

This could be an awesome year for fall foliage, expert says

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(PhysOrg.com) -- For more than 20 years, Marc Abrams has studied how precipitation and temperature influence the timing and intensity of fall foliage colors in Pennsylvania. Every year during that span, there was some factor -- extreme cold or heat, drought, too much rain or insect infestations -- that threatened the brilliant hues of the display.

However, this year, according to the professor of forest [ecology](#) and physiology in Penn State's College of Agricultural Sciences, there seems to be no reason the foliage will be anything less than spectacular.

"This is an unusual year because there doesn't seem to be anything to worry about that could negatively affect the foliage," he said. "Every other year there was always something that could dampen the colors in the display, but this year there is nothing on my radar. There are no

widespread, great stressors of trees, and we have had adequate [moisture](#) across the state through the growing season."

"2009 looks like the ideal year for Pennsylvania fall foliage," he said, "but a lot depends on what happens with the weather in the next few weeks, because a mild fall drought and cool-down seems to help the colors."

Most years the Keystone State's foliage display turns out to be characteristically awesome, Abrams conceded, despite factors that could dampen colors.

"That's because trees and forests are resilient," he said. "There is a lot of variation from one extreme condition to another, but most years they don't pose any real threat to the trees."

Abrams has found that the critical period influencing coloration in Pennsylvania runs from the middle of September to the second week of October.

"At that point, we need nice cool nights in the middle to high 30s -- but not a hard frost -- and bright sunny days," he said.

Cooler temperatures signal deciduous trees to stop producing chlorophyll, the green pigment responsible for photosynthesis, Abrams explained. Photosynthesis is the way plants trap light energy and convert it to sugars and starches, the food and building materials for plants.

As the chlorophyll breaks down and disappears, it unmask other leaf pigments. It's these other pigments -- called xanthophylls and carotenes -- that create the glowing yellows and oranges seen in the leaves of yellow poplar, hickory, sycamore, honey locust, birch, beech and certain maples. After chlorophyll production stops, trees also produce another

pigment in their leaves called anthocyanin. The anthocyanins create the brilliant reds seen in red maple, sassafras, sumac and black gum.

"Laboratory and greenhouse research indicates that more anthocyanin is produced when starch levels in the leaves are high," Abrams said.

"Because drought reduces photosynthetic rate -- which in turn decreases starch levels -- people generally believe that drought affects fall coloration in a negative manner, but it has to be a very prolonged and severe drought. We've had a number of summer droughts in the last 20 years, and as long as we get that nice cool-down period, starch levels have been adequate to produce good color."

One thing Abrams has found to be very detrimental to fall colors is a very warm late summer and early fall. "The trees get confused," he said. "They try to stay green longer to capture the longer growing season. This may be good for tree growth, but it's not good for peak coloration."

Provided by Pennsylvania State University ([news](#) : [web](#))

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