



# Controlling Scentless Chamomile in Native Grassland



Scentless Chamomile

INVASIVE SPECIES

## Introduction

*(Matricaria perforata)*, commonly known as scentless chamomile, has already become a threat to cropland systems of the prairies and is starting to become a threat to native grasslands. Native to Europe, this weed was introduced both accidentally as a grain contaminant and purposely as an ornamental. Since its introduction in the early 1900's, this daisy like plant has spread throughout Canada and has become a problem in Saskatchewan on the black, dark grey, and grey soil zones and is spreading into the dark brown soils.

Scentless chamomile can be a summer or winter annual as well as a short-lived perennial. It inhabits areas that have been or are periodically disturbed or lie on the edge of vegetation such as roadside

shoulders, farmyards, slough margins, and drainage ditches. Scentless chamomile takes advantage of moist habitats where there is little competition from established vegetation because of flooding, mechanical disturbance, or animal activity.

## The Problem

Native prairie is a part of our natural history and is important as a grazing resource, wildlife habitat and soil and water conservation. With few natural controls in the Canadian Prairies, many introduced or exotic species have the ability to invade natural habitats and out-compete the native species. Threats such as the invasion of exotic species can degrade our prairie by excluding native species which reduces biodiversity, carrying capacity, habitat and the aesthetics of our prairie ecosystem.

Scentless chamomile, although most often a cropland weed has several characteristics which make it a threat to native grasslands:

- It continually flowers from May through to October. This means that there can be plants that have flowers, immature flowers, and mature seeds all at the same time.
- One flower head can produce as many as 300 seeds (average of ~ 180) and one large plant can produce as many as a million seeds (average of ~ 300,000)
- Germination can occur under a wide range of temperature and moisture conditions. Usually this occurs between 3-40°C and when soil moisture is at more than 10 percent of the soil capacity.



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addressed such as the size of the area affected and the relative biomass of scentless chamomile in relation to native grass species present.

Scentless chamomile spreads primarily by seed, therefore control depends mainly on identification and elimination of the seed sources. Keeping a healthy stand of perennial grass will help prevent establishment. Scentless chamomile does not do well under competitive pressure, especially from a well established forage stand.

### Control of Scentless Chamomile

#### 1. Prevention

Not allowing scentless chamomile to spread is key to keeping it under control. Since this weed is only abundant in certain areas of the province, preventing it from being introduced into new areas will keep it in confined locations. Thoroughly clean all equipment such as mowers, balers and vehicles that have been in contact with scentless chamomile. Also, it is very important when purchasing grass seed that the seed be certified and a Certificate of Purification be requested. This certificate lists all weeds that are present in the seed mix and their percentages. Guard against helping the plant move with farm animals. Twenty-six percent of scentless chamomile seeds fed to cattle may pass through the animals unharmed. Manure produced by livestock fed from sources that might be infested with scentless chamomile should be contained until the seed is no longer viable.

#### 2. Early Detection

Detecting scentless chamomile stands or plants before they spread will help in controlling the spread, especially along creeks and waterways. It is important to know where potential sources are upstream as well as actual infested areas.

#### 3. Monitor

A very important tool in restricting the spread of scentless chamomile is to continually monitor and regulate areas that make ideal scentless chamomile habitat. It is also important that once scentless chamomile has infested an area that control procedures be implemented, followed by the area being monitored and evaluated for the success of the control procedure. Often, control measures have to be applied more than once over an extended period of time to be truly successful.

### Management Techniques

#### Hand weeding

For small patches, hand pulling is the most effective method of control. As long as the crown (the base of the plant) is picked the plant will not regenerate. After the plants are pulled, they should be placed into garbage bags. This is necessary as once the white petals appear some of the florets can still produce viable seed. The bags should then either be buried deep into the ground or burned in a controlled manner, where wind or water cannot spread the seeds. Burning is the best way to get rid of the weed and not contaminate other sites. In large patches, however, hand weeding is not practical because it is time consuming.

## Scentless Chamomile



#### Mowing

Mowing can be effective if it is done early in the season and at repeated intervals. Cutting must occur before the white petals appear otherwise the seeds will be viable. A double cut system is the most effective method. The first of the two cuts should be relatively high and remove the main growing point of the plants. If the initial cut is at ground level, scentless chamomile will continue to flower below the cut line and produce seed. When it appears that it is attempting to recover, cut it again, this time closer to the ground. It is important that equipment used to cut scentless chamomile is adequately cleaned, as the mower itself will spread the seed. Lush, green material, contaminated with chamomile seed becomes stuck under the shrouds of rotary mowers and drops off farther down the swath spreading seeds with it. As well, scentless chamomile plants should not be left

- Its seeds absorb moisture quickly and can float in water for at least 12 hours, beginning the germination process. This allows scentless chamomile to establish immediately upon landfall in moist habitats as well as re-infest areas downstream or throughout a watershed.
- It has a dense, fibrous root system that traps soil and moisture. Because of this, scentless chamomile is able to survive after being uprooted under moist soil conditions.
- Seeds are adapted to germinating on the soil surface because of a light requirement. With time, seeds that are buried in the ground, lose their light requirement and as a result germinate in the dark.
- Some seeds in the soil can remain viable for a decade or more although most will germinate within two to three years after being shed.

### Know Your Problem

Scentless chamomile has become such a large problem in many areas of the province that the overall management goal should be to keep it controlled and prevent it from spreading to unaffected areas. When choosing control and management options a number of things should be

standing over winter, as they have the potential to spread seed across frozen snow on windy winter days. To prevent this spread, mature chamomile plants should be knocked down during very dry fall afternoons and then baled or burned. This insures that scentless chamomile seeds will not spread from the current infestation.

### Grazing

Grazing is not a means of eliminating scentless chamomile as livestock do not freely graze it due to its low nutritive value. But, proper grazing management can be used as a method to prevent the spread or introduction of this plant. Scentless chamomile competes very poorly with a well established, healthy stand of perennial grass. Areas that have been overgrazed and result in bare soil or weak plants are prone to invasion by scentless chamomile where it can become very aggressive.

### Competition

Any practise that aids in the establishment of forage, such as seeding good forage seed shallowly into a firm, moist seedbed, will help in reducing the scentless chamomile growth. It is recommended that any waste or recently disturbed areas that are prone to scentless chamomile infestation be seeded to grass. In established forage stands, scentless chamomile will only be a problem where the forage is not growing well. In wet environments such as intermittent spring flooded areas or slough margins, this may not be as effective, since scentless

chamomile thrives in moist or wet conditions and will become a better competitor than grasses. It depends on the amount and duration of moisture.

### 1. Scentless chamomile seed weevil (*Omphalapion hookeri*)

The seed weevil larva feed on developing seeds, therefore decreasing seed production. They disperse rapidly from the release point and can cover a large area. There have been several release sites throughout the province (Figure 1), but as of yet they do not contain sufficient numbers of established populations to harvest. Contact your local extension agrologist to keep up-to-date with these collection sites.

When preparing to harvest seed weevils, it is important to know the extent to which they have established first. To determine this, cut 100 mature scentless chamomile seed heads off the stem and place them in a container. Dissect each head and count the number of adult weevils present. If there are weevils present in over 50 percent of the seed heads, then the site is ready to be harvested.

Generally the best time to harvest the seed weevil is the end of July to the end of August. The first step in harvesting is to collect the seed heads off the scentless chamomile plants. There are then two methods most commonly used to capture the seed weevils from the seed heads. The aspirator method involves spreading the seed heads out on a tray, waiting for the seed weevils to emerge from the heads, and then collecting them with an aspirator. This is a very

accurate method but can be time consuming. The other method is direct distribution. The collected seed heads are distributed at the release site and then the weevils emerge on-site. Unfortunately, this method does not give a known number of weevils released, as well as it can be sensitive to weather conditions.

It is best to release the seed weevils right after collection (if this is not possible, the insects can be stored in a cool place, such as a cooler or fridge, with a temperature no lower than 4°C). When choosing a release site, choose areas that are not expected to flood in the spring and that are not located near anthills or wasp nests (ants and wasps are enemies of seed weevils). Releases should be made on days when the temperature is between 18°C and 28°C. Mark the release site with a wooden stake or GPS (Global Positioning System) so that the site can be monitored and evaluated for progress. It is very important that after a release, the site is not disturbed (i.e. applying

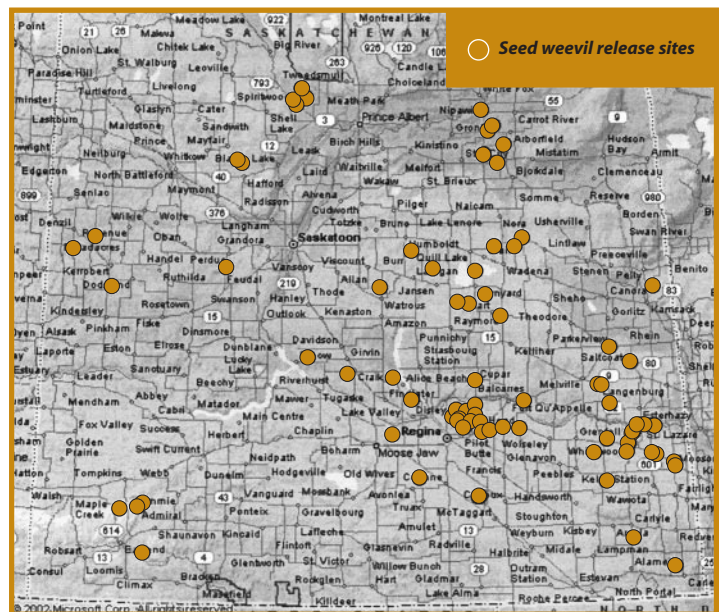


herbicides, mowing). Grazing should not occur on the site until the insects have established a stable population (usually this takes at least five years).

### 2. Scentless chamomile stem weevil (*Microplontus edentulous*) and the scentless chamomile gall midge (*Rhopalomyia tripleurospermi*).

The stem weevil larva feed on the interior of the stems, leaving hollow areas. Unfortunately there are no established field populations of the stem weevil in Saskatchewan as of yet. The gall midge larva feed on the growing points of the scentless chamomile plants, forming a conspicuous gall

Figure 1. Seed weevil release sites in Saskatchewan from 1995-2002 (Saskatchewan Agriculture, Food and Rural Revitalization)



which interrupts and stunts the growth of the plant, reducing its flowering. Similar to that of the stem weevil there are no field populations of established gall midges yet in Saskatchewan. Although, in areas where galls have formed on scentless chamomile plants (indicators that the gall midge is present), it may be possible to establish this insect in other areas by digging up the scentless chamomile plants with galls and then transplanting to a new location infested with scentless chamomile. As the adults emerge from the gall, they should lay eggs on the surrounding plants to start a new population. Release is the same for the gall midge as that of the seed weevil.

#### **Chemical Control**

In native grasslands, total vegetation control herbicides should not be used as they eliminate competition from grass against new emerging scentless chamomile plants. A selective herbicide is more effective, especially if applied early in the season while the plant is still in the vegetative stage. Herbicide applications must be made prior to flowering to prevent the spread of the weed since evidence is not available to show that late applications of herbicides will reduce seed viability. Refer to the Crop Protection guide produced

annually by Saskatchewan Agriculture, Food, and Rural Revitalization, for registered herbicides and their application rates.

#### **Combined Management Techniques**

As with many invasive plants, the best control measure is the application of more than one management technique. The same is for scentless chamomile. Not just one control option will effectively show results. In order to achieve long term results; more than one technique has to be applied.

#### **Mowing and Chemical Control or Biological Control**

Defoliation of the scentless chamomile plant will stimulate regrowth. After the plant has been allowed to regrow for a short time it should be hit again either with herbicides or the release of beetles. This regrowth period is when the plant is most vulnerable and carbohydrate reserves are lowest. Mowing scentless chamomile before the release of biological control agents opens up the canopy improving the chance for agent establishment. It is very important that mowing or any other type of disturbance does not occur after insect release as this may have detrimental effects on its establishment.

#### **Competition and Chemical Control**

As a forage crop matures or an existing forage stand thrives, the forage usually provides sufficient competition to crowd out the scentless chamomile, as long as it is in a healthy state. Any scentless chamomile that is spotted can then be selectively removed from the grass stand with a herbicide.

## **Summary**

Scentless chamomile is an extremely aggressive species when given the right growing conditions (such as any type of vegetation disturbance or the edge of any vegetation or field). It has many competitive advantages that allow it to outcompete native species, threatening the diversity of many native habitats and endangered species. Management programs for controlling scentless chamomile must use an integrated site specific approach where continuous monitoring methods must be maintained to prevent spread. Management should be focused and adapted to scentless chamomile control while encouraging and promoting the establishment and health of native species.

### **For Further Information**

A bibliography of the resources used to prepare this factsheet is available from the Saskatchewan Watershed Authority. Factsheets on other species and topics are also available.

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