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The bold numbers on a plant food package represent the primary nutrients in your plant's growth and health: nitrogen (N), phosphorous (P) and potassium (K). Plants obtain NPK (and other nutrients) from the soil. Eventually, the nutrients are depleted and must be replaced. Understanding what each does and learning to recognize deficiencies will help you become a better gardener.

Nitrogen (N), the first number, is important for growth, especially leaves and stems. Plants deficient in nitrogen may appear stunted, and the leaves will be yellowish.

Phosphorus (P) strengthens the roots. Plants deficient in phosphorous usually have smaller leaves that may appear dark or purplish. Reddening stems and overall disappointing development may also result.

Potassium (K) is beneficial for overall plant vigor. Potassium improves immunity to disease and makes plants more tolerant of cold or dry spells. Potassium deficiency symptoms include small brownish spots on leaves and poor fruiting.

Because gardening needs vary, Osmocote® Smart-Release® Plant Food comes in multiple formulas. Outdoor & Indoor formula (pink label, 19-6-12) is well suited for annuals and container plants. The high phosphorous in Flower & Vegetable (green label, 14-14-14) makes it ideal for any situation where root growth is important, such as with perennials and vegetables. To learn more about Osmocote®, visit PlantersPlace.com.

science matters | understanding patents and trademarks



Golden Ruby barberry starts out red (left) and develops a yellow edge (right) over the summer. Its breeders protect their work with a patent and trademark.

bet that when you first walk in to a store, particularly a garden center, you're most interested in what's new. But just what does it take to bring a brand new plant cultivar to market?

The Plant Patent Act of 1930 was enacted to develop an incentive for plant breeders and the horticulture industry. In layman's terms, a plant patent legally protects the actual plant itself. This means no one can asexually propagate a patented plant (such as by cuttings or tissue culture) without permission; they need a license agreement from the patent owner. This applies to the wholesale end of the green industry and also means the home gardener who likes to dabble in propagation cannot legally reproduce the plant.

As with any other patented invention, the patent owner receives a royalty on all sales. In the plant world, royalties are collected on the


amount of plants sold or propagated. Rates vary depending on the type of plant. They range from around a quarter for a perennial, shrub or evergreen and fifty cents to more than a dollar for a tree.

Protected plants are identified in several ways, including by abbreviations that follow the cultivar name: PAF or PPAF (Patent or Plant Patent Applied For) or PP followed by the patent number. A plant patent has a life span of 20 years. It is not renewable and once it expires, the patented variety is available to anyone. It only provides protection rights within the United States.

Patenting can be a long, expensive process, especially when there are no guarantees that the gardening public will take to the new plant. It can take 10, 20 or 30 years or more to select, evaluate, test and multiply a plant until suitable numbers of it are ready for marketing and sale.

An alternative or additional recognition available to plantsmen is the trademark. Unlike a patent, which protects the plant, a trademark protects its name. It lasts for 10 years and can be renewed for subsequent 10-year periods indefinitely. If a trademark is associated with a plant or group of plants that are not patented, they can be asexually reproduced without a license agreement. However, without a license you are unable to use the trademark in conjunction with that particular plant. In other words, you can only sell it by its cultivar name, which is usually not as well recognized as the trademark. Cultivar names cannot be trademarked.

A federally registered trademark is identified by an R within a circle. You may also see a ™ used, which means the name has been claimed but not officially registered with the US Patent and Trademark Office. It may also represent a state-issued trademark.

For example, take Golden Ruby™ dwarf variegated barberry, or *Berberis thunbergii* 'Goruzam' PP 16203. That number shows that the plant is patented. Its trademark name is Golden Ruby. A seller would need permission to propagate it. When the patent expires, anyone can propagate it, but they will have to sell it as 'Goruzam', not Golden Ruby, unless they obtain permission to use the trademark name. 

MARIA ZAMPINI is president of Lake County New Plants, an Ohio-based company.

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