



# African rue

*Peganum harmala* (aka harmal, Syrian rue)



## Overview:

African rue is a bushy perennial native to the desert areas of northern Africa and southern Asia.<sup>2</sup> Hulled seed produce a red dye used in Middle Eastern countries. It develops an extensive root system consisting of both a main tap root and laterally spreading roots.<sup>2</sup> African rue reproduces both by seed and vegetatively via sprouting from lateral roots. The main tap root can extend as deep as 6 m into the soil to access water during drought.<sup>3</sup>

Plants die back in the fall or during extreme drought and then re-sprout from the root crown in early spring or with the return of moisture.<sup>2</sup> Seeds germinate throughout the growing season if sufficient moisture is available.<sup>2</sup> African rue flowers from April to October.<sup>1</sup>

All parts of the plant are poisonous – it contains harmful alkaloids which cause the plant to taste bitter and therefore prevents grazing by animals if other forage is present. Seed capsules and young leaves are the most toxic

– a lethal dose is 0.15% of the animal's body weight. Signs of poisoning are progressively; loss of appetite, listlessness, weakness in hindquarters, excess salivation, stiffness, trembling, and incoordination. Lethal poisonings cause hemorrhages in the heart and liver.<sup>3</sup>

**Allelopathy** - the leaves, stems, and roots of African rue exude growth inhibiting compounds which negatively impact the germination and development of other plants.<sup>4</sup> Once African rue is established, this enables the plant to progressively exclude other vegetation.

## Habitat:

Inhabits arid and semi-arid environments, both hot and cold, and tolerates highly saline soils.<sup>2</sup> African rue can establish on both hard and sandy soils. The USDA Plants Database reports that the plant is present in Montana.

## Identification:

**Stems:** Are numerous, 25-60 cm tall and branched to form a round-topped cluster or

bush.<sup>1</sup> Stems are stiff and erect.<sup>2</sup>

**Leaves:** Are alternate, sessile, fleshy, and bright green.<sup>2</sup> Leaves are 4-8 cm long and irregularly dissected into 3-5 cm long, 2-5 mm broad, lance-shaped or elliptic segments. Leaves have bristle-like stipules 1.5-2.5 mm long.<sup>1</sup>

**Flowers:** Are white or yellowish white, 2-2.5 cm across<sup>1</sup>, and borne on stalks 2-5 cm in leaf axils.<sup>2</sup> Sepals are 5, linear shaped, and 1.5 cm long. Seed capsules are 7-15 mm in diameter and orange-brown at maturity. The capsules are 3 chambered and open at the apex.<sup>2</sup> Seeds are blackish-brown, triangular, and about 2 mm long.<sup>1</sup>

## Prevention:

Maintain desirable plant cover in pastures in dry environments by not overgrazing and do diligent monitoring of disturbed, high traffic areas for African rue establishment. Most seeds fall near the parent plant and are then carried by water flow or in mud attached to human, animal, or vehicle movement.<sup>2</sup>

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# African rue (Continued)

## Control:

**Grazing:** African rue is poisonous to all livestock, including horses. Invasive plants should never be considered as forage.

**Mechanical:** Cultivation can exhume buried seed for germination, and cultivation will result in sprouting from severed roots.<sup>2</sup> Hand pulling is ineffective as it is impossible to remove all of the root system, however repeated grubbing of small infestations over multiple years can be effective, but must be done before seed production.<sup>3</sup> Mowing and burning are also ineffective.<sup>3</sup>

**Chemical:** Currently no selective herbicides are registered for use on African rue. Always check product labels to ensure the herbicide is registered for use on the target plant in Canada by the Pest Management Regulatory Agency. Always read and follow label directions. Consult your local Agricultural Fieldman or Certified Pesticide Dispenser for more information.

**Biological:** None researched to date.



Plant with Root

PHOTO: Joseph M. DiTomaso, University of California - Davis, Bugwood.org



Seed Capsules

PHOTO: Joseph M. DiTomaso, University of California - Davis, Bugwood.org



Foliage

PHOTO: Joseph M. DiTomaso, University of California - Davis, Bugwood.org

## REFERENCES

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