

PASTORAL AND AGRO-PASTORAL SYSTEMS

CGIAR RESEARCH PROGRAM ON LIVESTOCK

Aims to increase the productivity of livestock agri-food systems in sustainable ways across the developing world.

Managing rangelands: promoting sustainable native shrub species

Artemisia herba-alba Asso: a drought tolerant subshrub well known as an aromatic and medicinal species

Artemisia herba-alba is a dwarf shrub which grows rapidly in dry and warm climates. It is found on the steppes of North Africa, the Middle East and south western Europe. The plant is also common in sandy or silty soils and hillsides, from the upper semi-arid to the lower Sahara.

Benefits:

- Used in rehabilitation of degraded arid rangelands
- Tolerates well drought stress
- One of the most important medicinal species
- Has intense fragrance (aromatic properties)



Scientific name:
Artemisia herba-alba
Asso

Common names:
white wormwood, desert
wormwood & Chih

Locations:
South Western Europe
North Africa
Middle East

Artemisia herba-alba belongs to the Asteraceae family. It is a greenish-silver perennial dwarf shrub 20–40 cm in height. Morphology differs depending on environmental, geographical, and climatic conditions. The plant is strong, has sturdy roots, and is very leafy with tomentose young branches, covered with densely matted wooly hair. The leaves are small, bipennated, silvery, hairy, and have a characteristic smell of thymol. The stems are erect and rigid. Flowering occurs from June until the end of the summer. The flowering heads are sessile, oblong, and taper at the base, and the receptacle has two to five yellowish hermaphrodite flowers in each head. Fruiting takes place mainly in December and January. The fruit is small, dry and single seeded.





Artemisia herba-alba growing on steep slopes, Tataouine, Tunisia



Artemisia herba-alba leaves are grazed by livestock and utilized in folk medicine



Artemisia herba-alba has a great potential to recover rapidly in dry and warm climate

The seeds of *Artemisia herba-alba* are achenes, surrounded by loosely receptacular bracts which disperse close to the parent plants. Seedling mortality is high around the parent plant, and beyond 40 cm, the risk of mortality declines with distance. The biodiversity of *Artemisia herba-alba* is under threat as a result of land cultivation and heavy grazing. It is also collected for folk medicine, and is used widely for the treatment of various diseases. Traditionally, people have consumed the plant for irregular heartbeats, stomach and intestinal issues, coughs, the common cold, diabetes, and muscle weakness. The main medicinal properties include anti-microbial, anti-spasmodic, anti-diabetic, anti-malarial, and anti-oxidant effects.

Despite being aromatic it is also eaten by livestock in some areas, and is generally preferred by sheep, and to a minor extent, by camels. Eating too much has a purgative effect, however, particularly on sheep, which can cause young lambs to die.

Establishment and management

The main growth period of *Artemisia herba-alba* is spring, but it also forms new leaves in late autumn and winter. For survival and growth of the seedling, continued access to moisture is crucial, although temporary desiccation is not necessarily fatal if the dry period does not last too long. After contact with water, a transparent gelatinous envelope develops around the seed. Seedlings emerge during February in favorable micro-habitats.

Contact

Dr. Mounir Louhaichi, International Center for Agriculture Research in the Dry Areas (ICARDA). M.Louhaichi@cgiar.org
Dr. Mouldi Gamoun, International Center for Agriculture Research in the Dry Areas (ICARDA). M.Gamoun@cgiar.org

Optimal temperatures for germination are in the range of 10–23 degrees Celsius (°C). For the fine textured soils in which *Artemisia herba-alba* grows, surface sealing can be broken by the trampling of livestock to create more favorable germination conditions. After a prolonged drought period, and perhaps in competition for moisture with root systems of already established plants or as a result of repeated grazing, many germinated seedlings die. The vegetative stage of *Artemisia herba-alba* lasts for eight months, from August until March. The reproductive stage starts early (November) under ideal conditions. At the end of the dry season (September) the reddish inflorescences of this summer active dwarf shrub appear. During this time the plant carries only small scale-like summer leaflets, which become smaller the longer the dry period lasts.

Effective Management

- Optimal temperatures for germination are in the range of 10-23°C
- Germinability of seeds lasts for 0.5-24 hours after hydration, followed by a week of dehydration
- Trampling can help to create more favorable germination conditions
- It has allelopathic effects shoots on annual plants by means of volatile phytochemicals
- It is recommended to moderate exploitation during the autumn period, and alleviate exploitation during the spring period for better regrowth.

ICARDA's Rangeland Ecology and Management Unit

ICARDA's Rangeland Ecology and Management Unit aims to address the unsustainable use of resources induced by adverse effect of climate change and an increasing demand for food and feed in the dry areas. ICARDA programs promote the enhanced quality and productivity of crop, forage, livestock, and the improved management of water resources through close cooperation with farmers and national researchers.