The hidden wonders of linden trees

Imagine holding in your hand one of the many wonders of nature

Aziz Inan
Guest Commentary

Two months ago, I was waiting at a bus stop in Beaverton when I was suddenly captivated by a twirling wing-shaped object smoothly descending down to the ground. "What is that?" I asked myself.

At first, I thought what landed there was some kind of flying bug.

However, as I observed it more closely I realized that it was motionless and looked like a yellowish-colored leaf. It was bent in the middle, had a stem extending straight out from the bent point, and four tiny small seeds at its other end.

The seeds belonged to the tree right next to the bus stop and apparently the leaf served as a parachute for them to spread. The whole thing seemed very delicate and fragile, but its landing on the ground was apparently successful because its physical structure seemed to be intact.

My curiosity was so much piqued by the amazing rotational air show that I had just witnessed that I decided to pick the leaf-seed unit up from the ground and further examine it. As I was holding it in my hand, I realized I had stumbled on one of the many wonders of nature: it was a naturally constructed helicopter-type flying machine, engineered by the tree standing right next to me.

What was this tree? How did it engineer such a fine flying machine? Before my bus arrived, I cautiously put the leaf in my coffee mug inside my lunch bag so it didn't get bumped or damaged. The seeds traveled with me on the bus to the University of Portland where I carefully took them out of the mug and saved them in my office drawer.

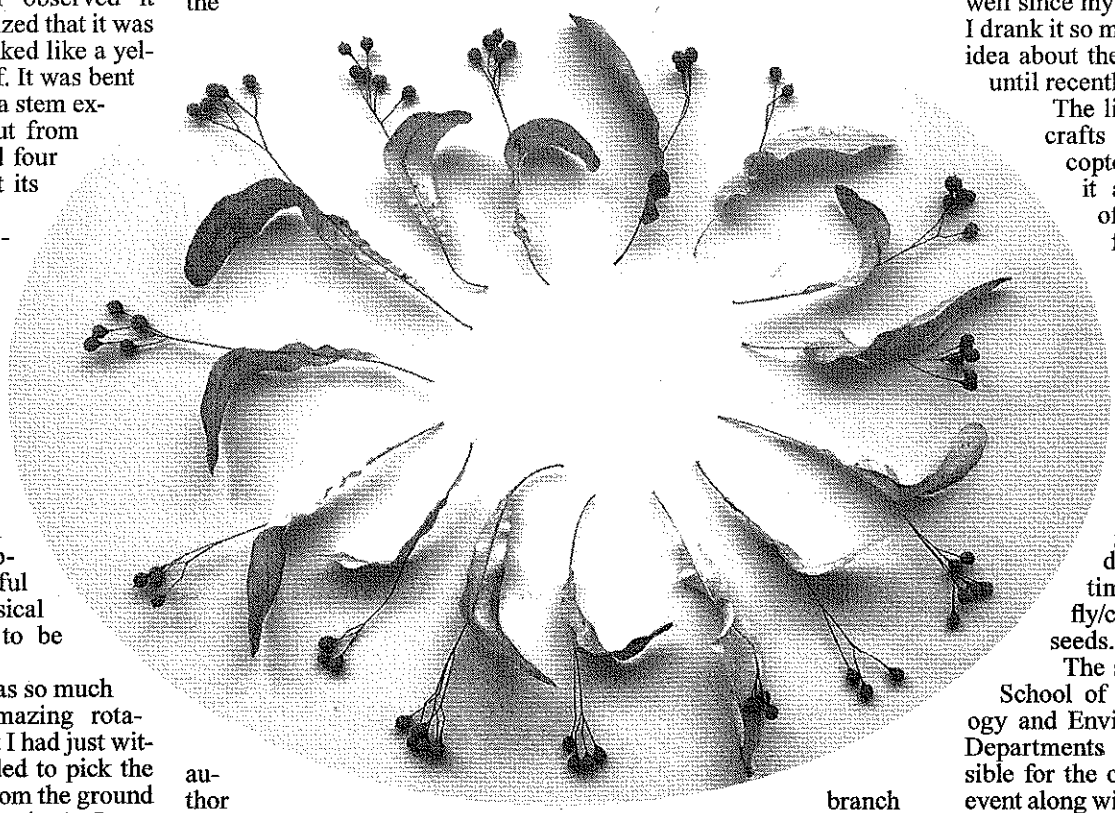
This started my journey into the world of traveling seeds, especially the ones that perform a spiraling flight.

Since that day, in my spare time I have been reading and researching plant seeds, specifically how and why some seeds travel.

It is a fascinating subject - and understanding its full spectrum requires background in basic sciences such as biology, chemistry, engineering, physics, you name it.

For example, I found a book titled "The Fly-Aways and Other Seed Travelers" by Francis Fultz written for younger readers published one hundred years ago in 1909.

In the preface of this book, the author states, "Seed distribution is not only interesting to children; to many grownups it is also a fascinating field for investigation."



Amazingly, I also bumped into some recently published articles about "helicopter" maple tree seeds ("whirlybirds") and the spiraling pattern in which they glide to the ground, which has delighted children for ages and puzzled engineers for decades. I learned that in order to reproduce, maple seeds must travel far enough away from the parent tree so that the young trees will not be shaded.

As maple seeds fall off the maple tree, their spinning rotation results in their being able to stay airborne long enough to be blown by the wind to a significant distance from the parent tree. Detailed performance studies recently conducted by engineers and scientists helped reveal the aerodynamic secrets of twirling maple seeds.

These studies could have unique applications in the aerospace industry, as well as helping to gain better understanding of hovering insects, bats and possibly birds.

As I continued my research, I still wondered about the identity of the tree at my bus stop which introduced me to this fascinating subject.

One day, I cut a small branch with leaves from that tree and brought it to the University of Portland to see if our veteran tree expert, Jim Wells, could help me determine the type of this tree. I was told that Jim was doing some yard work between Christie and Kenna Halls.

While I walked there with the tree branch in my hand, I was surprised to see multiple trees lined up in front of and across from Christie Hall which were indeed the same type trees I was trying to identify. When I showed Jim the tree branch, he immediately recognized the littleleaf linden tree.

I was so happy, for two reasons: not only did I now know my tree friend's name, but the same type of trees exist on our campus and I could watch more linden seeds parachute down these trees.

Later that evening, I kept thinking about the name "linden," I heard this before, but where? Suddenly, it dawned on me that linden herb tea must be created from the delicate flowers of this tree! Linden herb tea has been used in Europe for centuries to treat a wide range of health problems.

When I was growing up, my mom always used linden tea as a homemade medicine whenever someone in our family had a cold, cough, headache, fever, indigestion, vomiting, etc. Although I knew linden tea very well since my childhood because I drank it so many times, I had no idea about the tree it came from until recently.

The linden tree not only crafts an ingenious helicopter to fly its seeds, it also produces one of the most powerful flowers to cure people's illnesses.

One of my visions is to initiate an "Annual University of Portland Maple Seed Drop Day" event where interested students, faculty, staff, and visitors get together on that day around lunch time for ½ hour and fly/compete maple seeds.

The student societies of School of Engineering, Biology and Environmental Science Departments could be responsible for the organization of this event along with one faculty from each discipline. I propose the event to consist of three stages: 1) Short talks on how and why plant seeds travel; 2) Maple seed competition; and 3) Drop of a large number of maple seeds from some high elevation on campus and watch them helicopter down to the ground simultaneously.

Aziz Inan is a professor of electrical engineering. Photo courtesy of him