

## RESILIENT AGROSILVOPASTORAL SYSTEMS

### CGIAR RESEARCH PROGRAM ON LIVESTOCK

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

## Managing agrosilvopastoral systems: understanding ecological and medicinal importance of indicator species

### *Artemisia campestris* L.: ecologically important with allelopathic and antifungal constituents

*Artemisia campestris*, commonly known as Tgouft, is a perennial spontaneous aromatic herb belonging to Asteraceae family. It is widespread in Northern Africa and other similar Mediterranean agro-ecological zones and is commonly used as an herbal medicine.

*Artemisia campestris* is described as a “pioneer” and a “climax” species. Tolerate disturbances and occurs on “waste” areas, roadsides, active sand dunes, grazed sites, and old fields. It has a marked

### Benefits:

- Important medicinal species
- Fungistatic and insecticidal agent
- Wide climatic tolerance
- Occurs in many habitats
- Indicator of rangeland disturbance such as overgrazing



**Scientific name:**  
*Artemisia campestris* L.

**Common names:**  
Field wormwood  
Field sagewort  
Tgouft (التقفت)

**Locations:**  
Asia, North America  
& North Africa

ecological plasticity; however, the most appropriate conditions for this species occur in semi-arid climates. *Artemisia campestris* commonly produces several brownish-red stems of height 0.3–1.5 m. Plants are very leafy at the base and much less so above. Leaves are green; the basal are 2–3 pinnatisects and the upper are simple. Inflorescence is an ovoid, heterogamous yellowish capitulum, with an involucre bracts; ray flowers are female, pistillate and fertile; the disk flowers are sterile and functionally male.



Branched and ascending twigs with green leaves of *Artemisia campestris*



*Artemisia campestris* holding soil in southern Tunisia



Leaves of *Artemisia campestris*

Fruits are achenes measuring around 0.8 mm long and lacking a pappus. Seeds weigh about 0.003 g, based on an average of at least 25 seeds. *Artemisia campestris* is considered highly unpalatable to livestock, and it is an indicator species for heavy grazing pressure. This plant is frequently used in traditional rural herbal remedies, where the herbage is gathered, dried, and marketed as a substitute for imported sage, used in cookery and somewhat in medicine. The aerial parts are used in popular medicine as an anti-helminthic, disinfectant, cholagogue, tonic, hypotensive, and antivenom. In Tunisia, it is often used in poisoning cases and known to possess significant antioxidant activities. Also, it may have allelopathic effects on mycorrhizal colonization, and aqueous extracts of roots and shoots significantly inhibit growth and the germination of other species surrounding it.

### Establishment and Management

Plants flower during August–September and are wind-pollinated. Seeds are primarily wind-dispersed. Without a pappus, seeds typically remain near the parent plant or are short-distance dispersal by wind. Zero dispersal distance occurs when seeds germinate on a parent plant that has fallen over and become partially buried in sand. In sandy soils, seed germination is strongly related to available moisture. Very small seeds ( $0.6 \pm 0.01$  mg/1000 seeds) of *A. campestris* had high germination percentages at shallow depths of only 0.5 cm because they require small amounts of

moisture for imbibition. Seedling emergence can occur during the entire crop growing season under moist conditions and favorable environmental conditions.

### Nutritional composition

*Artemisia campestris* contains 98.6% dry matter (DM), 89.7% organic matter (OM), 9.8% crude protein (CP), 56.1% neutral detergent fiber (NDF), 45.2% acid detergent fiber (ADF), 12.6% acid detergent lignin (ADL) and 5.8% ash.

### Effective Control

- The abundance of *A. campestris* is an indicator to the beginning of dysfunction of the ecological system
  - Invasion by *A. campestris* could be related to edaphic factors (poor soils)
  - Improving the soil biota can reduce the allelopathic effects on neighboring plants
  - Avoid clearing of native vegetation and cultivation practices in rangelands to prevent the colonization of *A. campestris*
  - Species removal must often be coupled with restoration of desirable native plants
- Herbicide plus tillage are desirable intervention to control invasive allelopathic species and their residual toxic effects

#### Contact

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

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

#### ICARDA's Rangeland Ecology and Forages unit (REF)

The REF team promotes advances in rangeland ecology and pasture management in the dry areas. This series of factsheets is dedicated to the characterization of promising range and forage species aimed at alleviating the feed gap, limiting water runoff and soil erosion, restoring degraded rangelands and maintaining a healthy ecosystem.