

Silver Moss



INTRODUCTION

Silver moss (*Bryum argenteum*) is a common problem on bowling greens.

Given the very dense nature of silver moss, it is very difficult for chemicals to penetrate into and hence kill the moss. Consequently, control programmes often produce variable results.

LIFE CYCLE

Silver moss goes through two distinct phases. The juvenile phase primarily occurs during summer – early autumn and practically is difficult to distinguish from algal slime. However, although this phase is most commonly a black-green colour it may also take on a brownish look.

The important point from a green keeper's perspective is that this juvenile phase is much easier to control than the mature cushions of silver moss.



The juvenile phase of silver moss is most evident during summer – early autumn and practically is often very difficult to distinguish from Algal slime.

During autumn (March onwards) and normally once the first dews are observed, the mature silver moss cushions start to form. These initially start as single filaments of silver moss growing out of the “slime” and once the autumn rains occur, rapidly give rise to cushions of silver moss.

FACTORS FAVOURING SILVER MOSS

The main conditions that contribute to silver moss are as follows:

1. Cover

Mosses are colonising plants and therefore are usually the first plants to establish in any weak or bare areas that are present on the bowling green. Furthermore, the “open” growth habit of in particular starweed and *Cotula maniototo* (winter leaf stage) favours the establishment of silver moss.

2. Mowing height

Despite what appears to be a complete turf cover, the very low mowing heights required on bowling greens provides an opportunity for light to reach the soil surface and therefore allow moss to establish.

3. Thatch

Thatch provides a moisture retentive surface which is essential for moss to establish and persist.

4. Fertility

Silver moss lacks a true root system. Consequently, fertilisers such as lime, phosphate organic products and controlled release nitrogen sources that remain on or near the green surface and particularly during the early autumn can encourage moss.

Conversely, acidic fertilisers such as ammonium sulphate are damaging to the juvenile moss phase.

CONTROLLING MOSS

Healthy and complete turf cover

The first priority is to maintain a complete and healthy turf cover. Commonly occurring issues that contribute to a weak turf cover on bowling greens and which need to be managed if silver moss is to be discouraged, include:

- Nematode damage and/or heat stress
- Scalping

Mowing height needs to be based on the levelness of your green and thereby ensure cover loss or excessive thinning of the turf cover is prevented.

- Renovation

Renovation needs to be completed early, whilst there is at least 4 – 6 weeks of good

growing weather to follow. Adequate nitrogen should be applied to encourage a quick and complete recovery.

Chemical control

Juvenile moss (slime stage)

For those clubs that either have a history of silver moss or have a weak cover going into autumn and prior to the cushions of moss forming consider the following strategies:

- Use acidic fertilisers such as potash during summer and ammonium sulphate/Iron sulphate during autumn. Delay the use of lime and NPK fertilisers until late autumn – early winter.
- Apply contact fungicides (Thiram, Orthocide, Mancozeb/Maneb) during late January – early March at recommended rates for Algal slime. *For example: Thiram 80W or Mancozeb (800gai/kg) @ 3kg/green*

Caution: To reduce the risk of burning the turf, the powder/granule formulations are preferred.

Adult moss (cushion stage)

For best results when controlling moss:

- i. In order that the product translocates to the base of the moss cushion, the moss must be thoroughly saturated (ie. when lightly touched water should ooze from the moss).
- ii. Consider raking or grooming the green prior to spraying, thereby opening up the moss and aiding penetration of the mosskiller.
- iii. Use appropriate water rates. Most products specify water rates of 100 – 125 L/green.
- iv. The moss needs to remain moist for 2 – 3 days following spraying, in order to prolong the herbicide effect. If necessary consider syringing the greens around 12.00 noon, 3.00pm and 5.00pm.
- v. Implement a turf recovery plan (fertiliser, sowing etc) to reinstate a complete turf cover.

Chemical options include:

1. Iron sulphate (typically used at 10 – 15kg/green)
 - Results are generally more variable than when using chemicals.
 - Once the moss starts to “green up” repeat applications, 4 – 6 weeks apart (approx) will be required.
2. Quaternary Ammonium Chlorides (Yield, Surrender, Quaternary ammonium chloride etc)

- Given the proliferation of brand names, make sure the application rate reflects the amount of active ingredient present within the product. Standard industry products, namely Yield, Surrender and Quaternary ammonium chloride have 500gai/L and are used at 2.5 – 5L/green.

Care is required where browntop is a desirable component of the green surface as some damage may occur following the use of these products.

3. Foresite

- Foresite can be used safely on Cotula dioica, maniototo and starweed for the control of moss. Foresite will both kill the existing moss and prevent moss re establishing afterwards (4 - 12 weeks approx). **Foresite should not be used on browntop greens.**
- When using Foresite:
 - Some short term yellowing of in particular, Cotula dioica may occur.
 - Schedule spraying so that at least 8 weeks elapses between spraying and sowing bulbils, starweed seed or other seed.

4. Detergents/Soap powder

- Detergents/soap powder has been used extensively for controlling moss on bowling greens with mixed results.
- Care is required as high rates of detergents/soap powder can burn or kill the turf.

NZSTI SPORTS TURF ADVISORS – CONTACT DETAILS		
Alex Glasgow 09 529 5064 027 496 2486 alexg@nzsti.org.nz	Everett Darlington 09 529 5064 027 232 4545 edarlington@nzsti.org.nz	Peter Munro 027 445 8571 pmunro@nzsti.org.nz
David Ormsby 07 846 7698 027 442 8053 davido@nzsti.org.nz	Megan Cushnahan 06 355 7021 027 220 9957 mcushnahan@nzsti.org.nz	Brendan Hannan 06 355 7024 027 442 8046 bhannan@nzsti.org.nz
Andrew Mitchell 06 356 8090 ext 722 027 662 0148 amitchell@nzsti.org.nz	Chris Gribben 06 355 7026 027 552 4488 cgribben@nzsti.org.nz	www.nzsti.org.nz
Paul Avison 03 363 5099 027 446 2874 pavison@nzsti.org.nz	David Howard 03 477 7333 027 446 2875 dhoward@nzsti.org.nz	