

Soil FACTSHEET



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Managing Clay Soils For Backyard Gardens and Lawns

INTRODUCTION

Lawns and gardens are more difficult to establish on clay soils than on loamy soils. However, competent landscapers and farmers are invariably successful when working with clay soils. The keys are:

- 1) large organic matter additions
- 2) working the soil at proper moisture content
- 3) proper fertilization
- 4) low irrigation rates
- 5) drainage as required
- 6) prevent heavy traffic on lawn during wet weather

1. Organic Matter

Applying large amounts of organic matter and mixing it in the top 15–30 cm of soil is the key to managing clay soils. It would be difficult for you to

apply too much organic matter. At least 5 cm of material should be applied and incorporated to markedly improve a clay soil. Well-rotted animal manure, sawdust (do not use cedar), composted garden and kitchen refuse, peat moss, dried seaweed and spent mushroom compost are common organic amendments available to most gardeners.

A common misconception is that a small amount of sand will improve the physical properties of clay. In order to change the undesirable characteristics of a clay soil, seven tons of sand per 100 m² (1000 square feet), would be required. However, combined with organic amendments, some sand will help open up the compacting characteristics of clay soil [medium to coarse sand (0.5 to 2.0 mm)].

Table 1 is a guide to the amount of material required for a given area and depth.

Table 1

| VOLUME OF AMENDMENTS OVER VARIOUS AREAS AND DEPTHS | | | | |
|--|--------|------------|-------------|-------------------|
| AREA | DEPTH | VOLUME | | |
| | | Cubic Feet | Cubic Yards | Cubic Metres (m3) |
| 100 sq. ft | 1 inch | 8.3 | 0.31 | |
| | 2 inch | 16.6 | 0.62 | |
| | 4 inch | 33.2 | 1.20 | |
| 10 m ² | 2 cm | | | 0.2 |
| | 4 cm | | | 0.4 |
| | 8 cm | | | 0.8 |
| | 10 cm | | | 1.0 |

2. Proper Moisture Content

Clay soils must have the proper moisture content before worked; if the soil is too dry, roto-tilling will be an impossible task due to the concrete like hardness of the soil. If the soil is too wet, the sticky, plastic nature of clay will make working very

difficult. Gentle irrigation of dried-out clay (12 hours at 0.25 cm per hour followed by a 2 day rest) or surface drainage of water-soaked clay followed by a period of dry weather would provide the optimum moisture required for tillage.

General fertilizer recommendations are shown in Table 2.

Table 2

| GENERAL FERTILIZER RECOMMENDATIONS FOR GARDENS AND LAWNS | | | | |
|---|-------------------|----------------------------|-------------------------|--|
| | | RATE | | |
| GARDEN | FERTILIZER | kg/100m² | lb./1000 Sq. ft. | |
| 1. Entire garden in spring | 4-10-10 | 12-15 | 25-30 | |
| 2. On leaf vegetables, corn and melons 4-6 weeks after planting. | 34-0-0 | 3-4 | 5-7 | |
| LAWNS | | | | |
| 1. Prior to seeding, | 19-19-19 | 5 | 10 | |
| 2. Established lawns 4 to 6 times during season. | 12-4-8 | 3 | 6 | |

3. Proper Fertilization and Liming

If sawdust, peat, or seaweed are used, extra nitrogen must be applied to prevent poor growth due to a nitrogen deficiency. Apply at a rate of 0.7 kg 34-0-0 or 0.5 kg 46-0-0 per cubic metre of organic material (1.5 lb 34-0-0 or 1.0 lb. 46-0-0 per cubic yard).

Apply lime at a rate of 20 kg per 100 m² (50 pounds per 1000 square feet) and thoroughly incorporate with the organic material.

4. Low Irrigation Rates

Most lawn sprinklers apply water well in excess of the amount that clay soils can absorb. This results in surface puddling, structure breakdown, reduced air porosity of the soil which will hinder the growth of most seedlings. Add water to a clay soil at less than 0.5 cm/hour to allow absorption. Sprinklers heads can be purchased through most garden shops that are specially designed for low rates of application. You can check the application rates by placing a number of pans to collect water within the sprinkler area. After one hour, the depth of water in the pan will indicate the amount of applied water. For

lawns, sprinkler rates can be increased to around 0.5 cm/hour when the grass becomes well established.

5. Drainage

Surface puddles after a heavy rain do not necessarily mean your clay soil has poor drainage, but a consistently wet soil into the late spring means that you have a high water table that is restricting water movement on your property. A properly graded soil surface that will enable surface water from heavy rains to run off the lawn will improve the drainage situation.

If your yard is very large and drainage is very poor, you should invest in underdrains or drain pits. For further information, see [Factsheet No. 610.000-2 "Soil Improvement Methods for the Home Garden"](#).

6. Prevent Heavy Use of Lawn during Wet Weather

When wet clay soils compact easily and to avoid long term damage or costly renovation reduce the amount of traffic or playing on lawns.

FOR FURTHER INFORMATION, CONTACT:

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