

The Brix Movement - Growing For Quality



One of the basic problems of the day is convincing consumers as to the true value of quality produce. Not all crops are of the same quality in terms of flavors, nutrient density and their inherent health benefits.

Despite what many producers want you to think, not every food of the same variety has the same flavors or nutrient density. The standard nutrient charts for individual foods do not work because the nutritional analysis differs so greatly depending on the growing conditions of each crop. It is therefore fair to say that the true value of the crops that we buy should reflect the crops quality. We should certainly resist purchasing food based on how pretty it looks as a result of being sprayed with chemicals.

This is a desperately important issue for both farmers and consumers in order for there to be an economical reward for the farmers that spend the extra money in paying for the more quality fertilizers and the extra time learning and practicing fertility and farm management techniques that raise quality. At present, the greatest rewards are for farmers that can grow the highest yields on the smallest budget. This is a dire situation that leads to consumers purchasing and eating substandard foods that will obviously lead to a decrease in our population's health levels.

There is a movement however that advocates a very simple method for producers and consumer to measure the quality of their foods so that they can make informed decisions about the amount of money they are spending on produce versus the quality. For the consumers that use this method, they are empowered to measure quality and for the producer it would bring in far more demand and therefore justify the extra time needed to grow for quality, rather than getting high yields as cheaply as possible. This movement has been going for over 30 years, ever since being popularized by the late Dr Carey Reams. The method has been used almost religiously by a small niche group of farmers and consumers that have been using a simple handheld device known as a Refractometer to do just that - measure their foods quality. This movement is "The Brix Movement".

The Refractometer:

The Refractometer works by measuring the amount of light refracted by juices squeezed from a given crop. Light is refracted in juices by the quantity of dissolved solids, these include natural sugars (mainly Fructose) Vitamins, Minerals, Carbohydrates, Enzymes, Amino Acids, Nucleic Acids, Proteins and other dissolved solids. The premise is therefore that the more light refracted by the juices, the more nutrients and flavor the plant put into the crop, and therefore the better the quality.



The Refractometer measures in degrees Brix (or just Brix) and is named after the man who came up with the scale, Adolph Brix. The Brix scale is calibrated so that each degree Brix represents a 1% increase, by weight of, Sucrose in pure water at 25° Celsius. So a 100 gram standard solution of Sucrose (table sugar) in pure water measuring 10% Brix, represents 10 grams of Sucrose and 90 grams of water. Even though a Refractometer is calibrated this way, the Refractometer measures any dissolved solid in the solution that will bend light.

The method is simple, a few drops of juice is squeezed from the food that you are testing using a garlic press or similar device and then placed on the prism of the Refractometer. If you have a

handheld Refractometer you simply look through the eye piece and read where the line is and it will tell you the Brix reading. If you have a digital Refractometer, you simply calibrate the Refractometer using distilled water, and press a button to have it analyze the sample and give a Brix readout.

Wine growers have been using Refractometer as a standardized piece of equipment for many years to test the quality of grapes. Indeed a good wine year can be predicted by the Brix readings taken from the grapes at the time of harvest. The Refractometer is also used by ketchup companies that will pay based on Brix levels. A 3 Brix tomato will receive a lower premium than a 9 Brix tomato. This is a typical Brix range within tomatoes. One of the greatest victories for the movement is its usage by the Florida USDA to grade the quality of Oranges. Oranges are tested using an Acid:Brix ratio. The lower the concentration of acids and higher the Brix reading, the better food grading the Orange gets. Farmers are paid a nice premium if there Oranges are of high Brix content. The latest news is that Cranberry juice companies have also begun paying a premium to growers who produce high Brix.

Impact on agriculture.

The great thing that Brix measuring is doing is changing the way producers grow their plants. Previously there has been no quick and simple way to instantly measure a plants quality, so there was no way to monitor how soil and fertilizer amendments were affecting the quality and taste of the foods. Through experimentation, growers have found that increased phosphate and calcium levels are of the upmost importance for increasing Brix levels. So too is changing the types of fertilizers being applied throughout the growing season.

Also, because sugars and other nutrients are converted in the “photosynthesis factory”, or the leaf, it is no surprise that growers have found that the practice of foliar feeding to dramatically increase the Brix levels in plants that follow a regular foliar fertilizer regiment. This is why I started my own liquid fertilizer company, because of the Brix increases found using quality foliar sprays.

Foliar fertilizing is the art of spraying the leaves of plants so that the plant nutrients are absorbed directly into the leaves of the plant. The mineral ions from the foliar fertilizer penetrate the leaves through the stomata and cuticles to reach the interior of the leaves. The nutrients then become available for absorption by the Mesophyll cells and utilized by the plant as food.

The Refractometer also is a great way of telling if a foliar fertilizer has been affective. Simply squeeze the juice from the leaf of a crop before spraying and then test the Brix level. Then after spraying the leaves, wait a 2-3 hours and then do another Brix test. A change indicates the foliar application has been successful. If the Brix does not change then you know that adjustments need to be made. Maybe spray a finer mist, spray later in the day when it is cooler and the stomata is open or use an adjuvant to help the mixture stick to and absorb into the leaves. There are quite a few changes that can be made.

Another impact it is having is by changing the Organics movement which shares the same beliefs in agricultures sustainability and foods quality as a Brix grower. Of course Organics has been a tremendous movement because it has a guaranteed a premium paid to growers who have avoided cheap and detrimental agriculture practices. However, just because something is organic, does not guarantee a high Brix quality product. In fact dumping huge amounts of organic materials can be detrimental to crops Brix levels as it can destroy the ratios of crop nutrients needed to make high Brix. There has to be proper nutrient management to obtain high Brix and it is organic growers that are embracing the Brix movement.

Drawbacks.

The greatest drawback of measuring Brix using a Refractometer is that it doesn't distinguish between the myriad of dissolved solids that will affect the refractive index of the juices. I like to compare this to the way that a set of scales does not distinguish between muscle, fat, water bone density when telling you your weight. When used in conjunction with other knowledge of the person being weighed, a set of scales do give us an excellent idea of how healthy the person is. This principle is the same with a Refractometer. The Refractometer will provide an estimate of quality when measured between foods of the same variety and size. You will know for example that if you choose two grapefruits of the same variety and of the same size, and find a 7 Brix reading in one and a 12 Brix reading in the other, that the latter is going to taste far better. Go ahead, experiment for yourself.

The Brix movement has remained relatively small for many years but is gaining momentum because consumers can clearly taste the difference in crops that have higher Brix readings. A conspiracy theorist may say that it has remained small because the large scale farmers, fertilizer companies and resellers would all suffer if Brix testing entered the mainstream, so they have made sure not to popularize its usage. If it did become mainstream however, they would be forced to start producing and selling higher Brix rather than passing off and selling poor quality produce to the masses. They would benefit if they were willing to make the changes necessary.

Another reason the movement has remained small is because of the lack of University studies that are willing to corroborate that higher Brix levels correlate to higher nutrient densities, something that smaller independent soil labs have been doing for a long time. This would make a great research project for university food testing and soil testing labs.

In the meantime, until growing high Brix catches on, the best way to ensure that you get high Brix produce is to grow your own. Your health and your taste bud's will thank you for it.

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