



# **SAFFRON THISTLE**

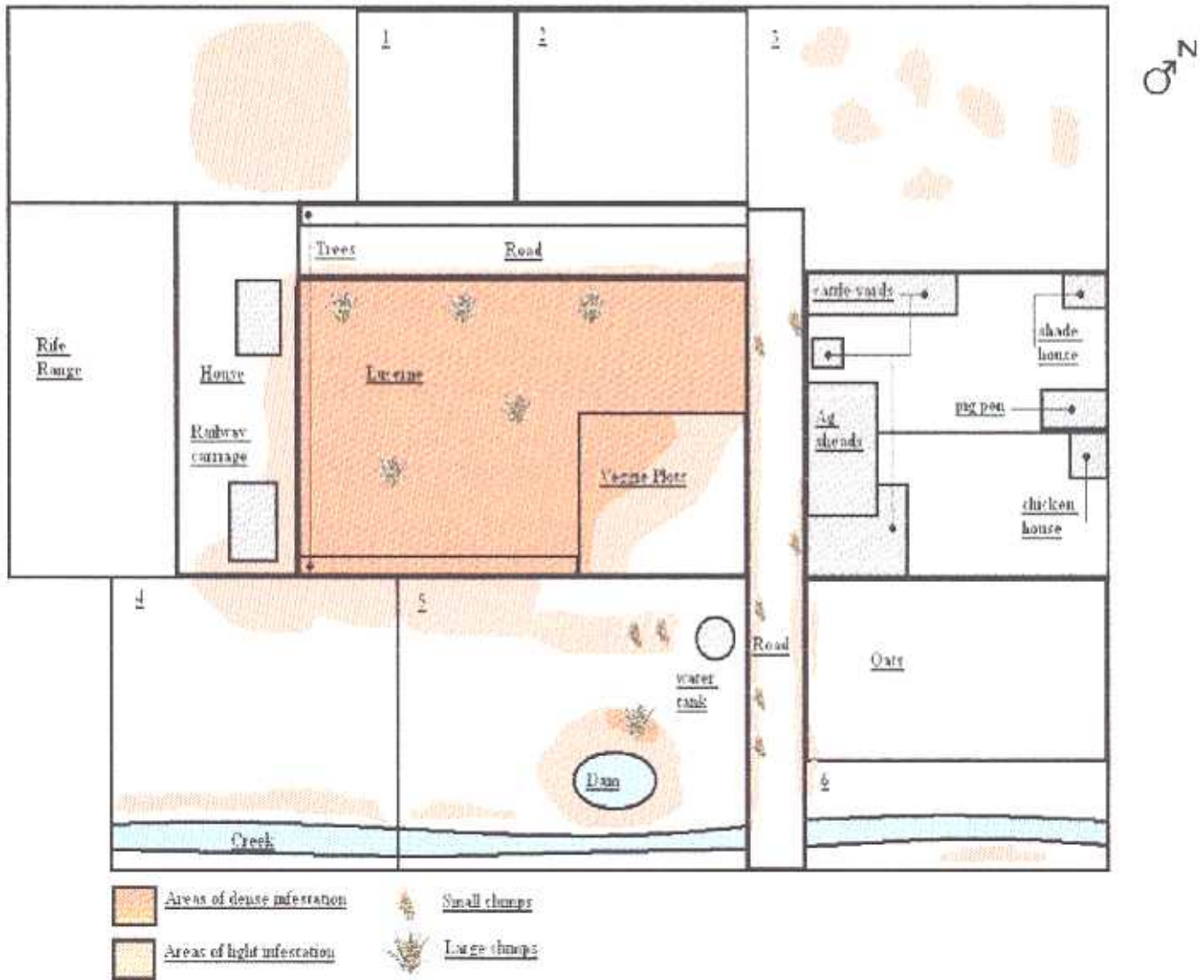
*CARTHAMUS LANATUS*



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**YEAR 9**  
**AGRICULTURE**

## LOCATION

The Saffron thistle is located at our school farm, here is a map showing large and small clumps of the thistle, as well as areas where it is dispersed in light or dense areas.



**Topography:**  
Relatively flat, slightly sloping towards the north-west

**Soil Type:**  
Acid clay loam, Ph 5.5

Vegetation:

In the areas of 1, 2, 3, 4, 5 and 6 on the above map, there is improved pasture consisting of the following species:

- Haifa
- White clover
- Annual Rye grass
- Perennial Rye grass
- Phalaris
- Subterranean clover

The lucerne paddock is a particularly difficult area as it is consistently infested throughout with saffron thistle.

In the Rifle Range also shown on the above map, there is native pasture consisting of the following species:

- Kangaroo grass
- Spear grass
- Couch
- Phalaris

## IDENTIFICATION

### SAFFRON THISTLE

**Scientific name:** *Carthamus lanatus*

**Origin:** Saffron thistle is native to southern Europe, central Asia and the Mediterranean area.

**Flowers/ Seed heads:**

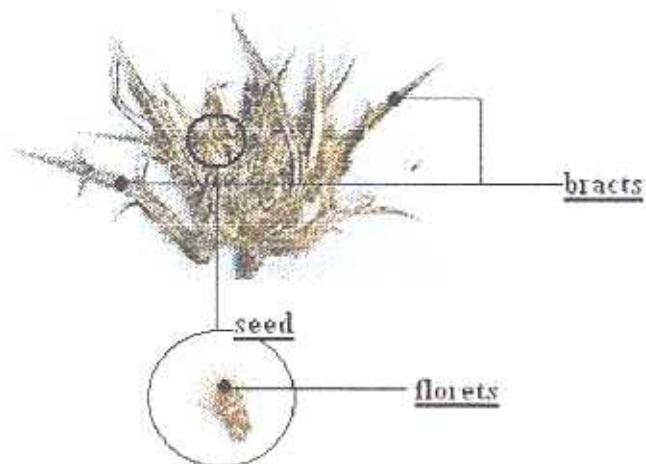
Saffron thistles have solitary heads 2cm in size, they can grow up to 1.5m from the ground. It flowers annually, late spring-autumn.

**Bracts:**

Spines surrounding the flower head can grow up to 5cm in length

**Florets:**

Small flowers, yellow in colour.



**Description:** Saffron thistle can be described as an erect annual thistle 1-1.5m in height; the stems are ribbed and are usually hairless. The leaves often vary in length and width but the basal leaves on a fully grown plant are usually around 20cm in length and 5cm in width and the stem leaves are about 10cm in length and 5cm in width. They tend to grow in large clusters as the dispersal of the seed is generally in need of a host. The seeds are light brown in colour and develop on the bottom of the florets (See above diagram)



A cluster of saffron thistle

**Dispersal:** Saffron thistles have the following means of dispersal:

- Saffron thistles can mature in cereal crops and the seeds can be harvested with the crop and can be imported / exported by different countries.
- Saffron thistle seeds can become tangled within the wool / fur / clothes of the passing animals or humans, these seeds can become dislodged at another location to begin a new cluster of thistles.

Note:

Saffron thistle seeds are too heavy to be dispersed by the wind, therefore they rely on the above means of dispersal. If the saffron thistle seed is not interrupted it will fall to the ground and enlarge the size of the cluster in which it growing.

## IMPACTS

The Saffron thistle is mainly in our Lucerne paddock. This causes the following problems:

- Contamination of the stock feed.
- Reduces the final yield.
- Disperses the thistle if / when the Lucerne is sold / relocated.

Problems of the thistle in the paddocks containing the improved / natural pastures:

- Large open areas for the weed to spread.
- Thistle may be hard to locate in the open paddock meaning that, when spraying, thistles may be overlooked when still small.

Problems of the thistle affecting the stock:

- The thistle is usually avoided by animals so the thistle will become an obstacle which the stock must maneuver around to reach any destination (especially a problem when close to a dam or a gate).
- When eaten the thistle can damage the mouths of the animals causing infection.
- The thistle can tangle within the fleece of the sheep (more so with dead/dry plant material).
- Animals are one of the main reasons why the thistle is dispersed throughout the farm.

## MANAGEMENT PLAN

### Paddocks containing improved pastures:

#### Autumn – Winter:

The management program is best begun during winter when large or dense clusters can be removed or pushed into a manageable pile with machinery such as a bobcat with a jaw / scoop. This can be burnt off at the dormant period of the pasture with hopefully minimal disturbance to ground cover. This is also a time to record or mark where old plants have died off and new ones will be expected to grow.

#### Spring - Summer:

Early spring is the start of the new growth cycle and inspection should take place to locate breakouts. The growth of the thistle should be monitored until it is at the Rosette stage of development, about mid spring to early summer. It is now possible to start spot spraying in the paddocks containing improved pastures. If you do not wish to, or are unable to commence spot spraying at this time, you will be able to use a “**weed wiper.**” Do this once the thistles have emerged above the other plants in the vicinity and have developed their leaves, but before flowering so no new thistles are seeded.



Example of a weed wiper

Image: [www.e-dax.com](http://www.e-dax.com)

**Note:** if using the weed wiper, spot spraying will be in need in areas such as around dams, along fence lines/ creek lines and around constructions and other hard-to-reach places.

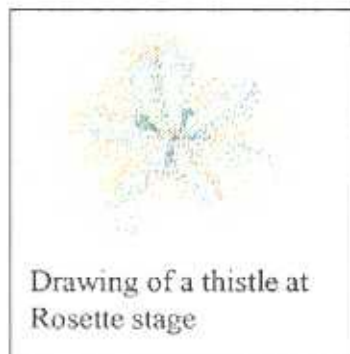
No biological control is available for release in the management of Saffron thistle.

**Note:**

The use of herbicides in the Veggie plot should be forbidden as the herbicide used (roundup) is a non selective herbicide and will kill most plants it comes in contact with. Therefore thistles in and around the area (along all fence lines and in neighboring paddocks 5m away from the veggie plots) should be physically removed (details under heading *Veggie plots*) for health and safety

**Roads, Fences and Tree lines**

Thistles should be sprayed once they reach the Rosette stage of development, this is when the thistles are most vulnerable to herbicides because they are still developing into a strong framed thistle as well as being clearly identifiable as a pest species. A backpack sprayer containing Roundup should be used in this situation. This method should also be used around any buildings such as the water tank and Ag sheds as well as around fences and in cattle yards



Drawing of a thistle at Rosette stage

**Veggie plots**

Thistles should be physically removed in this area between the Rosette stage and before flowering. Thistles should be cut off just below the surface of the soil because this discourages re-growth. All removed thistles should be collected together and safely burned. The burning of the removed thistles will destroy any developing seeds.

**Lucerne**

In the Lucerne paddock, wait until the thistle has emerged over the height of the Lucerne and then, with the exception of the 5m radius around the veggie plot fence, go over the whole paddock using the round up in the weed wiper. You may need to do this more than once to make sure you eradicate all the weeds in the area.

Note: when using the weed wiper in the Lucerne paddock, make sure to set the level of the tray above the Lucerne so they make no contact, Remember, roundup will kill the Lucerne!

**After usage of herbicide**

Once all weeds on the farm are thoroughly browned out, leave for a further six months. After this time period, all dead plants must be collected together and burnt to prevent new seeds being germinated. In larger areas where the thistle has grown in a large cluster you have the choice to burn it on sight if appropriate. This has the following benefits:

- You don't have to remove the thistles.
- You won't have the risk of dropping seeds as you remove the thistle or when you transport it to the burning site.

The disadvantages of the burning of the thistle on sight are:

- There will be large patches of ground where it will take time to recover, and will take time for new pasture to grow.
- Risk of a grass fire if careful selection of location and timing is not considered.

### The animals

As the weeds themselves are being destroyed the animals will need to be checked for seeds when leaving and entering different paddocks. The Sheep's fleece and hooves of both sheep and cattle should be checked to stop seed dispersal.

## **EQUIPMENT USED**

### Cost of equipment needed

Product name	manufacturer	price
Roundup – 20L	Nufarm	\$110.00
425/475 Deluxe Backpack sprayer	Solo	\$105.00
“Eliminator” (weed wiper)	C-DAX	Priced on enquiry.
Bobcat	Contractor	\$40 / hour.
Operator	Contractor	\$40 / hour.

I chose Roundup as the herbicide used in my management plan because it is a fast acting herbicide which will kill broadleaves such as the Saffron thistle by application on its leaves. It has a low toxicity to mammals, birds and fish and it won't cause cancer or birth defects.

Rate: 1.2L-1.6L /ha

# **Roundup® CT**

Broadacre Herbicide by Monsanto  
**ACTIVE CONSTITUENT: 450 g/L GLYPHOSATE**  
(present as the isopropylamine salt)

**Group M herbicide**

Water soluble herbicide for non-selective control of many annual and perennial weeds in conservation tillage situations

- Make sure to use Roundup in accordance to the label provided.
- Material Safety Data Sheet (MSDS) should be followed in all aspects of use (eg. PPE required when mixing etc.).



### Solo 425/475 Deluxe Backpack Sprayers

#### Features:

- Pressure gauge on handle
- Adjustable brass nozzle
- Easy spray pattern adjustment from jet to mist without need for nozzle removal
- Foldable handle for easy storage

Image: [http://www.forestry-suppliers.com/product\\_pages/View\\_Catalog\\_Page.asp?mi=1842](http://www.forestry-suppliers.com/product_pages/View_Catalog_Page.asp?mi=1842)



### C-DAX Eliminator (weed wiper)

#### Features:

- Electronic pump controller
- No chemical drift
- Low volume application
- Unique wiper design increasing available contact surface
- Long life woollen carpets (applicators)
- Application rates 3.9-40.2 L/ha
- No chemical dripping

## **LABOUR**

Labour needed for my management plan is as follows:

- Mapping of the area
- Finding and locating infested areas.
- Recording the growth progress of the weed.
- Mixing/ preparing the herbicide.
- Spraying the weeds.
- Using machinery to run the weed wiper.
- Physically removing and the burning of the dead weeds.

## **IMPACT ON NEIGHBORING PLANTS AND ANIMALS**

### **Plants:**

- Plants that come in contact with the herbicide will most likely die.
- If the thistle is physically removed then the space taken by the original plant will be re-claimed by the other plants in the vicinity.
- In the areas where the thistle was burnt there will be slow re-growth as the fire would have cleansed the ground of needed nutrients and organic matter.
- In the Lucerne paddock the annual yield would be higher as there will be less competition amongst the plants.
- When the Lucerne is baled into hay and is then sold there will be no increase of Saffron thistle in the surrounding areas as the seeds wouldn't be in the Lucerne anymore.
- Increase in value of Lucerne as it is free from contamination of the thistle.

### **Animals:**

- Animals would have more of the improved pastures to graze on.
- Mouth infection would decrease as they would be consuming less thistly plant matter.
- Animals will be able to move freely through a paddock without having to go around large clumps of thistles.
- The sheep's wool will become less tangled increasing it's wool value.

Over all, eradicating the thistle population would make working up at the agriculture farm a much more pleasant experience for obvious reasons.

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