

THE PURDUE LANDSCAPE REPORT

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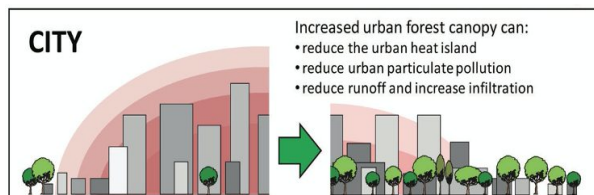
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We need trees and here's why...

(Lindsey Purcell, lapurcel@purdue.edu)

Yes, we need trees and here's why...

Trees have presented as more than just a pretty face as research has indicated that trees are even more valuable for their function as much as their form. Currently, more than 50 percent of the world's population now lives in towns and cities. In the Hoosier state, the last census indicated that 72% of our population lives in an urban area and this statistic is increasing annually.



Properly planted trees improve living conditions in downtown and suburban areas.

For the most part, the rapid expansion of cities takes place with little consideration to land use planning strategy. The resulting human pressure has highly damaging effects on our urban trees and green spaces. The environmental impacts of climate change are intensified by urbanization such as increased pollution, increased temperatures, and larger demands on infrastructure such as stormwater systems.

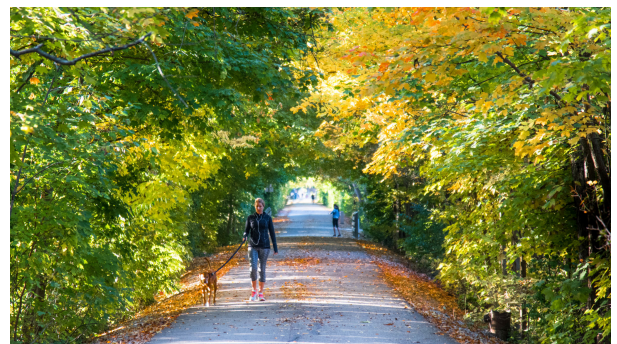
Urban trees can help to mitigate some of the negative impacts and social consequences of urban sprawl and make cities more resilient to these changes. These important functions are called ecosystem services. This is the way urban foresters measure the benefits that trees provide other than just their beauty. Ecosystems services are the many benefits that trees and plants provide to the community. They improve our quality of life by providing food, cleaner air and water, regulating temperatures, supporting pollination and providing recreational, health and spiritual benefits.



People will stay longer and enjoy urban economy more with tree-lined streets.



Trees are proven to reduce length of hospital stays and improve birth outcomes.



Recreational areas are critical to community well-being.

Here are some easy ways in which urban trees and woodlots contribute to making cities more environmentally sustainable and

livable:

- Trees can contribute to the increase of local **food and nutrition security**, providing food such as fruits and nuts for wildlife and human consumption.
- Trees play an important role in **increasing urban biodiversity**, providing plants and animals with a proper habitat, food and protection.
- A mature tree can absorb up to 350 lbs. of CO₂ per year. As a result, trees play an important role in **climate change mitigation**. In cities with high levels of pollution, trees can improve air quality making cities healthier places to live in.
- Strategic placement of trees in cities can help to **cool the air** between 30-40° F, thus reducing the urban “heat island” effect, helping reduce extreme heat conditions in summer weather.
- Large trees are great biological **filters for urban pollutants** and particulate pollution. They absorb pollutant gases (such as carbon monoxide, nitrogen oxides, ozone and Sulphur oxides) and filter fine particulates such as dust, dirt, or smoke out of the air by trapping them on leaves and bark.
- Research shows that living in close proximity of urban green spaces and having access to them, can **improve physical and mental health**, for example by decreasing high blood pressure and stress. Also, research indicates greatly improved neo-natal health as well. This, in turn, contributes to the well-being of urban communities.
- Mature trees **regulate water flow** and play a key role in preventing floods and reducing the risk of sewer overflow. Stormwater management is a crucial city infrastructure issue and trees help. A mature tree, for instance, can intercept more than 5,000 gallons of water per year and without trees, every rain would contribute floods.
- Trees also help to **reduce carbon emissions** by helping to conserve energy. For example, the correct placement of trees around buildings can reduce the need for air conditioning by 30 percent and reduce winter heating bills by 20-50 percent.
- Planning urban landscapes with trees can **increase property value**, by up to 15 percent, and attract tourism and business.



Trees make life better.

These are just a few examples of the functional benefits that trees

provide to our everyday life. A community or neighborhood with well-planned and well-managed green infrastructure becomes more resilient, sustainable and equitable in terms of livelihood improvement, climate change mitigation and adaptation, disaster risk reduction and ecosystems conservation. Throughout their lifetime, trees can thus provide a benefit package worth two to three times more than the investment made in planting and caring for them. Trees aren't the answer, but they are part of the equation. Planting trees is important, but their maintenance is as equally important.

For more information on urban tree care, visit the [Purdue Education Store](#) for tree care tips and suggestions.

Impatient for new impatiens!

(Janna Beckerman, jbeckerm@purdue.edu)

A workhorse of the shade garden, impatiens, also called 'Busy Lizzies' delight people by their amazing ability to brighten up shady sites. Downy mildew, caused by the water mold *Plasmopara obducens* put a damper on things for almost a decade. This downy mildew infects impatiens (*Impatiens walleriana*), or balsam impatiens (*Impatiens basamina*). New Guinea impatiens and other bedding plants are not susceptible to this downy mildew (but they may have their own downy mildews). Downy mildew quickly spread across North America, and impatiens were falling down on the job in landscapes. Symptoms begin with discolored leaves coated with white mildew on the underside (Fig. 1) consisting of sporangia (Fig. 2) that spread via wind, rain and wind-driven rain. As the pathogen colonizes the plant, leaves discolor and defoliate, leaving a lot of naked, green stems (Fig. 3). Summer weather that is rainy with cooler temperatures is conducive to impatiens downy mildew developing in the landscape. In Indiana, we often see symptoms develop in July and August, but sometimes, as late as September and October.



Figure 1. Downy mildew signs appearing on the underside of fallen leaves. Photo by Janna Beckerman.

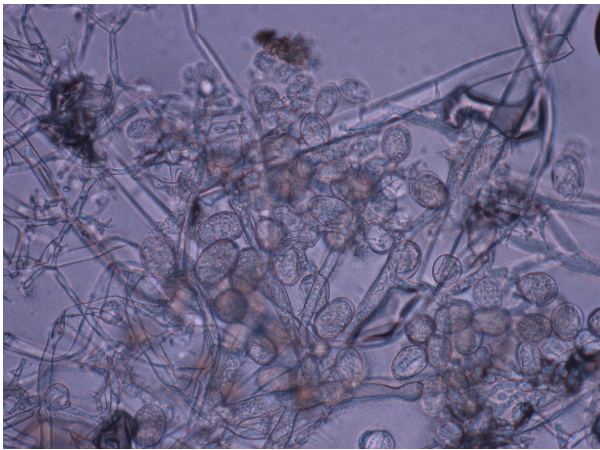


Figure 2. Sporangia and spores of downy mildew. Photo by Janna Beckerman.



Figure 3. The green stems are symptomatic of downy mildew infection. Photo by Janna Beckerman.

Unfortunately, beds that had infected impatiens were now infested with the overwintering oospore, which starts the infection cycle all over again if impatiens are replanted in the same site in the spring. This overwintering oospore is thick-walled and evolved to persist a very long time in the debris of dead impatiens, and presumably, in the soil. Any impatiens replanted in the same site are likely to be infected during the growing season.

Managing impatiens downy mildew



Figure 4. Different impatiens are resistant to the downy mildew pathogen. Note the very susceptible *I. walleriana* in the foreground, the less susceptible *I. balsamina* and more resistant 'Sunpatiens' and wild touch-me-nots (*I. capensis*). Photo by Janna Beckerman.

There is good news on the horizon. The 'Sunpatiens' (Sakata Seed) have been much more resistant, as are New Guinea impatiens (Fig. 4). There are over 1000 species of impatiens (my

favorite is *I. zombensis* for the name and *I. namchabarwensis* for an unbelievable blue flower). I have no idea if these have any downy mildew resistance, but I am hopeful that zombensis may reanimate). Beacon (PanAmerican Seed) series impatiens and Imara XDR (Syngenta Flowers) have better resistance to many races of downy mildew. Resistant does not mean immune! If overfertilized or provided too little light, plants can become infected. Also, resistance may not extend to everywhere: Certain sites happen to be infected with races of downy mildew that can still infect these resistant varieties. However, when planted and combined with protective applications of fungicide, growers can once again enjoy the prolific flowers that impatiens provide.

The key to successfully managing these or any impatiens, is to maintain a protective program of fungicides, and recognize that fungicides do not 'cure' plants. Apply products with differing modes of action in rotation (or as a tank-mix, when indicated). Table 1 was developed to help you with your selection. This is important in preventing resistance to any one fungicide by the downy mildew pathogen. And, applying fungicides are important to preserve the genetic resistance of these new impatiens varieties by not allowing pathogen numbers to get so high that one sporangium 'gets lucky' and is able to infect the plant. Be sure to read the label: Some fungicides perform better as drenches whereas others perform better when applied to foliage.

Important Note: There are fewer downy mildew fungicides registered for landscape use compared to production. Make sure the fungicide you choose is appropriate for the type of application you are making and where this application will occur! This table relied upon work that was performed across the US to identify which fungicides performed well against this and other downy mildews. You can review this research here:

<http://ir4.rutgers.edu/Ornamental/SummaryReports/DownyMildewDataSummary2017.pdf>

For more information on downy mildews, see:

<https://www.extension.purdue.edu/extmedia/BP/BP-68-W.pdf>

Table 1. Fungicides labeled for downy mildew, along with Fungicide Resistance Action Committee (FRAC) codes. When developing a fungicide program, alternate between products with different codes to reduce the risk of fungicide resistance.

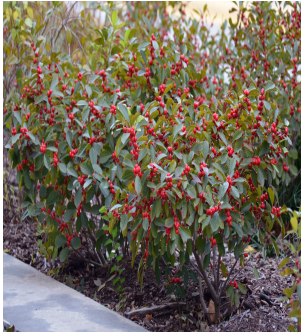
| Fungicides (active ingredients) | FRAC Code | Sites* | REI | Spray or Drench | Comments |
|--|-----------|---------------|------|-----------------|--|
| Adorn (fluopicolide) | 43 | G, L, N, S | 12 h | S,D | Apply as a tank-mix with other fungicides. |
| Alette (fosetyl Al) | 33 | G, N | 12 h | S | For downy mildew of roses only |
| Alude, Magellan, Vital, etc. (phosphorus acid salts) | 33 | G, N | 4 h | S | |
| Broadform (trifloxystrobin+fluopyram) | 7+11 | G, I, L, N, S | 12 h | S | |
| Compass | 11 | G,I,N,L,S | 12 h | S,D | |
| Fenstop (fenamidone) | 11 | G | 12 h | S | |
| Heritage (azoxystrobin) | 11 | G, L, N, S | 4 h | S,D** | **Roses in commercial production may be drenched |
| Mancozeb (EBDC) | M | G, N | 24 h | S | The addition of the surfactant Latron B-1956 will improve performance. |
| Micora (mandipropamid) | 40 | G, N,S | 4 h | S,D | |
| Orvego (ametoctradin+dimethomorph) | 40+45 | G, I, N, S | 12 h | S,D | Do not apply to dry media |
| Segovis (oxathiapiprolin) | U15 | G, N, S | 4 h | D | |
| Segway (cyazofamid) | 21 | G, N, L | 12 h | S | |
| Stature DM (dimethomorph) | 40 | G,S,N | 12 h | S | |
| Subdue Maxx (mefenoxam)* | 4 | G, L, N, S | 0 h | D | |

G= Greenhouse; N=Nursery, I= Interiorscape; L= Landscape; S= Shadehouse

It's for the Birds!

(Rosie Lerner, rosie@purdue.edu)

We often receive inquiries from folks wanting to add landscape plants that will attract birds. Most folks primarily think of plants with edible berries. Birds require not only food such as fruits and seeds, but also shelter and water.



Red fruits of winterberry deciduous holly. Photo Credit: Purdue Arboretum



Bluish black fruits of arrowwood viburnum. Photo Credit: Purdue Arboretum



Red fruits of spicebush Photo Credit: Purdue Arboretum

Planting a variety of plants that offer these resources across the seasons will help attract more birds to the yard. Some native shrubs to consider include:

Aronia (chokeberry)

Callicarpa (beautyberry)

Clethra (summersweet)

Cornus (dogwood)

Corylus (hazelnut)

Ilex (winterberry)

Lindera (spicebush)

Rhus (sumac)

Sambucus (elderberry)

Symphoricarpos (snowberry and coralberry)

Viburnum (several species)

More information on attracting birds and other wildlife to your yard in [Purdue Forestry & Natural Resources publication FNR-247-W](#).

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