

Spinach and Swiss Chard

Cultivars

Contact Manitoba Agriculture and Food's Vegetable Specialist for variety recommendations.

Climate and Soil Requirements

Spinach is a cool season crop which produces best with a temperatures growth range from 5° - 24°C. Optimum temperatures for growth and product quality are 15° - 18°C.

Spinach quickly bolts (produces flowerstalks) under long-day and warm-weather conditions, so the crop should be produced in the spring or fall. Cool weather reduces the long-day effect. Spinach grown in cool summers may not bolt quickly.

Though highest yields are obtained on muck/peat soils, production on sandy or sandy loam soils are also preferred for early and late crops. Since spinach is somewhat sensitive to soil acidity, a soil test

is recommended before planting. The ideal range for spinach is a pH of 6.5 – 7.5.

Seeding and Spacing

Sow outside as soon as soil can be worked in early spring until early May, or from July 31 to August 31 for a fall crop. Do not sow seed in mid-summer, because bolting may occur.

Fresh seed will germinate readily at soil temperatures as low as 3° – 4°C, and good results are obtained at 10° – 16°C. At higher temperatures, there is a more rapid emergence but decreased percentage germination.

Row Spacing: Spinach – 12 inches (30 cm)
Swiss chard - 12 inches (30 cm)

In-Row Spacing: Spinach – 2-4 inches (5-10 cm)
Swiss chard – 4-5 inches (10-12 cm)

Rate: Approximately 4.8 kg of seed will plant one acre.

Fertility

Refer to Tables 1 through 9 for this crop. For general recommendations in the absence of a soil test, refer to Table 10 in the fertility section.

Boron

Boron deficiencies on spinach and swiss chard are not common but may occur during periods of hot, dry weather. Leaves become twisted with light spots developing on the petioles. Internal breakdown may occur in the roots or may appear on the root surface as external cankers.

Boron should be used with care. There is a fine line between adequate and toxic levels. Take all crops in the rotation into consideration when applying boron. Some crops are more sensitive and experience toxicity at lower levels. On some soils, boron is required for rutabagas, carrots, celery, beets, spinach and cole crops. Boron deficiencies often occur during dry weather. However, the response to boron is often inconsistent. As a result, it has not been possible to develop a reliable soil test. Visual symptoms and tissue analysis are useful for predicting boron requirements in plants.

Application of boron to mineral soils has not been universally successful. Foliar sprays generally give faster and more effective results. Spray when the young plants are about 8 cm high. A second application may be required.

On request, manufacturers may mix boron fertilizers with ordinary fertilizers. Do not band boron.

For mineral soils apply as follows: application, apply boron at a rate of 0.9 – 2.7 lb/ac (1.0 – 3.0 kg/ha). Foliar applied boron at a rate of 0.2-0.7 lb/220 gallons (0.1 – 0.3 kg/1000 L). NOTE: Rates are nutrient rates (actual boron).

Magnesium

A magnesium deficiency may occur on spinach. The usual symptoms are yellowing of older leaves while the veins remain dark green.

Magnesium is a plant nutrient not normally found to be deficient in vegetable production in Manitoba.

If deficient, magnesium can be supplied by applying dolomitic to soils with a pH below 6.0. If pH is above 6.0, magnesium can be supplied by either magnesium sulfate or sulfate of potash magnesia. Soil apply at 27 lb/ac of actual soluble magnesium or 268 lb/acre of actual product.

Foliar applied epsom salts (10.5% Mg) at the rate of 4.2 lb/220 gal. or 40 lb/220 gal. is also recommended.

Pest Management

Diseases

Damping-Off

Refer to Fungicide/Bactericide section in the *Guide to Vegetable Crop Protection 2003* for recommended seed treatments.

Downy Mildew and Mosaic Virus

Grow a resistant cultivar. Do not grow a fall crop in, or adjacent to, a field where an infected spring crop was grown.

Fusarium Wilt and Root Rot

In soils where this disease is a problem, do not seed spinach between May 31 and August 15. Some tolerance may exist in some varieties.

Check with your seed company representatives for further information.

Insects

Aphids, Leaf Miners, Cabbage Looper and Beet Webworm

Leaf Miners and Beet Webworm are normally not

economic pest problems on vegetable crops in Manitoba.

If monitoring indicates a need, refer to the Insecticide section of the *Guide to Vegetable Crop Protection 2003* for recommended control products.

Weeds

Competition from weeds can reduce yield and also make harvesting more difficult. For recommended herbicides refer to the *Guide to Vegetable Crop Protection 2003*.