

Sometimes It's Good To Be Left In The Dark

Volm's light-blocking bags are proven to extend shelf life.



HALF-N-HALF®

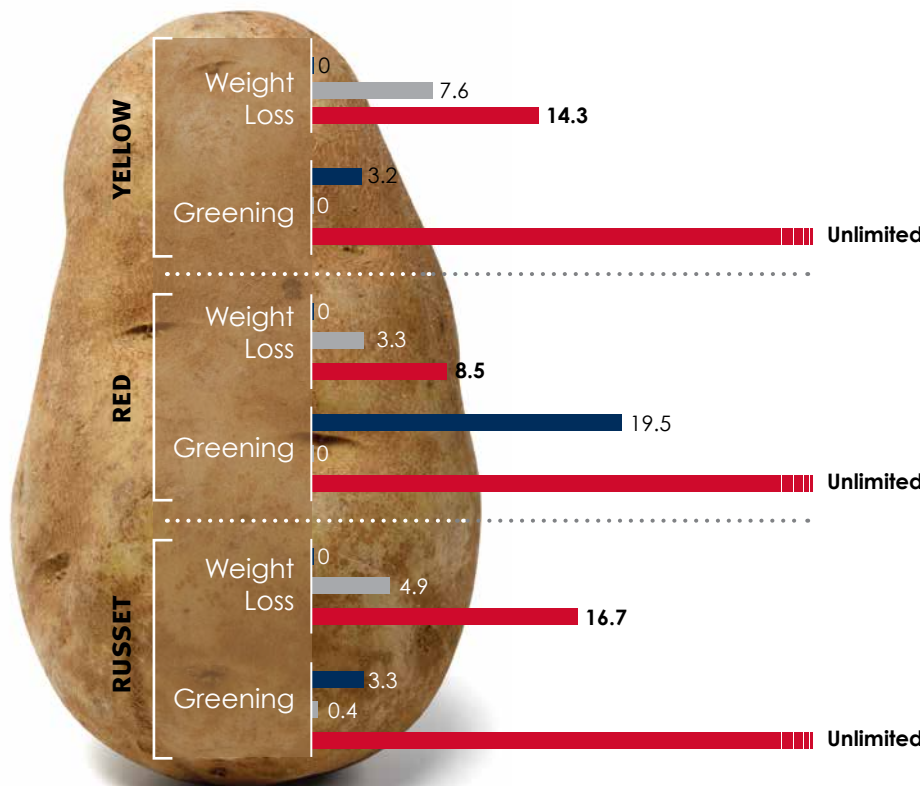


Volm recently engaged the Michigan State University School of Packaging with the purpose of researching the best bag to prolong potato shelf life during retail storage. Our bags were analyzed and evaluated by measuring thickness and light transmission, while shelf life was measured by monitoring physio-chemical changes in the potatoes. Yellow, Red and Russet potato varieties were stored over a period of several weeks (4 or 6 depending on the bag type) under controlled conditions of 22.5° C and 40% relative humidity with exposure to fluorescent light.

About Michigan State University School of Packaging:
 Throughout more than five decades of development, the MSU School of Packaging has built significant research expertise and earned national and international recognition in physical distribution and protective packaging. The school is known as a leader in the areas of permeability and migration, shelf life, food packaging, product/package compatibility, tamper evidence and legibility.

Volm Light-Blocker Half-N-Half® Bags Extend Shelf Life

Estimated days of shelf life extension determined by the quality parameters of weight loss* and greening.**



Bag Types

- Paper (with venting)
- All Poly (traditional printing with front and back punches)
- Light Blocker Half-N-Half (no punches)

Volm Light-Blocker Half-N-Half bags extend shelf life by 12 to 17 days over traditional poly and paper bags for Russet potatoes on the measurement of weight loss.

When measured by greening, the shelf life extension was unlimited with the Light Blocker Half-N-Half bags versus traditional poly and paper bags for Yellow, Red and Russet potato varieties.

Light Blocker Half-N-Half bags block greater than 99.5% of all visible and ultraviolet light.

* Shelf life extension in terms of weight loss was estimated by the number of days it took the potatoes to reach 5% weight loss.

** Shelf life extension in terms of greening was estimated by the number of days it took for the potatoes to show 25% of greening.

How Do Good Potatoes Go Bad?

Shelf life of potatoes was monitored during storage by measuring color, weight loss, firmness, scent, sprouting and microbial growth.

GENERAL CONCLUSIONS:



GREENING

Colorimetry, visual inspection and chlorophyll content were used to quantify greening.

Results in this category were of the most significance to determining the bags with the greatest ability to extend shelf life.



WEIGHT LOSS

Weight loss is also related to light exposure since it increases temperature and thereby moisture/weight loss.



TEXTURE

Loss of firmness is also related to moisture loss and bag type.



SCENT, SPROUTING & MICROBIAL GROWTH

No scent was detected during the study.

Although the number of sprouts did increase over time, it was independent of bag type.

Microbial growth was eventually present, but was also independent of bag type.

From Farm To Cart

In today's typical "farm-to-cart" process, exposure to light is the primary cause of potato greening.

Light exposure at each stage is indicated by number of suns.



Harvest



Cool/Dry/Heal/Storage



Prep/Package



Ship/Warehouse



On the Shelf

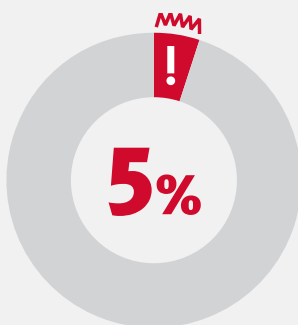


Purchase/Home

Since most light exposure occurs at prep and beyond, the right packaging makes all the difference.

Did You Know...?

If a potato is more than 5% green, the USDA considers it damaged and less than US Grade #1.



12 HOURS

Fluorescent lighting in grocery stores can induce potato greening in as little as 12 hours depending on the potato variety, light transmission rate of the packaging materials, humidity and temperature.

Solanine is a naturally occurring substance that occurs at greater levels in potatoes that have greened. The greener the potato, the more likely it is to contain high concentrations of solanine.

The FDA limits solanine content in commercially grown potatoes	no more than 20mg / 100g of potatoes
While highly unlikely, a high dose of solanine can cause severe gastrointestinal distress and neurological symptoms	usually in excess of 25mg / 1kg of body weight

From Design to Delivery—the Volm Difference. Volm offers a complete catalog of standard bags and packaging, mesh fabric products, and more. We also have the ability to tailor our offerings to meet whatever specifications our customers demand.

But there's more to Volm than that. And it comes from our long heritage of partnership with our customers. Our singular goal is to be recognized as your complete design, equipment and consumables supplier: **Your Most Valued Partner.**