Pacific Pests, Pathogens, Weeds & Pesticides - Online edition

Crowsfoot grass (461)

Common Name

Crowsfoot grass; it is also known as crow's foot, goosegrass, bullgrass, crabgrass, wire frass, and many more.

Scientific Name

Eleusine indica. It is a member of the Poaceae.

Distribution

Asia, Africa, North, South and Central America, the Caribbean, Europe, Oceania. It is recorded from Australia, American Samoa, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, and Wallis & Futuna.

It's exact origin is unknown, perhaps Africa and Asia. It is widespread and naturalised throughout the tropics and sub-tropics.

Invasiveness & Habitat

An important weed of agriculture and the environment that grows vigorously and produces a very large number of seeds. It invades cultivated and other disturbed locations as well as natural areas, such as the margins of natural forests and grasslands, marshes, streams and coastal areas (Photo 1). It is frequently seen along roadsides. Crowsfoot is found from seas level to 2000 masl.

Description

Crowsfoot grows fairly flat to the ground, reaching to 40 cm high (Photo 2). The stems and the leaf sheaths are flattened. Leaves, flat to V-shaped (side folded in), up to 15 cm long and 8 mm wide, with boat-shaped tips; mostly the leaves are smooth, and bright green. The ligule - where the leaf sheaf and leaf blade meet - is short, 1 mm long, and has a few short hairs (Photo 3). Flowers, in spikelets attached closely along 3-8 central stems, each 5-10 cm long (Photo 4). One of these flower stems is usually attached 1 cm below the others (Photo 5). The seeds are reddish brown to black, about 1 mm long. Plants have a well-developed root system, difficult to pull from the ground.

Spread

Spread is by seeds. One plant can produce upwards of 50,000 seeds that can be dispersed by wind and water. Spread also occurs as a contaminant of seeds of other crops, in soil attached to machinery and vehicles, and on the fur of animals.

Impact

A weed with agricultural and environmental impacts. It is most serious in cotton, maize, upland rice, sweet potato and sugarcane. CABI quotes attempts to equate density of the grass with losses when growing with peanut and maize, concluding that reductions of 25 and 15%, respectively, were possible at the highest infestations measured. In separate work in India, it was found that removal of potassium is higher than all other weeds. Similarly, the grass caused substantial losses in upland rice in the Philippines and also Colombia. In

Photo 1. Crowsfoot grass, *Eleusine indic*a, coastal setting.

Photo 2. Low-growing single plant, crowsfoot grass, *Eleusine indic*a.

Photo 3. Close-up of the ligule at the junction of sheath and leaf blade, crowsfoot grass, *Eleusine indic*a,.

Photo 4. Spikelets of crowsfoot grass, *Eleusine indic*a, containing the flowers, along a central stem.

Uses

The plant is used as a medicine, food and source of materials for weaving mats and baskets, and making paper. The seed is small but is sometimes used as a famine food. It can be cooked whole or ground into a flour and used to make cakes and gruels. The seedlings are eaten too. In traditional medicine, it has many uses, from curing complaints of the bladder, relieving pain to stopping bleeding. It is sometimes used to stabilise soils.

Management

BIOSECURUTY

The risk of introduction is moderately high. It is a common weed, produces much seed and is invasive over a wide range of ecosystems. Countries not yet infested should consider all likely pathways for entry, and apply quarantine measures accordingly. Particular attention should be given to the risks associated with the weed as a contaminant of crop seed.

BIOLOGICAL CONTROL

There have been attempts using fungi *(Melanopsichium eleusinis, Biopolaris setariae)*, a nematode *(Heterodera delvii)* and a gall midge *(Contarinia* sp.*)*, but no successes reported.

CULTURAL CONTROL

- Physical & Mechanical
  - Hand weed. As a seedling this is possible, and so is hoeing, as crowsfoot grass does not root at its nodes. However, once established it is difficult to do either because of the strong root system of this weed.
- Hygiene
  - Treat vehicles and farm machinery. If moving from areas where the weed occurs to those weed-free, wash to remove soil. This is equally important if the machinery is being imported into a country or moved within a country. Also, ensure seeds are not carried on clothes between infested and 'clean' areas.

CHEMICAL CONTROL

In Australia, a number of chemicals are registered, for instance: quizalofop-p-ethyl (and Fiji); MCPA (and Fiji); fluazifop-p; pendimethalin; isoxaflutole; metribuzin; diuron; clethodim; oxyfluorfen; glyphosate.

Note that resistance to fluazifop has been reported from Malaysia, and to dinitroaniline herbicides (e.g., pendimethalin belongs to that group) in the USA. Both these countries have reported glyphosate resistant strains of crowsfoot grass. Therefore, it is important not to rely continuously on one class of herbicide.

Note, EU approval to use glyphosate ends in December 2022; its use after that date is under discussion.

When using a pesticide, always wear protective clothing and follow the instructions on the product label, such as dosage, timing of application, and pre-harvest interval. **Recommendations will vary with the crop and system of cultivation. Expert advice on the most appropriate herbicides to use should always be sought from local agricultural authorities.**

Photo 5. Flowerhead, crowsfoot grass, *Eleusine indi*ca.

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Adapted from Crowsfoot grass (*Eleusine indica)* (2018) Weeds of SE Qld and Northern NSW. Lucidcentral. (https://www.lucidcentral.org/editors-pick-animal-and-plant-identification-keys/key-to-weeds-of-se-qld-and-northern-nsw); and additional information from CABI (2019) Eleusine indica (goose grass). Invasive Species Compendium. (https://www.cabi.org/isc/datasheet/20675#toPictures); and from Eleusine indica (2014) Useful Tropical Plants. (http://tropical.theferns.info/viewtropical.php?id=Eleusine+indica). Photos 1&2 Forest and Kim Starr, Starr Environmental, Bugwood.org. Photos 3&4 Bruce Ackley, The Ohio State University, Bugwood.org. Photo 5. Tau'olunga Eleusine indica, closeup (Wikipedia).

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