

## 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 and establishing endangered species

*Rhus tripartita* (Ucria) Grande: a rare and endangered species with great ecological value

*Rhus tripartita* is distributed in isolated populations within areas that have an altitude of 10–500 m and receive 100–600 mm of rainfall each year. It is usually found on calcareous soils, but it can grow in a variety of types of soil from deep clay-textured soil to fissures in hard limestone, dolomite rock, or granite, where soil has accumulated.

### Benefits:

- Frequently used in traditional medicine and pharmacology
- Source of an important tanning substance
- Drought-tolerant
- Used successfully in the rehabilitation of degraded arid environments
- Multipurpose species with great medicinal and aromatic features
- Adapts well to conditions of high salinity



**Scientific name:**  
*Rhus tripartita* (Ucria)  
Grande

**Common names:**  
Sumac

**Locations:**  
Mediterranean countries,  
North Africa & the  
Middle East

*Rhus tripartita* (syn. *Rhus tripartitum*), also known as *Sumac* or *Jdari*, belongs to the Anacardiaceae family. It is a small tree that can reach a height of 1–2 m, with short spiny and tortuous branches that are glossy and reddish-brown. *Sumac* leaves are dark green, trifoliate, deciduous, sessile, up to 2 cm in length, obovate-cuneate in shape, and toothed. *Rhus tripartita* is a dioecious plant with tiny clusters of yellowish white flowers. The fruit is a small drupe enclosing only a single red to black colored seed with a spherical shape. Fruits may be dispersed by frugivorous.

The tree is often exposed to heavy grazing by domestic animals – goats and sheep – and is cut for firewood or protective barriers.



*Rhus tripartita* tree growing on skeletal soils, Tataouine, Tunisia.



*Rhus tripartita* branches and young leaves



*Rhus tripartita* black matured fruits

This species is widely used in both traditional and modern medicine, due to the high concentration of flavonoids, polyphenols, proanthocyanidins, and other phytochemicals. It has long been known that *Rhus tripartita* contains high amounts of tannins and its bark is used for dyeing.

### Establishment and management

The seasonality and phenology of *Rhus tripartita* varies somewhat according to the habitat and environmental conditions. The active vegetative phase of *Rhus tripartita* takes place in humid seasons, from September until May. In summer, this species has a growth arrest. The foliation and fruiting seasons are spread out and the flowering phase is short.

The germination of *Rhus tripartita* is low. It is characterized by the regular growth of its root system from germination. This growth, which was low during the first month, subsequently became relatively fast towards the end of March. Water is retained better in the subterranean succulent rhizome system than in the branches, leaves, or fruit. The root system is shallow, and generally, there is vegetative reproduction by rhizomes. Although seed reproduction is probably not as prevalent as many other plants, there is evidence of seed dispersal by animals, especially birds.

Heavy grazing keeps *Rhus tripartita* plants below 1.5 m in height, while in areas not subjected to grazing, some single trees can reach heights of more than 3 m. If such destructive activities continue without protection measures, the abundance of this species will be endangered. Thus, protective measures should be implemented. Reducing anthropic pressures in most degraded areas may lead to an increase in their size.

### Effective Management

- The optimal temperature for seed germination is 15 °C, which would be completely inhibited once it reaches 20 °C
- Seed germination would be severely inhibited at 100 mM of NaCl
- Thrives under calcareous soils, but it can grow in a variety of edaphic situations
- Vegetation reproduction is important and possibly represents the dominant mode for reproduction
- Young trees should be protected from grazing, under protection trees can reach heights of more than 3 m
- Heavy grazing is detrimental to the plant reproduction

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### 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.