

Identifying Die-Off Syndrome

Background

Roseau cane (*Phragmites australis*) is an integral part of the Mississippi River Delta. This tall perennial grass constitutes most of the vegetation found at the mouth of the river and protects the coast from potentially harmful events, such as storm surge and coastal land loss. The plant holds most of its mass in the roots, which provide stability to the channels through which the river travels (Fig. 1).

In fall 2016, roseau cane was observed to be dying at alarming rates in southern Louisiana. As researchers work to discover what is damaging the plant, those who are familiar with roseau cane can help by learning how to identify the die-off syndrome and report both sick and healthy patches to the Louisiana State University Agricultural Center.

The apparent health of a roseau cane stand will vary based on time of year and the variety of the cane.

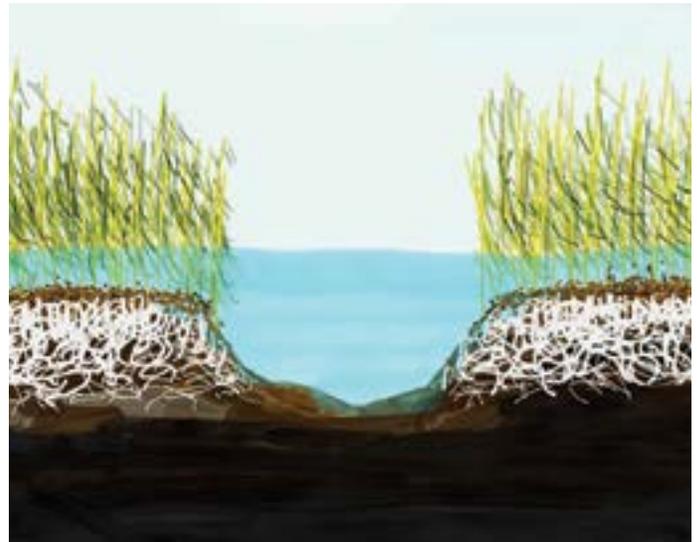


Figure 1. Schematic representation of channel protected by roseau cane.



Figure 2. Remains of roseau cane stems and open water following a roseau cane die-off at Southwest Pass, Louisiana, in March of 2017.

The most extreme examples of roseau cane die-off are characterized by patches of open water in areas that were once dominated by the grass (Fig. 2). Often, broken and dead stems are visible above the soil or water surface.

As roseau cane dies it is replaced by floating aquatic vegetation, such as water hyacinth and common salvinia. These plants do not perform the same ecological functions that the root-heavy roseau cane does, leaving the marsh susceptible to erosion, storm surge and habitat loss (Fig. 3).

These stands located at the Southwest Pass of the Mississippi River Delta remained healthy throughout the year as evidenced by the density of the stand, the presence of green leaves in fall, and no visible lodging or collapsing of stems (Fig. 4).



Figure 3. A water hyacinth mat pushes against a weak roseau stand at Southwest Pass, Louisiana, in August 2018.

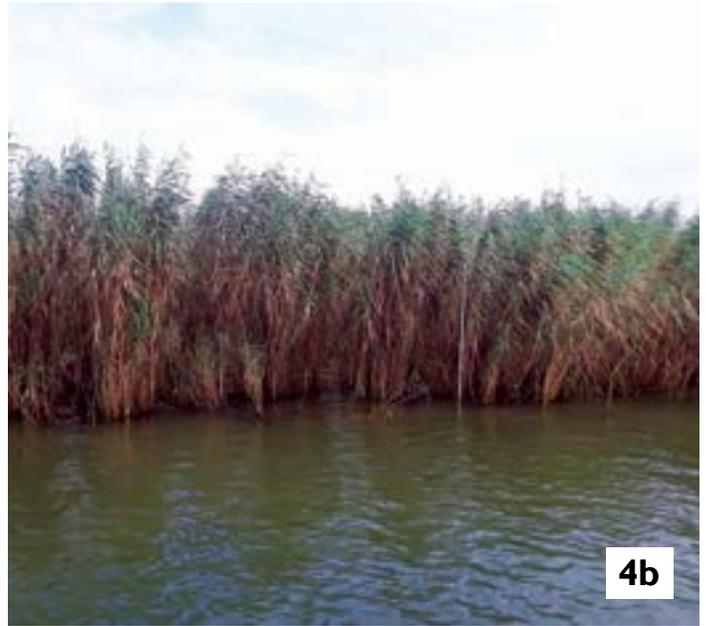


Figure 4. Healthy roseau cane at the Southwest Pass of the Mississippi River Delta has abundant regrowth in the spring (a). By fall the same stand remains dense and stems have not begun to die or collapse (b). Differences between summer and fall include some browning of leaves (c). Except for very cold winters, plants do not show complete loss of green leaves (d). Photographed at Southwest Pass, Louisiana, in August 2018.

An unhealthy stand of roseau cane does not maintain dense green stems in fall and winter. Patches of open water within the stand will expand over subsequent seasons as spring regrowth becomes less vigorous.



Figure 5. The outer edges of a roseau cane stand can appear green and healthy in the summer (a) but hide an ever-expanding area of open water (b and c) that will not return with the same vigor the following year (d). Photographed at Pass-a-Loutre Wildlife Management Area, Louisiana, August 2018.

Another visual aid used to assess roseau cane health is to determine at how much of the stem has fresh green leaves versus deteriorated brown leaves. This assessment should be made with mature (taller) stems instead of smaller stems that may represent new shoots and should

be looked at from the perspective of the entire stand. It is more effective to make this assessment in late summer and fall when new shoots are less common. If less than 25 percent of the stem maintains green leaves, the stand can be classified as “unhealthy” (Fig. 7).



Figure 6. The Greeny variety of roseau cane in the foreground appears much shorter, its leaves contain a bluish hue and the plants flower much earlier in the year in comparison with the taller Delta variety visible in the background. Photographed at the Pass-a-Loutre Wildlife Management Area, Louisiana, August 2018.

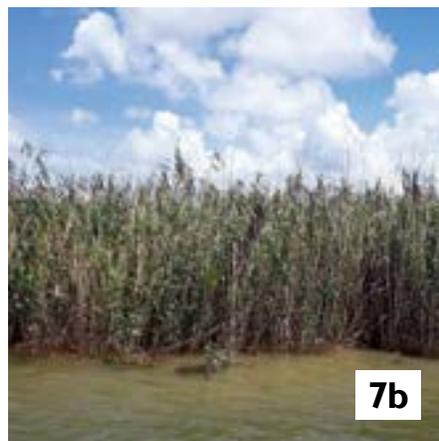


Figure 7. These stands exhibit low (a), medium (b), and high (c) percentages of green leaves. A stand that exhibits 20 percent green leaves looks very unhealthy (a), while a stand with over 60 percent green clearly shows healthy consistent growth (c). Photographed at Southwest Pass, Louisiana, August 2018.

If you are interested in learning more about roseau cane die-off syndrome and related issues, please visit our website: www.lsuagcenter.com/roseaucane



Authors: Madeline Gill,
Ian Knight, Arthur Hebert,
James Cronin and Rodrigo Diaz

William B. Richardson, LSU Vice President for Agriculture
Louisiana State University Agricultural Center
Louisiana Agricultural Experiment Station
Louisiana Cooperative Extension Service
LSU College of Agriculture

Pub. 3683-B (online) 3/19

The LSU AgCenter and LSU provide equal opportunities in programs and employment.

Visit our website: www.lsuagcenter.com