Grass-Free Lawns.

Grasses grow swiftly upwards from their basal meristems (growth points). Some perennial grasses also maintain carbohydrates in their roots. These features allow them to quickly regrow if their leaves are eaten or cut. It gives grasses an advantage in environments that are regularly defoliated, such as lawns and pastures. They can out-compete both shorter and slower growing plants by quickly taking the available light and soil nutrients.

By excluding grasses from the lawn, other plant species that have different growth patterns and the potential to produce flowers, can be used in the same space.

The research at the University of Reading first used clonal perennial forbs. These are plants that spread by runners, either under the soil (rhizomes) or over it (stolons); and by roots that occur when stems or leaves touch the soil (adventitious roots). They can survive for two or more years (perennial) and are usually soft-stemmed and not grasses (forbs).

Mowing is the management technique that keeps the lawn low. It prevents taller growing species from becoming dominant in the place of grasses. Each time the lawn is mown taller growing plants have more material removed than lower growing ones.

Severely cut plants immediately stop growing. They readjust the amount of their roots to balance the new above ground size. They don’t need as much root material to support the reduced top growth. During this process they release stored root carbohydrates to repair the damage before restarting to grow. Low growing plants that escape the mower with little damage continue to grow. Taller plants have growth repeatedly interrupted, their size reduced and sometimes their architecture reshaped. The frequency and height of the mower’s blade are the selection criteria. Unsuitable plants will die, some will structurally adapt. In this way both tall and short stature plants can be grown together.

Some species used are evergreen e.g. English Daisies (*Bellis perennis*). Some species are herbaceous e.g. Silverweed (*Argentina anserina*). Some species will rarely manage to flower due to repeat cutting e.g. Yarrow (*Achillea millefolium*). Rarely flowering species can act as plants that cover any open patches created by the herbaceous species in winter.

Each species used has conditions in which it will thrive – its niche. For example, some will do better in drier conditions, while others will prefer moist conditions. As environmental conditions change from dry to wet the advantage will move from one species to another. By using as many species as possible, each with its own niche, at least some species will be doing well in any one place at any one time. This helps a highly diverse sward to show resilience in the face of changing environmental conditions.

Not all plant species first used will survive. All the usual environmental garden conditions will affect which species are successful – soil type, pH, moisture, nutrition, temperature, direct sunlight and shade will influence the outcome. By doing a bit of ‘lawn gardening’ and using as many species as possible (ideally 30+), many are likely to survive. Only plants that are environmentally robust and can avoid or tolerate repeated cutting will perennially survive in a grass-free lawn.

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