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Plants' negative emissions put Earth first

Any gardener worth their green thumb should know what plants help confront climate change, writes Mark Cullen and Ben Cullen.

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The Vineland Research and Innovation Centre has created a Greening the Canadian Landscape program to help with picking the right tree for the right location. (Dreamtime)

Negative emissions are a good thing — for the environment and for your health.

We wish that negative emissions sounded more positive — because they are — but scientists aren't always creative when it comes to naming these things.

Negative emissions, or the removal of pollutants from the atmosphere, have always been a by-product of plant life. They are becoming so important as we confront global climate change that technologies are being developed to mimic what plants have been doing all along.

Some plants produce negative emissions more efficiently than others:

DOING THE HEAVY LIFTING: Forests have been called the lungs of the Earth since trees take in carbon dioxide and pump out oxygen. All plants absorb carbon dioxide but trees really are the most effective due to their size and extensive root structures. According to the U.S. Department of Energy (DOE), the most effective species at generating negative emissions are trees which grow quickly and live a long time. The challenge is that these two traits are generally mutually exclusive.

PROPER FIT: The answer is to plant the right tree in the right place to ensure it can live a long, healthy life. Issues to consider are soil quality, site selection and the species. Thankfully, researchers at the Vineland Research and Innovation Centre here in Ontario have launched Greening the Canadian Landscape Program (greeningcanadianlandscape.ca). Based on their research in Ontario and Alberta, the program digs into soil remediation and species selection to make recommendations that maximize the odds of choosing the right tree for your location.

IN THE GARDEN: A native perennial garden is more sustainable by almost every measure when compared to a planting of annuals. Perennials have deeper roots that allow them to sequester more carbon in the soil by passing it along to mycorrhizae in exchange for nutrients. The mycorrhizae store the carbon in the soil as glomalin, which forms humus. No, not the kind you dip crackers in, but a soil component that is mostly carbon.

AROUND THE GARDEN: The larger shrubs and evergreens in your yard also help with negative emissions, especially for filtering particulate matter that contributes to human health concerns, such as asthma. Royal Horticulture Society (RHS) research in the U.K. found that yew and cotoneaster, two shrub species that are winter hardy and widely available in Southern Ontario, are remarkably well-suited for filtering particulate pollutants from nearby traffic. To maximize the benefit, they should be planted as a hedge, separating people from the source of pollution. Regular pruning produces a denser hedge with greater filtering.

IN YOUR HOME: The authoritative list for common indoor plants with maximum negative emissions is still the 1989 NASA Clean Air Study, a joint project between the National Aeronautics and Space Administration (NASA) and the Associated Landscape Contractors of America (ALCA). These plants were identified not only for their ability to absorb carbon dioxide, but also toxins such as benzene, formaldehyde and ammonia among others. Three easy-to-find species:

Spider plants, Peace lily and Draceana provide maximum negative emissions indoors. (MarkCullen.com)

- Spider Plant (Chlorophytum Comosum "Vittatum") Easy to grow and just as easy to propagate by the baby spider-plants it produces. Give it bright, indirect sunlight. Removes formaldehyde and xylene.

Draceana provides maximum negative emissions indoors, although its leaves can be harmful to pets who eat them. (MarkCullen.com)

- Dracaena (Draecena sp.) Available in more than 40 varieties. Be mindful of pets, however, as dracaena can be harmful if consumed. Removes benzene, formaldehyde, trichloroethylene and xylene.

The peace lily produces a unique flower while purifying the air. It can also tolerate low light. (MarkCullen.com)

- Peace Lily (Spathiphyllum sp.) They not only tolerate low light, they also produce a unique flower while purifying the air. Soil should be moist, without overwatering. Removes ammonia, benzene, formaldehyde and trichloroethylene.
  Many of the choices we make have an impact on the environment, from the cars we buy to the food we eat. When making decisions about the plants in our lives, we can choose the greater of benefits. This is the positive magic of negative emissions.

Bhut jolokia (ghost pepper) is one of the hottest peppers in the world. (Dreamstime)

QUESTION OF THE WEEK
Q: I’m growing ghost peppers from seed for the first time. The package recommends a heat mat under the seeding tray. Do I really need a heat mat?
A: Bhut jolokia (ghost pepper) is one of the hottest peppers in the world. The seeds require heat to germinate. I rely on a south-facing window. The heat from the sun will warm the soil and encourage germination. Ghost pepper seeds are very slow to germinate. Be patient and start them now.

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