Risk Management: Plants Can Be More Rational than Animals

By Alex Berezow, PhD — October 17, 2016

Though we consider ourselves quite clever (*Homo sapiens* means "wise man"), humans are notoriously poor at risk perception.

As this [cartoon](https://www.acsh.org) cleverly illustrates, people get worked up over tiny threats, like Ebola, while ignoring much greater dangers like obesity and tobacco. People play the Mega Millions lottery even though they have a better chance of being struck by lightning, eaten by a shark, or murdered.

Other animals aren't any smarter. In a recent experiment, reported by *Science's* [news service](https://www.acsh.org), wolves were provided a choice: They could either pick to eat whatever was inside bowl #1 (which was always a bland food pellet) or bowl #2 (which was a tasty piece of meat half of the time or a rock the other half of the time). Despite the guaranteed nutritional benefit of bowl #1, the wolves preferred bowl #2 about 80% of the time. This type of "gambling" behavior is not particularly rational.

But when a similar experiment was performed in plants, these creatures -- which possess neither a brain nor a nervous system -- performed much better. Reporting in the journal *Current Biology*, a team of scientists showed that pea plants responded rationally to variations in nutrient supply.
Pea plants had half of their roots grown in a pot supplied with a constant stream of nutrients; the other half were grown in a pot with a variable nutrient supply. If the constant nutrient supply was sufficient, the plant focused its efforts on growing roots in that pot. If, on the other hand, the constant nutrient source was insufficient, the plant rolled the dice and grew more roots in the pot with a variable nutrient supply. This is in striking contrast to wolves, which prefer to gamble even if given a steady food supply.

Bernhard Schmid, in a commentary on this article also published in *Current Biology*, writes that plants' "information processing is generally slow and their decision-making not centralized" but that "sophisticated cognitive abilities are not required for decision-making." Furthermore, he notes that when "faced with a choice between constant and variable resource supply, [plants] make a rational decision for the option that maximizes fitness, a fact rarely observed in animals."

Of course, there are big differences between plants and animals. Plants are stationary, while animals can move around. Perhaps it is less risky, therefore, for an animal to gamble; if it loses, it simply can move on to another opportunity. That's not an option for plants.

Still, the implications of the research are intriguing. Indeed, it is humbling to be outwitted by a plant.

Sources