# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Rumex crispus***

***Rumex crispus*** **System:** Terrestrial

| Kingdom | Phylum | Class | Order | Family |
|---|---|---|---|---|
| Plantae | Magnoliophyta | Magnoliopsida | Polygonales | Polygonaceae |

**Common name** narrowleaf dock (English), acedera crespa (Spanish), krultongblaar (Afrikaans, South Africa), curley dock (English), sour dock (English), nagaba-gishi-gishi (Japanese), weeblaar (Afrikaans, South Africa), zhou ye suan mo (French), reguette (French), língua-de-vaca (Portuguese, Brazil), labaça-crespa (Portuguese, Brazil), labaça-selvagem (Portuguese, Brazil), patience crépu (French), rumex crépu (French), herbe patience (French), oseille (French), patience (French), curled dock (English), acedera crispada (Spanish), romaza crespa (Spanish), gualtata (Spanish), vinagrillo (Spanish), Krauser Ampfer (German), acelgas (Spanish), lengua de caballo (Spanish), romaza (Spanish), oseille crépu (French), lengua de vaca (Spanish), curly dock (English), yellow dock (English), paciência (Portuguese, Brazil)

**Synonym**

**Similar species**

**Summary** Curled dock (*Rumex crispus*) is a problematic weed throughout its native and introduced range. It is native to Europe and western Asia, but is now present on all continents and is considered one of the five most widely distributed plants in the world. It is a major weed in agricultural areas.

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**Species Description**

*Rumex crispus* is a perennial herb with erect flowering stems 30-160 cm in length. Basal leaves up to 40 cm x 11 cm, lanceolate or oblong-lanceolate in shape, subacute, tapering from middle to an obtuse point. Upper cauline leaves are less crisped than basal leaves, with petioles up to 6 cm in length. Leaf margins of cauline leaves vary from nearly flat (such as in var. *uliginosus*) to strongly crisped. It has a fleshy taproot which is smaller and less branched than that of *R. obtusifolius*. The inflorescence is a panicle with few, short, erect branches. Flowers are crowded in whorls which are usually distinct except towards the ends of branches. Perianth (petals and sepals) segments are orbicular-deltoid in shape are green coloured at flowering but become brown. The inflorescence is a panicle with few, short, erect branches. Flowers are crowded in whorls which are usually distinct except towards the ends of the branches. One to three of perianth segments have tubercles (corky protuberance), usually one large and two minute. However in seashore varieties of *R. crispus* all three tubercles are usually equally developed (var. *jittoerus* and var. *trigranulatus*). The achene (fruit) is 3.5-6 x 3-6 mm and is enclosed within inner perianth segments. Margin of achene is entire or minutely denticulate. One thousand seed weight varies from 1 to 3 g. Seeds or maritime plants are usually heavier than those of inland forms (Cavers & Harper, 1964).

**Notes**

*Rumex crispus* is a highly variable species with many forms and varieties described. The two subspecies recorded for *R. crispus* are *Rumex crispus* ssp. *crispus* L. and subspecies *R. crispus* ssp. fauriei (Rech. f.) Mosyakin and W.L. Wagner. Interspecific hybrids are common between other species in the genus *Rumex*. Hybrids are usually recognisable by their failure to form fruits (Cavers & Harper, 1964).

**Lifecycle Stages**
Reproduces by seed and vegetatively. Flowers have no nectar and are usually wind pollinated, although bees sometimes visit flowers. Plants can be self-fertile. One seed is produced per achene (fruit), of which there can be twenty to fifty on each whorl of the panicle. The number of achenes per plant varies widely from less than 100 to over 40,000 (Cavers & Harper, 1964).
Seed dormancy of *R. crispus* is disputed in the literature. Viable seeds have been found after 80 years, 39 yeas and 60 years of burial in various studies (Reviewed in Cavers & Harper, 1964).

**Uses**
*Rumex crispus* has been used for medicinal purposes as a laxative, astringent, rheumatic tonic and to treat blood diseases, skin disease and jaundice. It can also be used for sore throats and coughs (Grieve, 1959 in Cavers & Harper, 1964).

**Habitat Description**
*Rumex crispus* is one of the five most widely distributed plants in the world. It is common on waste ground, grassland and shingle beaches. It is a very serious weed in agricultural land (Cavers & Harper, 1964). It is found in all types of crop, and is an early coloniser after disturbance. The maritime variety is an important component of tidal drift vegetation.
It is found on nearly all soil types, except highly acid soils. In general *Rumex* species prefer soil with high nitrogen, and grow faster than most other co-occurring species (Zaller, 2004). *R. crispus* has a lower requirement for soil nutrients than *R. obtusifolius*, but higher requirement for soil moisture (Zaller, 2004). Altitudinal limits around the world vary from 2300 m in the Middle East, 2520 m in New Mexico, 3000 m in Persia to 3500 m in Argentina (Cavers & Harper, 1964 and references therein). It appears to be unaffected by severe drought or frost. It can occur in waterlogged soils, but is less successful. It has low competitive ability as a seedling and cannot establish under closed communities (Cavers & Harper, 1964).

**Reproduction**
Curled leaf dock is a perennial plant, although sometimes behaves as an annual or biennial in arable land. Longevity of plants is unknown but is at least 3 years for inland and 5 years for maritime plants. Plants overwinter in the rosette stage, and regrowth occurs in early spring. Infloresences are formed in April or early May with flowering occuring from May until the first frosts occur in October or November.Some plants produce two sets of inflorescences, one in May and one in Autumn after the first seed set has been shed (Cavers & Harper, 1964).
Seeds can germinate in any month of the year, as long as conditions are not too dry or cold. After fruiting about half of plants die, while the other half produce a winter rosette (Lousley, 1944b in Cavers & Harper, 1964).

**General Impacts**
*Rumex crispus*, along with *R. obtusifolius* are troublesome weeds in grasslands, pastures and arable land. In agricultural areas *R. crispus* competes with sown or native pasture species and arable crops. They also occupy area which could be used by more palatable crop species (Cavers & Harper, 1964) and thus reduce forage feeding value. While leaves of *R. crispus* had only 20% less palatability than ryegrass, and similar protein concentrations to lucerne, rumicin and chrysaborin from above-ground parts and roots, respectively may cause gastric disturbances and dermatitis in cattle if eaten in large quantities. There are also concerns that nitrate and oxalic acid may cause fatalities in livestock (Reviewed in Zaller, 2004).
The presence of both species are to some extent, indicators of mismanagement of land, of high soil nitrogen concentrations and with *R. crispus*, soil compaction. They are successful on agricultural land due to flowering several times a year, production of large amounts of seed which remain viable for many years, ability to quickly establish from seed and ability to germainte in a wide range of conditions. They can also regrow from vegetative fragments left in the soil (Cavers & Harper, 1964)
While in general *R. crispus* is not common in native plant communities (Ellenberg, 1986 in Zaller, 2004) it is stimulated and distributed by human activities, and is an early coloniser of disturbed areas in lowland and upland. *R. crispus* may also serve as a host for diseases, pests and parasites.

**Management Info**
Preventative measures: A Risk Assessment of *Rumex crispus* prepared for Australia resulted in a high score of 16 with a recommendation of \"reject the plant for import (Australia) or species likely to be of high risk (Pacific)\" (PIER, 2003).
*R. crispus* appears to be relatively vulnerable at early stages of development; once the taproot has formed it has great advantage over shallower rooted grasses and herbs, and can be very difficult to eradicate (Zaller, 2004). The long-term goal of control measures against *Rumex* is to reduce build-up of seeds and weaken their regrowth capacity by removing or destroying their above- and below-ground biomass.
Chemical: *R. crispus* is sensitive to many herbicides, especially synthetic auxins (MCPA, 2,4-D, dicamba, dichlorprop-P, fluroxypyr, etc.) and many sulphonylureas (tribenuron, thifensulfuron, amidosulfuron, etc.) (Jursík *et al*., 2008). Thifensulfuron can be used for dock management in perennial legume stands, good efficacy is also shown by asulam, which is recommended for local application only, due to lower selectivity (Jursík *et al*., 2008). Public concern about pesticides in the environment has led to greater demand for non-chemical control methods and the development of mechanical and cultural measures to control plants (Zaller, 2004).
Mechanical: If herbicides are not used, the best option is control via manual removal or destruction of plants. This can be achieved via hand weeding, although is only suggested for use in small areas as it is labour intensive. It is necessary to remove the tap root to a depth of 20 cm in order to prevent regrowth (Zaller, 2004). Recent developments in mechanical control include a motor-driven dock pulling machine which can pull up about 600 *Rumex* plants per hour (Pötsch, 2003 in Zaller, 2004).
Well developed *R. obtusifolis* plants can be difficult to control with cutting or grazing. Because of rapid replenishment of carbohydrate in roots, plants require repeated defoliation over a period of several years, which can be achieved by frequent cutting or grazing (Stilmant *et al*., 2010). However, increased cutting frequencies may increase disturbance and offer opportunities for new seedlings to germinate and establish (Grossrieder & Keary, 2004).
Grazing: Grazing by sheep has been proposed as an alternative to manual removal, but may not be as effective as hand pulling (Van Middelkoop *et al*. 2005 in Van Evert *et al*., 2009). While *Rumex* species are unpalatable to many livestock, they are a favourite of deer (Cavers & Harper, 1965). More studies should focus on mixed grazing (e.g. cows and goats) to control *Rumex* (Zaller, 2004).
Cultural: Mechanical removal can be combined with grassland renewal and rotation with a grain crop (Van Middelkoop *et al*., 2005 in Van Evert *et al*., 2005). Some authors have suggested combating the problem of regrowth by leaving the ground as a bare fallow following a rotary cultivation in spring, so that the unearthed root fragments are killed by desiccation (in Grossrieder & Keary 2004). As *Rumex* seedlings require high light, control through shading may be effective (Zaller, 2004).
Biological: Numerous insects and fungi have been proposed as biological control agents for *R. obtusifolius*. The most thoroughly studied organisms are the beetle *Gastrophysa viridula* and the rust fungus *Uromyces rumicis*. Studies with Coleoptera have found reductions in seed production, regeneration, and leaf and shoot growth. Similarly studies with fungi have found similar effects and increased root rotting. Efficacy of biological control tends to be more effective when plants are already stressed by environmental conditions (Reviewed by Zaller, 2004).

**Pathway**
Seeds may be dispersed when they adhere to clothes, machinary, fur of animals, feathers and on soil (Holm *et al* 1977).

**Principal source:** Cavers, P.B. & Harpeer, J.L. 1964. *Rumex obtusifolius* L. and *R. crispus* L. Journal of Ecology, 52(3): 737-766.
Zaller, J.G. 2004. Ecology and non-chemical control of *Rumex crispus* and *R. obtusifolius* (Polygonaceae): a review. Weed Research, 44: 414-432.

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**Review:**

**Pubblication date:** 2010-06-08

## ALIEN RANGE

**[2]** AUSTRALIA
**[1]** FALKLAND ISLANDS (MALVINAS)
**[1]** FRENCH POLYNESIA
**[1]** MEXICO
**[1]** PAPUA NEW GUINEA
**[1]** PUERTO RICO
**[1]** SAINT HELENA
**[1]** SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS
**[1]** ECUADOR
**[1]** FIJI
**[1]** MAURITIUS
**[1]** NEW ZEALAND
**[1]** PERU
**[1]** REUNION
**[1]** SAINT PIERRE AND MIQUELON
**[5]** UNITED STATES

## Red List assessed species 1: EW = 1;

Trochetiopsis erythroxylon **EW**

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**Summary:** This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc.

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