LSU AgCenter Update – Information about Saltwater Impact to Plants and Livestock

Most current info on plant and livestock impacts:

First of all, don't panic. This has happened before (1988, for example) and will happen again. Other parts of the world that are incredibly productive for growing fruit and vegetables have been dealing with this for centuries. We, and our gardens, will be ok. With all things, adaptation is key to resiliency. Gardeners are no exception. I've seen tremendous changes happening in home horticulture in just the past few decades as gardeners have begun to adopt the use of hardy native plants in their yards, or design spaces to support pollinators and wildlife, and work to conserve resources.

What is the Risk?

Saltwater intrusion into the municipal water supply sounds scary. There is already a plan in place to barge freshwater in from upriver to dilute the salt content at the intake points, and desalination filters are going to be installed at the water treatment plants. This will greatly reduce the salt content in the water coming from your taps and hose pipe. So much so that you will be able to still drink it. Watering your plants will still be ok. The risk is that the longer there is excess salt in the water supply, it will build salt levels in the soil over time. Luckily, salt is highly mobile and flushes out of soil each time it rains. It is not a long-term issue. The forecast for the coming winter is that it will be a cool, wet one. The saltwater is expected to reach the following areas in October:

- Belle Chasse- October 19
- St. Bernard- October 19
- Algiers- October 22
- Gretna- October 24
- West Jefferson- October 25
- Carrollton- October 28
- East Jefferson- October 29

With the return of winter rainfall, any salt that does accumulate in soils from watering plants or irrigating will not be there long. It takes 90 days for freshwater to travel from the upper Midwest downriver to our area. While the municipal water supply may have elevated salt for months from now, local rainfall should help to flush the soil and mitigate the damage to plants being watered artificially.

Impacts to Home Landscaping and How to Manage

Salt damage to landscape plants can manifest as stunted growth, burned leaf edges, and inhibited ability for the plant to take up necessary nutrients from the soil. Sodium ions block the entry ports of roots that would normally be taking in, including potassium, calcium, and magnesium. This late in the year, we should not be fertilizing plants anyway. Doing so promotes tender new growth that is susceptible to freeze damage in the winter. Mulching landscape beds with 3-4 inches or more of pine straw, bark, or wood mulch helps to retain soil moisture from natural rainfall and prevent the evaporation of soil moisture. This means that there is less demand for irrigation water from plants. Mulch shades the root zone also, which protects the roots from heat stress. Fall has always been the ideal time to renew landscaping mulch. Avoid using hay or straw, much of this material is treated now with a persistent, herbicide harmful to garden plants, and can carry residual weed seeds into the beds. If you are reworking your beds, adding soil organic matter, in the form of compost, also helps soil to retain

moisture and supports healthy plant development. It is a good idea to lay 2-3 inches of good quality, finished compost in a bed when replanting annuals and perennials. Add compost to the beds before mulching. Some plant species are more sensitive to salts. If you haven't already installed a rain barrel, let this be a call to action. Rain barrels are a great way to reduce your water bill and provide plants with untreated soft water. They can be purchased or built. There are many DIY tutorials on the internet.

Azaleas, camellias, roses, gardenias, croton, and boxwoods are classified as salt sensitive. Avoid irrigating these plants with municipal water once salt levels climb. Established woody ornamentals should have healthy root systems and be able to survive a few months with just intermittent rainfall to sustain them. Hollies, magnolias, oaks, and photinia are moderately tolerant, but should already be established in the landscape as summer is not an ideal time for planting. Many landscape plants are drought stressed but the cooler evening temperatures we are experiencing now should help them to recover even with less water available. Growth is slowing for the season and that works in our favor. Bedding plants for seasonal color should be going into gardens in the coming weeks. Snapdragons, petunias, portulaca, dianthus, penstemons, asters, phlox, chrysanthemums, foxglove, vinca, verbena, lantana, salvias, sedum, yarrow, delphinium, pansies, cyclamen, violas, and coreopsis are all listed as salt tolerant, so freshen up those beds. Perennial flowers like bird of paradise, most irises, agapanthus, amaryllis, plumbago, bougainvillea, buddleia, bottlebrush, African bush daisy, hydrangeas, jasmine, Indian hawthorn, and firecracker plant are all highly tolerant or moderately tolerant of salinity. In short- most of our common New Orleans area landscape plants will survive just fine. It would be a good idea to keep a record of what plants manage to thrive in spite of the prolonged drought and upcoming salt exposure. Those are the plants you'll want to use for the coming few years with the projected weather patterns.

Impacts to Home Lawns and How to Manage

Of our four common turfgrasses, Bermudagrass, St. Augustine, and zoysia are all salt tolerant and come from parts of the world with elevated salinity. Centipede grass is not as salt tolerant as the other three turfs, but it is less commonly used in the area. As the cool season approaches lawns will begin going dormant in the coming months. Most lawns that were not irrigated all summer are severely drought stressed. If resodding this fall, choose one of the salt tolerant turfs and follow normal establishment water schedules. If you overseed your lawn with ryegrass each winter- good news. It's salt tolerant. Proceed as usual. Salt can slow seed germination, but luckily ryegrass can be sown in October through December with good results. You can follow local rain forecasts and sow ryegrass ahead of rainfall to ensure quick germination. Once germinated, ryegrass can handle salty irrigation water fine.

Impacts to Home Vegetable Gardens and How to Manage

Vegetable gardens will be a little trickier to manage. Water with salt levels above 1,000 parts per million (ppm) can kill some vegetable plants, including beans and cucumbers. This is where having a rain barrel can come in handy! Vegetables with moderate salt tolerance include cauliflower, arugula, chard, collards, carrots, some lettuces, peas, potatoes, squashes, and sweet corn. Vegetables with high salt tolerance include beets, peppers, broccoli, cabbage, kale, spinach, garlic, asparagus, and tomatoes. The most salt sensitive vegetables include beans, onions, cucumbers, radishes, and celery. Luckily from this list, we have plenty of options when planning the cool season garden. Many of our favorite herbs should also fare well, even with some salt in the mix. Rosemary, thyme, oregano, Cuban oregano, savory, marjoram, lemongrass, and mint are salt tolerant. Basil, lemon balm, lemon verbena, and green onions are more salt sensitive but will likely still produce to some extent. Again, adding soil organic matter (compost) and a thick layer of mulch reduces the need to water vegetable and herb gardens. This is a good practice regardless as it protects the soil from extreme fluctuations in temperature and moisture.

Again, keep a record of what crops manage to thrive in spite of the prolonged drought and upcoming salt exposure. Other areas of the world have found locally adapted crops that can handle these conditions, and we can too! Those are the plants you'll want to use for the coming few years with the projected weather patterns.

Impacts to Citrus and Other Fruit Trees and How to Manage

Loquat, persimmons, blueberries, figs, Barbados cherry, guava, passionfruit, pineapple, and bananas are all moderately salt tolerant. Avocado, pomegranate, and citrus are salt sensitive. Citrus varies in salt tolerance based on cultivar and rootstock used. Young trees are more sensitive to salt than older, mature trees. Stunting and leaf burn can result if salts build up in young citrus groves. Watering fruit trees at night reduces water evaporation and salt deposition. Established, in-ground fruit trees should be watered once per week, deeply, only if needed. Salty flood waters that inundate and stagnate in fruit trees will kill, but a weekly irrigation of slightly salty water will not.

Commercial citrus nursery producers should look into mobile reverse osmosis trailers which can be rented from water companies such as Suez, Baker Hughes, Nalco, and ChemTreat. State water quality specialists are currently working to compile information for commercial growers about options.

If you are growing fruit trees in containers as a patio plant or nursery stock, salts may build up within the reduced soil space over time if you water using salty supplies. Doing a weekly "flush" using rainwater or some other salt-free source will help prevent this build up even if you are watering daily with salty water. Natural rainfall also accomplishes this. Avoid allowing the containers to dry out. As soils dry, salt concentrations build in the soil solution, increasing water stress. It's better to water frequently and keep the soil hydrated. Watering frequently and applying more water than the plant will use can help to reduce salt stress. You may notice fruit tree leaves developing crispy leaf margins as salt levels build, but the trees should overall survive and recover if flushed out. Reduce fertilization rates of potted fruit trees as well to prevent further build up of salts. Most fertilizers contain salt, and it is better to fertilize at low rates more frequently than high rates less frequently when plants are exposed to irrigation water containing elevated salt.

Impacts to House Plants

House plants and container-grown ornamentals have a very small soil profile to live in. Salts and mineral deposits build up in the soil even under normal conditions. You may have noticed a white build up on your pots, or a slight crust on the soil surface of potted plants. If salts are allowed to build up, it can kill the tips of the roots or cause root rot, crispy leaf margins, wilting, or death. Current recommendations are to flush the pots with fresh water every 4-6 months to leach excess salt from the soil. Let the water drain through the whole soil profile and out of the bottom of the pot. The amount of water used should equal twice the volume of the pot.

Impacts to Commercial Nursery Producers and Garden Centers

Commercial nursery producers and garden centers should investigate small desalination units for mitigating salt levels in irrigation water. These are available via online retailers. This pattern of dry, hot summers will increase chances of saltwater intrusion in the coming years, such units would be a good investment. Local and state industry groups may want to investigate cost share options to help mitigate the cost of such units. State water quality specialists are currently working to compile information for commercial growers about options.

Impacts to Beef Cattle, Horses, and Other Large Livestock

Most livestock species have a higher salt tolerance than humans and pet species.

Cattle- Safe levels <3,000 ppm, 3,000-5,000 ppm may cause diarrhea or reluctance to drink.

Horses- Safe levels <4,000 ppm, up to 6,500 ppm ok but may cause scouring.

Goats- Safe levels <9,500 ppm. Goats can tolerate salty conditions well.

Sheep- Safe levels <6,000 ppm.

Hogs- 2,000 ppm max. Hogs can be sensitive to salinity in drinking water, plan on diluting water source with clean fresh water if levels increase above this threshold.

Impacts for Backyard Poultry and Rabbits

Salt levels below 2,000 ppm are fine for poultry to consume. Levels between 2,000 and 3,000 ppm may result in animals reluctant to drink. Levels above 3,000 ppm should be reduced and diluted with a fresh water source to avoid health impacts. Avoid restricting water access as salt toxicosis can occur. It's better to keep water in front of your birds at all times, even with elevated salt.

Salt levels below 2,000 ppm are acceptable for rabbits. Levels above 2,000 ppm should be diluted with a fresh water source to avoid loss in production. Rabbits may be initially reluctant to drink as salt increases, keep cool water in front of them at all times.

Questions?

LSU AgCenter local agents and state horticulture and livestock specialists are working hard to get accurate, research-based information out to home gardeners, green industry professionals, farmers, and growers in a timely manner. Please reach out to your parish agent for clarification or questions, we are here to help! If local agents can't answer, they can connect you to state specialists or industry leaders.

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