	1–2 months
phacelia	<i>Phacelia tanacetifolia</i> : half-hardy annual; fast growth and decay	March–August	1–3 months
red clover	<i>Trifolium pratense</i> : hardy perennial; fixes nitrogen	April–August	3–24 months
Italian ryegrass	<i>Lolium multiflorum</i> : hardy annual; fast winter cover, smothers weeds	April–September	6–8 months
winter tares	<i>Vicia sativa</i> : hardy annual; summer nitrogen fixer, winter cover, not acid soils	August–October	2–8 months