



Managing invasive plants

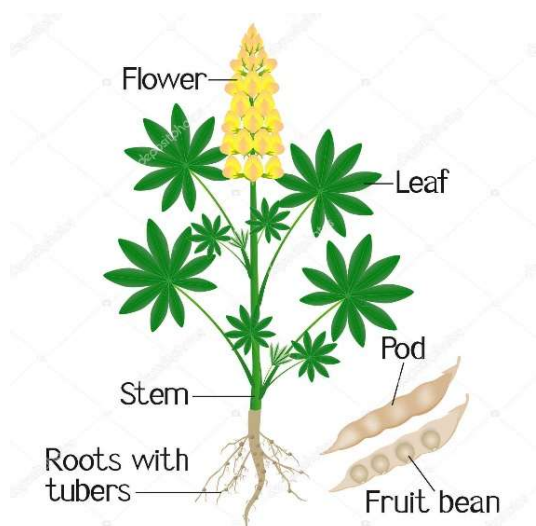
As well as path maintenance, invasive plants removal is essential to nature and landscape preservation. In Iceland, there are few none-native plants that have become invasive and are in competition with indigenous flora.

The most known is called Lupin (*Lupinus nootkatensis*).



Alaskan Lupin is a none-native species to Iceland. It is used to improve the quality of the soil in enriching it with nitrogen and allowing the long roots to stabilise the loose ground. This plant was introduced in Iceland to avoid soil erosion and to help forestry. The spread of plant went out of control, taking over large areas in a short space of time. Lupine has a negative impact on biodiversity by taking over local species.

The policy of protected areas managers is to control the spreading of Lupine by different techniques that are explained below. Eradicating the plant is not possible anymore but controlling it and avoiding its spreading in very fragile areas (such as the Highlands) is the key to preserve native plants as well as Icelandic landscapes. Many management plans have added this action to preserve the protected areas.



The lupine is a strong plant and is highly competitive because of its way of spreading (by the seeds and the roots). Removing the roots as well as the main plant is the best way to avoid the lupine to grow back. There are many techniques to remove lupines. The key is to do it during the right season which is basically from end of May to mid-July (sometimes to end of July in some parts of the country) when the lupine is blooming but is not yet in seeds. Lupine beans are resilient and can resist in the soil for many years, for this reason, it is important to monitor the areas regularly.



1. Use of different techniques

In many areas of the country, the lupine has spread widely, and it is difficult to see where to begin. Here are some tips:

- Have an overview of the patch of lupine you are dealing with
- Fix the priorities: what can I do in that amount of time (see example below)



- Focusing on the small patches and individual lupines is the most common technique. In this case, the technique used is the **total removal from the root** (1).
- Big patches of lupines cannot be left behind, and, in those cases, other techniques are used such as **mowing and seeds removal** (2).
- For medium patches (3) it is often difficult to evaluate what is the best technique, so it is better to mix them (total removal from the roots on the edges of the patch and focusing on **brushcutting** in the middle).
- It is important also to have in mind to focus on the areas where the lupine is making irreversible damages: reducing the biodiversity and changing completely the natural habitat.
- When removing the lupines with the roots, it is advisable to avoid damaging the other local plants as much as possible.
- Note that in some regions, it would be difficult to intervene on lupine as there are many nesting areas between May and July.
- Follow the instructions of the local managers.



2. Different techniques

a. Total removal from root

This is the most effective method of clearing a site of Lupin however it is also the most time consuming.

Method;

First, analyse the type of soils where the lupine is growing. The tools won't indeed be the same if it's sandy, rocky, on a riverbank...

The tools that are very useful for lupine removal are spade, fork (big or small depending on the size of the plant), trowel (mini), rock bar, crowbar.

The key to get as many roots as possible is to:

- First, put all together the stems of the plant so you have a clear vision of the size of the plant,
- Dig around the base of the plant exposing as much of the root as possible – to dig around the plant, fork, rock bar and crowbar are the most effective tools.
- Remove by pulling gently upwards once sufficient soil removed as to allow total extraction of the root. If the stem or root you're trying to remove is stuck, dig around and try to get as much root as possible.
- On a "rocky" situation, it is likely to remove the rocks first so as to get deeper in the soil and remove as many roots as possible.
- Remember after you pulled the lupine to try to restore the area (put back the rocks in the holes...).

The digging equipment and the amount of digging required will vary dependent on the size and age of the Lupin and also the type of ground the Lupin is on.

Tip is not going too fast and don't pull hard on a lupine of your size, the lupine will always win. Also, it is important to remove as much root as possible. Depending on the instructions, the lupines can be either taken in a plastic bag and removed from the area or left on the ground to dry out. Remember to **NOT PUT THEM IN PILE** otherwise they will grow back. If you remove lupines from the roots on a big patch and unless you clear all the patch, you can leave the removed lupine on top of the alive ones.

Equipment;

spade, fork (big or small depending on the size of the plant), trowel (mini), rock bar, crowbar, Gloves





b. Brushcutting

Method;

When the patches of lupine are not covered a large area, this method is to use a cutting implement to remove the plant at the base of the stem as close to the ground as possible.

If the plant is in seed, with black seed pods, this technique should not be used as it will spread them unless they are picked first. Any brush cutting should be followed up with removal of the plant from the root to stop its regrowth in following seasons (see method A).

The removal of the leaves/stems and flowers of the plant will make the root removal easier.

Discarded Lupin can be left on the site to biodegrade, unless the seeds are up to pop and need to be removed.

As explained before, **AVOID PUTING LUPINE IN PILE.**

Equipment;

Lupin knife, Loppers, Sickle, Scythe, Strimmer (Brush-cutter), safety equipment (ear protection...), Gloves





c. Mowing

Method;

This technique is used in areas where the lupine is covering a big surface of land and where pulling the lupine is not enough. This technique consists in cut with a mower machine (or trimmer) the lupine so as to avoid the seeds to spread. If the plant is in seed, with black seed pods, this technique should not be used as it will spread them unless they are picked first. The lupine should be cut as lower to the root as possible (avoid damaging other plants) and it's essential to cut the stems with the seeds. It's quite similar to the brush cutting technique but is less precise.

And again, **AVOID PUTING LUPINE IN PILE.**

Equipment;

Mower machine, trimmer, safety equipment (ear protection...), gloves.

d. Seed removal

Method;

The method consists in picking the unopened seed pod off the lupine plant to stop further spread. The lupine will be in seed according to the weather and usually in July (it can happen in late June). Once the plant has seeded this technique is not of any use. The seed pods are green but will turn black in dry weather when they are about to burst. So, this technique is only used when the seeds pods are green.

If the seed head is black this means it is about to pop and we do not want this to happen so extra care is required to ensure safe disposal of the seeds.

Equipment;

Gloves, Plastic refuse sacks to dispose of the seeds.

