Aliens among us

Cape Pyla Sustainable management of *Acacia saligna* with a focus on post clearance habitat restoration

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Acacia saligna

- **Fire-adapted bush or tree**, native to **southwest Australia**.
- **Widely introduced into several Mediterranean-climate regions**, and has become a **serious invasive plant** in South Africa, India and the Mediterranean Basin, including Cyprus.
- Significantly **affects the composition and function of natural ecosystems**, leading to homogenization and **loss of biodiversity**.
- Considered **amongst the worst alien species in Europe** and is included in the list of Invasive Alien Species (IAS) of Union concern in the Regulation (EU) 1143/2014.

Acacia saligna in Cyprus

- Intentionally introduced by the British at the beginning of the twentieth century for the **production of firewood, soil erosion control, forest protection from overgrazing and as fodder and ornamental**.

- Also used for **draining for controlling malaria at Larnaca and Limassol salt lakes** and **stabilising sand dunes**.

- *A. saligna* is **naturalized invasive in Cyprus** and it is **widespread and invading** in natural habitats, forests, maquis, garigue, phrygana, marshy areas and agricultural land, posing **serious pressure and threat to native diversity**.

Acacia saligna in Cape Pyla

- **Extensively planted and irrigated by illegal bird trappers at Cape Pyla**, to create suitable habitats for trapping migratory birds with mist-nets.

- **Since 2015, acacia management operations were undertaken in Cape Pyla area**, using a combination of different methods, with **the aim of restoring the local vegetation and controlling the illegal bird trapping**, resulting in the **reduction of dense acacia patches**.

- In addition, during the summers of 2019 and 2020 **wildfires** took place, which coincidentally resulted in further substantial reduction in acacias' stands in Cape Pyla.

Methods

1

Literature Review on *A. Saligna* **management methods implemented in other areas** focussing on **post-clearance management**

- Controlled Fire
- **Soil solarization**
- Sprayed Coating

- **Chemical Treatment**
- **Grazing Management**
- **Revegetation**
- Biocontrol
- Essential Oils

2

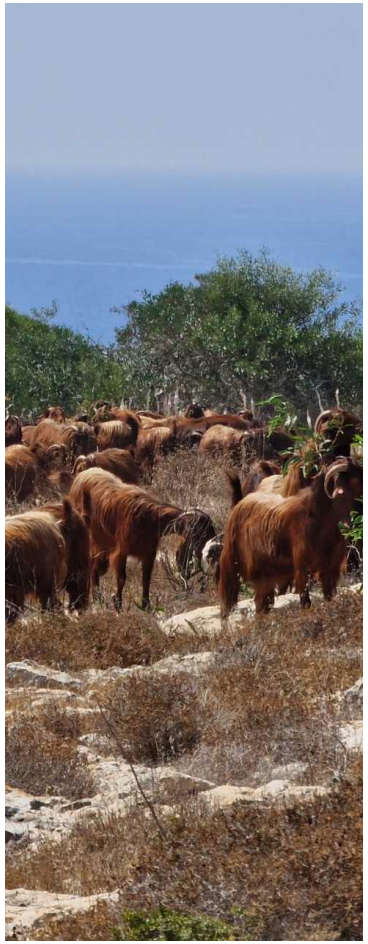
Selection of **4 field trial methods**

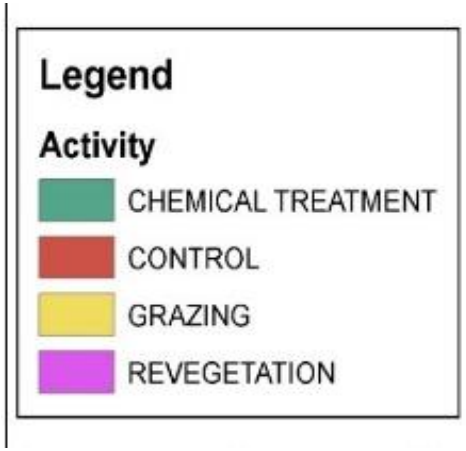
- **January – December 2023**
- **2 field experiments** – 16 trial plots for each experiment (4 replicates for each method + control)
- **Evaluation of results** based on a) **vegetation surveys** before/ during/ after & b) **seed viability and germination rate**, prior and post treatment

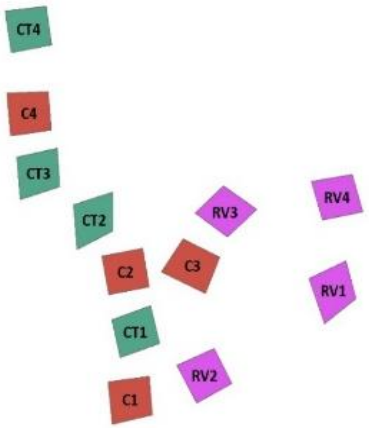

Experiment 1
Red Cliffs
Project Area


CT3
HAPPY COLOR
SMALTO SPRAY ACRILICO


Roundup




Legend
Activity
CHEMICAL TREATMENT
CONTROL
GRAZING
REVEGETATION


CT4
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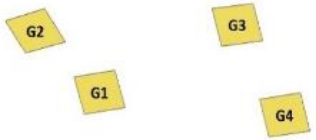
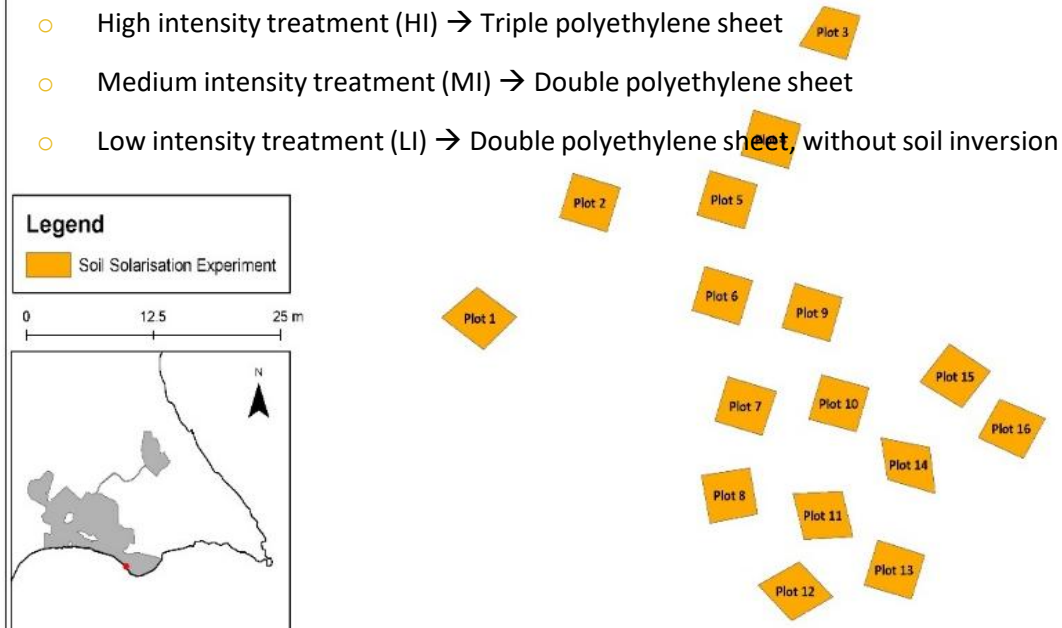
RV1
RV2


G2
G3
G1
G4

- High intensity treatment (HI) → Triple polyethylene sheet
- Medium intensity treatment (MI) → Double polyethylene sheet
- Low intensity treatment (LI) → Double polyethylene sheet, without soil inversion



Results

Revegetation with native species & chemical treatment

- Combination of dense revegetation & chemical treatment
- Both management of the invasive species, and also as restoration approach for the indigenous vegetation
- Time consuming, but effective
- Maintenance of native plants (watering, weeding) for at least three years, until a strong root system is established.
- Monitoring

Results

Managed Grazing

- Non - selective
- Effective in supporting mosaic of vegetation types, by creating clearance among woody vegetation.
- Retains plants in small size, thus potentially limiting the possibility of flowering or seedling.
- Some limitations (number of animals required, the frequency and period of grazing, and the type of animals, impacts to other plant species).
- Supplementary method, that can restrict the shooting of acacia seedlings.
- Monitoring is required, to finetune periodicity, number and type of animals.

Results

Chemical Treatment

- Highly selective, as it is directly applied on the leaves of the seedlings
- Highly efficient
- Increased requirements of resources (financial, human resources and consumables).
- Monitoring
- Repeated applications.
- If not directly applied to acacia, it can be extremely toxic for the soil, groundwater and non-target species

Results

Soil Solarisation

- 1st application in Cyprus
- 70oC max temperature of soil
- All SH intensity treatments increased the soil temperature, which in turn activated in some cases and lethally deactivated in other cases, the soil seedbank. The activation of soil seedbank allows for the easy removal of seedlings, short after the treatment. The deactivation saves resources from treating the seedlings after they shoot.
- Small sample for safe conclusions.
- Increased requirements of resources (financial, human resources and consumables).
- Limitations (non selective, only for small areas, depend on soil & local conditions)
- Waste management

Overall conclusions

- **Acacia Management** --> A process that requires **long-term commitment and effort**.

- A **combination of more sustainable methods** (such as grazing and re-vegetation/overplanting of native species) can **only be effective in combination with systematic chemical management** and a **long-term implementation and monitoring plan**.

Thank you!

Any questions?

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