



UROCHLOA PANICOIDES

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Urochloa panicoides with the common name of liverseed grass, occurs in the Tucson and Phoenix metropolitan areas growing in bermudagrass and in right-of-way areas. I suspect but have no proof, that it occurs in other desert regions of the state. To date, I and Dr. David Kopec (personal communication) have not seen it in "golf" turf. It would however have characteristics that might allow it to grow in golf turf.

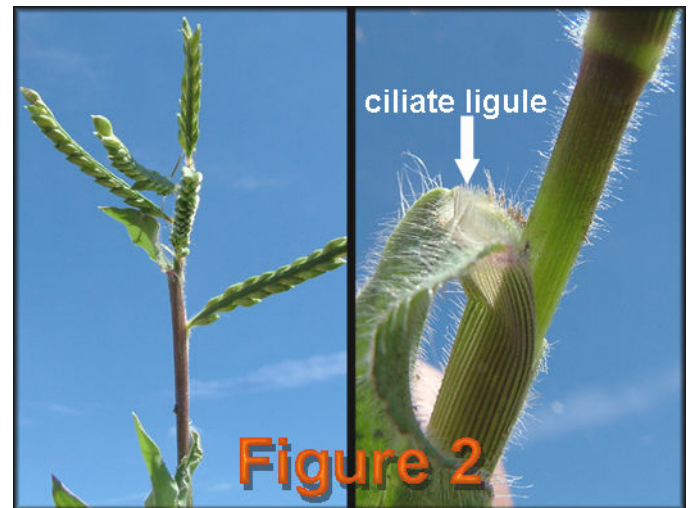
Liverseed grass is native to eastern and southern Africa, the Arabian Peninsula and India. It has spread to Asia (temperate and tropical regions), Australia, Europe, Mexico, New Zealand, North America and South America (Source-Kew Royal Botanical Gardens). In Australia, liverseed grass is a problem in summer crops, right of ways and disturbed areas. It also has invaded areas of native vegetation. Currently in the U.S., it occurs in Arizona, New Mexico and Texas (Source - U.S. Department of Agriculture (USDA)). USDA considers liverseed grass to be a noxious weed as do several states within the U.S. Since 2007, liverseed grass has spread rapidly in the Tucson and Phoenix metropolitan areas. Superficially, seedlings look like large crabgrass (*Digitaria sanguinalis*): light green and hairy. Leaves of liverseed grass are wider than large crabgrass, often very wavy along the margin and have long hairs (Fig. 1). Ligules on liverseed grass are a fringe of hairs (ciliate) (Fig. 2) while ligules of large crab grass are membranous. Plants of liverseed grass may appear grayish in fall due to amount of hairs on the surface of the plant.



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BIOLOGY OF LIVERSEED GRASS

Liverseed grass behaves as an annual reproducing ONLY from seed. In regard to when liverseed grass germinates, a study from Australia indicated that liverseed grass germinated when the soil temperature was 70-74°F (21-23°C) and usually in one flush of germination. Less than 5% of seed buried in soil in Australia survived after 24 months (Walker, Wu and Bell, 2010). I have seen seedlings of liverseed grass growing in decomposed granite in mid-February in the Phoenix area. In Phoenix and Tucson, liverseed grass is robust by May 1. So an educated guess for when liverseed grass will germinate in the Phoenix area is: right-of-way February 1, and turf March 1. As you are aware, the exact date for germination of liverseed grass will change from year to year and by location.



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INTEGRATED WEED MANAGEMENT

In turf, liverseed grass appears more problematic in bermudagrass turf that is struggling due to compaction, lack of nutrition, salinity, shade, poor irrigation, poor varietal selection, etc. It is not near as prevalent in areas which have good canopy coverage. It is much more pervasive in "thin" bermudagrass areas. As with most weed problems in turf, vigorously growing turf should help ward off invasion by liverseed grass.

Since this is a relatively new weed to the U.S., chemical control options have not been entirely worked out. Herbicides reported from Australia to control liverseed grass are: alachlor, atrazine, clethodim,

dacthal, diquat, fluazifop-P, glufosinate, glyphosate, imazamox, imazapic, imazapyr, imazethapyr, oxy-fluorfen, metolachlor, paraquat, pendimethalin, trifluralin and 2,4-D. Note that the herbicides listed have a wide range of selectivity and uses. Also note that effectiveness of a given herbicide is dependent on a host of variables. **There is documented resistance to atrazine and glyphosate in populations of liverseed grass in Australia.**

Information from Australia indicates that liverseed grass can be controlled with straight 2,4-D when in the seedling stage. Employees with the City of Scottsdale applied 2,4-D to mature, hardened off liverseed grass in bermudagrass around September 1. Initially, they thought they had killed it. There was however, regrowth of plants presumably from root reserves. This kind of activity on mature plants gives hope that 2,4-D will be very effective on seedlings. 2,4-D and possibly 2 to 3 way blends of "growth regulator" products containing 2,4-D appear to be an option for selective, post-emergent control of seedlings in turf. If indeed liverseed grass emerges in predominantly one flush as it does in Australia, then it would seem prudent to treat 2-3 weeks after you start seeing seedlings when plants are in the 2-3 leaf stage.

Other active ingredients have been applied post-emergence to liverseed grass in turf and **failed** to adequately control it. Quinclorac by itself appears to have no control of seedlings: Gary Kudes (personal communication). Quinclorac, Quinclorac plus MSMA and Tribute Total (thiencarbezone plus halosulfuron plus foramsulfuron) did not provide adequate control of mature liverseed grass (Dr. David Kopec -personal communication).

Post-emergent applications of glufosinate, glyphosate, one of the selective grass herbicides such

as fluazifop-P or one of the imidazolinone herbicides such as imazapic will likely provide adequate control in non-turf situations. As with most weed control programs, better control is usually achieved by applications made to young plants.

Control with pre-emergent herbicides which are good on grasses will likely work. Pendimethalin and trifluralin have worked in Australia. Other dinitro-aniline herbicides such as oryzalin and prodiamine should work well as should dithiopyr, imazapic, indaziflam and simazine.

Liverseed grass only reproduces from seed and seed appears (at least in Australia) not to survive long in soil. Preventing plants from going to seed should be a key component in effective weed management programs for liverseed grass. Cleaning equipment after use in liverseed grass infested areas will likely decrease spread.

Urochloa panicoides appears to have the potential to be a significant weed problem in areas of the U.S. This grass has moved extensively around the globe, been documented to grow in deserts, tropical regions as well as temperate regions and exploded in bermudagrass turf regionally in the last 5 years. I am not an expert on invasive plants but liverseed grass appears to me to have the potential to be very invasive. If you find an infestation of liverseed grass, my advice is to resolve the problem quickly. On small infestations, plants can be physically removed, bagged and discarded. With larger infestations, chemical control will likely be needed. Strive to prevent seed production. If liverseed has been present for a while, then an effective 2-3 year pre-emergence program coupled with post-emergence control before seed set should deplete viable seed in the soil. That is, assuming, liverseed grass behaves here as it does in Australia.

Never forget the benefit of healthy, actively growing turf in weed management programs!

Citation:

Walker, S., Wu, H. & K. Bell. 2010. Emergence and seed persistence of *Echinochloa colona*, *Urochloa panicoides* and *Hibiscus trionum* in the sub-tropical environment of north-eastern Australia. Plant Protection Quarterly 25 (3): 127-132.

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