Yellow Nutsedge, *Cyperus esculentus*
Technical Bulletin for Industry Professionals

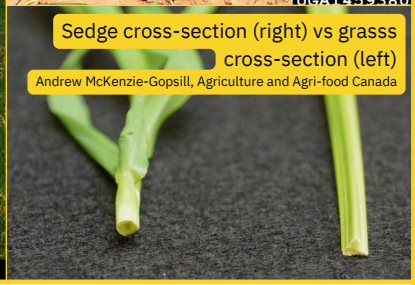
General Description

- **Highly invasive perennial herb,** may behave as an annual.
- Believed to originate from Southwest Asia.
- Sprouts begin to appear in late April-early May, and persist until killed by frost near the beginning of Winter.
- Distinct **triangular orientation** of the uppermost (apical) plant parts and a **triangular stem**.
- **Low-growing** (up to 2.5ft), can survive in a mowed lawn.
- **Feathery, golden yellow flowers** bloom in midsummer, producing **brown, football-shaped seed** in late summer- early fall.
- Prefers **moist or mesic soils**.
- Especially an issue in agricultural areas, riverbanks, and other disturbed sites.
  - If the plant is not controlled, it may become a significant issue in some of PEI's most widely-planted crops, potatoes and soybeans.
  - These tubers are harvested as a crop called "tiger nuts", which is the reason for their initial introduction to North America.
- Layered array of **long, slender leaves** at the base of the plant.
  - Leaves have a **yellowish hue, a waxy coating, and a strongly defined midrib.**
- One tuber has been shown to produce an average of over 700 new tubers each season. In an extreme case, one tuber may give rise to 1,700-3,000 shoots and 19,000-20,000 new tubers over four months.
- Tends to occur in clustered patches.
- ⚠ The plant's distribution is currently limited to one known patch on PEI. **Report suspected sightings** to the PEIISC as soon as possible:
  - At **peiinvasives@gmail.com**, on social our media page, or on iNaturalist.


Root with nutlets visible
Steve Dewey, Utah State University, Bugwood.org
UGA1459384


Whole plant
Steve Dewey, Utah State University, Bugwood.org
UGA1459380


Infestation of a residential lawn
Doug Doohan, Ohio State University/ OARDC, Bugwood.org
1617035


Sedge cross-section (right) vs grasss cross-section (left)
Andrew McKenzie-Gopsill, Agriculture and Agri-food Canada

Impacts

- Ranked as the 16th worst weed globally.
- Significant impacts to agricultural systems for potatoes, soybeans, sugarbeets, corn, etc.
- Yield loss varies between crops, but yellow nutsedge has marked impacts on low-growing crops in particular.
- When yellow nutsedge emerges with the crop, losses are higher.
- Losses are heavier when yellow nutsedge is heavily irrigated and when it has access to an abundant supply of nitrogen.
- Rapidly fills in gaps and occurs at high density when other weeds are controlled.
- The plant is not known to be highly invasive in natural areas where native plant competition is high.
- Yellow nutsedge releases chemicals into the soil which reduce growth of nearby plants.

Pathways of Spread

- Spreads predominantly by vegetative reproduction.
  - Spreads by stolons, rhizomes, tubers, and (negligibly) by seed.
- Movement of contaminated soil on field equipment is the most common source of spread.
- Cultivation can distribute tubers within fields and from field to field. Tubers are also mixed throughout the soil, making management challenging
- Soil mixing causes more spread that soil adhering to equipment.
- Spread in root crop systems is extreme due to the large amount of soil transported during harvest.
- Construction material and equipment, like farming equipment, can be a source of spread.
- The movement of other contaminated substrates and soil amendments such as gravel, sand, compost, manure, etc.
- Nursery activities can be a source of spread. Yellow nutsedge is believed to have been introduced with a packaged soil amendment or nursery stock on PEI. Movement of soil both packaged and potted for sale with live plants is a source of spread.
- Spread through contaminated animal feed, and where the plant is used as animal feed, has been observed.
- Natural dispersal is usually minor, but mice may move tubers, and periods of high surface water runoff can carry reproductive parts long distances.

Produced for PEI residents by the PEI Invasive Species Council, 2024

Management & Control

Due to the significant potential impact on crop production on PEI, populations of yellow nutsedge should be controlled swiftly after discovery. Once yellow nutsedge has become established in a crop system, especially a potato crop, it is extremely difficult to eradicate. Report suspected populations to the PEIISC.

Cultural Control

- Tilling yellow nutsedge is generally not recommended. This is due to the significant potential for spread and dispersal of tubers both within the infested fields and to other fields where infested soil is carried from field to field through contaminated equipment.
  - Repeated tillage (5+ times per year) has been shown to reduce density and propagation of yellow nutsedge. Tillage brings tubers to the surface of the soil, exposing them to drought or freezing.
  - Despite a reduction in propagation and density, yellow nutsedge will be dispersed and spread by tilling.
- Crop losses are highest when crops emerge around the same time as yellow nutsedge. Scheduling early planting in crop systems can assist with crop competitiveness against yellow nutsedge. Crop losses are highest in poorly competitive and low-growing crops.
- Narrow row spacing can provide crops with a competitive edge as they will be better able to compete by shading out yellow nutsedge.

Solarization

- Solarization is the process of using a clear plastic or polymer sheeting to increase soil temperatures. Soil temperature is increased by sunlight radiating through the sheeting to the point where temperatures could become lethal for yellow nutsedge.
- Increased soil temperature may, over time, kill yellow nutsedge.
- Cover the affected area with a clear sheeting and secure the edges by weighing them down or burying them.
  - If burying be wary of the potential transfer of yellow nutsedge away from the site in soil that may be transported away where it adheres to equipment, clothing, or vehicles.
- Solarization projects for yellow nutsedge should begin from May and extend through to early October.
- This process is non-selective, and will kill any vegetation below the covering that is heat susceptible.
- Requires sustained high temperatures raised to a lethal level (>50 degrees Celsius) for a long period of time, and thus may be less effective during cooler summers.
- This method does not guarantee complete control, and multiple years of treatment will likely be necessary for eradication.

Chemical Control

- Chemical control is the method of control most recommended by the PEI Invasive Species Council.
- Product selection will depend upon regulatory approval, crop species, site, and other factors.
- Yellow nutsedge can be controlled with both pre and post emergence herbicides.
- For specific chemical control options relevant to your situation, reach out to Certified Crop Advisor or a Professional Agrologist.
- When working with a chemical control product such as an herbicide, it is crucial that all local legislation and manufacturer's instructions be followed during storage, preparation, and application.
- Herbicides registered for use against yellow nutsedge in Canada include halosulfuron, s-metolachlor, and dimethanamid-P.

Biosecurity

- When working with invasive species like yellow nutsedge, it is important to make considerations during management to prevent the spread of the plant.
- As discussed above in the "Pathways of Spread" section, yellow nutsedge can easily spread from field to field on contaminated equipment, vehicles, and clothing.
- As an added precaution, move equipment to fields that may have nutsedge last, to remove the chance of spread to unaffected fields.
- Before leaving an area or moving equipment or vehicles used in soil containing, completely wash off all soil and organic debris to prevent spreading yellow nutsedge.
- Clean footwear and clothing of any mud or organic debris that could contain reproductive parts of yellow nutsedge.

Reporting

- Quick reporting and swift action to invasive species establishment is key to a successful response.
- If you have seen, or suspect you have seen, yellow nutsedge on PEI, report your findings to the PEIISC immediately.
  - Send reporting information to **peiinvasvies@gmail.com.**
  - Include the location of your find, your contact information, the date you found the invasive species, and photos of your observation.
  - PEIISC staff will review your report, confirm the identity of the plant, and provide instructions on how to proceed.
  - Ensure you do not remove any yellow nutsedge from the area, and use the biosecurity measures listed above.

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PEI invasive species council

Reference material: Swen Follak, Regina Belz, Christian Bohren, Olga De Castro, Emanuele Del Guacchio, Núria Pascual-Seva, Michael Schwarz, Filip Verloove, Franz Essl, Biological flora of Central Europe: Cyperus esculentus L., Perspectives in Plant Ecology, Evolution and Systematics, Volume 23, 2016, Pages 33-51, ISSN 1433-8319, https://doi.org/10.1016/j.ppees.2016.09.003.