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NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

By John Ferguson

Subject: tires elderberry bumble bees leaf mulch

Many gardeners enjoy having a pond or other water feature as part of their gardens filled with fish. Most of us do not like mosquitos. Fish and other aquatic life eat mosquito's eggs reducing their population. Less aquatic life means more mosquitos.

A new study has found the cause of many fish kills, chemicals used in automobile tires. We have talked about the dangers of rubber mulch made from recycled tires many times, and this adds to the list as why they should never be used in gardening or anywhere else for that matter.

For years many streams have experienced large fish kills that are called "urban runoff mortality syndrome." The cause has finally been identified as a chemical that is found in tires. This chemical is known as 6PPD and was added to tires to slow tire degradation.

As tires wear, dust sized particles are released where 6PPD breaks down into 6PPD-q which is the second most toxic chemical known to harm aquatic species. In addition to being very toxic to fish and other aquatic species a recent study found that this chemical can bioaccumulate in mammals, causing inflammation, and increasing liver triglyceride levels in mice. <https://pubmed.ncbi.nlm.nih.gov/36716866/>

Another reason not to use shredded tires as mulch, or weed control mats, etc.

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One of my favorite landscape plants is our native elderberry (*Sambucus nigra*). It blooms several times each year producing large edible clusters of white flowerheads loved by our pollinators. The flower heads are used to make a very nutritious and delicious treat known as Elderberry Fritters.

Elderberries are a native plant that will grow in almost any soil, wet or dry, they are extremely drought and heat tolerant, yet will tolerate flooding and wet conditions. I have had a large plant in my backyard for years, it was a volunteer that popped up in a flowerbed, probably from seeds donated by some bird. It came through the recent heat wave and drought without watering or any other care.

The fruit of this plant has been used for thousands of years for its health benefits. The fruit is high in phytonutrients and when cooked properly also have a lot of anti-oxidants which help give it the flu and other virus fighting properties.

The University of Sydney found that chemicals in the berries also prevented cells infected with a virus from replicating. They found that those whom took elderberry syrup recovered from viruses four days sooner than those whom took a placebo syrup.

The berries can also be used to make pies, jelly, and wine. Note that the berries need to be cooked before eating.

I have noticed that several bird species will nest in its branches.

A couple weeks ago I talked about some new studies on bees that they have a form of intelligence. Queen Mary University of London has released a new study that show bumble bees “play.”

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They found that the bumble bees went out of their way to roll wooden balls even when there was no reward. Younger bees rolled more balls than older bees. This same behavior of younger animals playing has been observed in mammals to birds. They also found that male bees rolled them for longer time than female bees.

Previous experiments have shown that bees could be taught to score a goal by rolling a ball to a target and offering a food reward. *Animal Behavior* (2022)

I got a chuckle out of an article in the journal *HortTechnology* (2022) on leaves. The Rutgers New Jersey Experimental Station has found that using fallen leaves from shade trees was beneficial for building soil organic matter.

They found it also protects against erosion, and was useful for controlling weeds when used as a mulch. They found increased growth and yield in their test crops and the soil held more moisture.

This was humorous to me as I know that Brenda and I have both been touting leaves as mulch and soil improvement, to do all the above for decades!

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