



Mini Review

Volume 1 Issue 3 - April 2018  
DOI: 10.19080/JOJHA.2018.01.555561

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# New Trends in International Vegetables and Small Farm Production



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Submission: March 19, 2018; Published: April 10, 2018

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**Keywords:** Lagenaria siceraria; Momordica charantia; Praecitrullus fistulosus; Cucurbitaceae; Tinda

## Introduction

The number of International citizens from Asian, Indian, African, Middle Eastern and Caribbean countries now residing in various locations in the U.S. has grown. These new residents desire their traditional vegetables which are not typically grown in the United States. Vegetable farmers and producers, especially in the southern states are small and struggling to remain viable, they need to create and identify new markets to increase their income. At Tennessee State University we have been researching these alternative niche vegetables and working with small and limited producers state wide with trying to develop new markets to increase income opportunities. I believe we can bridge this gap for the small producers with growing International Vegetables. Over the past few years, we have been producing various varieties of Lagenaria siceraria "Bottle Gourd"; Momordica charantia "Bitter Melon"; and Praecitrullus fistulosus, "Tinda". All these vegetables are in Cucurbitaceae family. Bitter Melon, Bottle Gourd and Tinda have been identified to contain herbal/medicinal properties for assisting with reducing inflammation, reduction of blood pressure, provide anti-anxiety effects and diabetes prevention in some individuals who consumer these vegetables. These vegetables are highly nutritional, tasty and low in calories, which could assist in fighting obesity in America where we presently rank number 1 world-wide in the Top 10 industrialized countries and 9th in the Top 10 of all countries (33.9%) and Tennessee ranks 9th in the nation at 30.8%.

In the spring of 2013, we started growing Lagenaria siceraria "Bottle and Calabash Gourds", Momordica charantia "Bitter Melon" and Praecitrullus fistulosus "Tinda" was added in 2014 to our field test trials for evaluating for growth and production of International vegetable varieties in Tennessee. Tennessee has a large immigrant population from Middle East, Africa, Asia and India, these communities desire fresh vegetables native to their

areas. However, the local groceries and markets do not carry these vegetables and in the local International stores consumers don't know how fresh these vegetables are since the shelf life of these fresh vegetables are very short. Many of these are at the end of their shelf life, when they arrive at these stores.

Tennessee small farms as in most of the Southern States are seeing a decline, Tennessee has approximately 68,050 in 2012 according to USDA Censes and 70% of Tennessee small farms had annual sales less than \$10,000 according to the Tennessee Department of Agriculture, therefore we see bridging the small farmer with international vegetable sales in Tennessee, as a win-win situation and for other southern states and growers Figure 1.



Figure 1: Bitter Melon leaves.

Momordica charantia, Bitter Melon (fruit and leaves) has been used as an herbal medicine/supplement in Asia, Africa and India countries. The benefit from Bitter Melon consumption

is to relieve diabetes, digestive problems, as a laxative, heart problems, anti-cancer properties, anti-aging, skin infections, regulates blood flow, respiratory diseases, wounds, gout, ulcers, rheumatism and slows hair greying. When consumed in juice or raw form, Bitter Melon can lower blood glucose levels but does not significantly decrease fasting blood glucose levels or A1C, when taken in a capsule or table form (Ooi, Yassin, and Hamid, 2012). However, once the India variety is harvested from the plant, the shelf life is limited to 3 to 5 days. Popular varieties include Chinese and India; the Chinese variety has smooth skin and is not as bitter as the India variety with a bumpy texture. However, from our research the Chinese variety has a longer shelf life on the vine and after harvested is averaging up to a week longer Figure 2.



**Figure 2 :** Bottle Gourd leaves.

*Lagenaria siceraria*, Bottle Gourd have an exceptional healing health benefits, especially on high blood pressure, heart disease, liver functions, when mixed with lime juice relieves the burning sensation in the urinary passages. Bottle gourd must be cooked before consumption. The juice of bottle gourd is extremely popular for weight loss. This South Asian squash is indeed bottle shaped, light green and long. The flesh inside is spongy and you can also cut it into small pieces and make a curry out of it. Bottle gourd or Lauki is over 90% water therefore, it is easy to digest. Traditional Indian medicine recommends cooked Lauki or bottle gourd for better digestion. It is cooling, calming, diuretic and anti-bilious. Like cranberries, bottle gourd or Lauki supports the urinary system of our body by reducing burning sensation from high acidic urination. It also reduces the chances of urinary infection because it is alkalizing and has a diuretic effect. Bottle gourd contains many vitamins and minerals, such as, calcium, magnesium, phosphorus, Vitamin A, C and folate. Bottle gourd is extremely popular for reducing high blood pressure and keeping your heart healthy and combat excessive thirst in diabetic patients and supports healthy digestion and combats flatulence and combats constipation. In traditional Indian medicine Bottle Gourd was used in the prevention of premature greying of the hair. With a pinch of sea salt it maintains the electrolyte

balance in the body and a remedy for diarrhea and reduces liver inflammation Figure 3.



**Figure 3 :** Tinda plant.

*Praecitrullus fistulosus*, also known as Tinda is a famous vegetable of South Asia, known as apple gourd, Indian baby pumpkin and Indian round gourd. Tinda is a light summer vegetable which is low in calories and a great source of thiamine, niacin, riboflavin, fiber, carbohydrates and energy. The health benefits of Tinda; breast and prostate cancer; heart healthy-low calorie and regulates your cholesterol and blood pressure. Tinda can also assist in weight loss and digestion, Tinda is alkaline in nature which regulates digestion and prevents constipation and acid formation in the stomach. Tinda contains carotene which slows down aging symptoms wrinkles, fine lines and remove acne scars and blemishes.

(Raw data) 2016 production for field and greenhouse Bitter Melon produced, excluding fruit which was under developed or over developed, was 1,455 and the overall weight was 388.55 pounds/176,243.43 grams from 60 plants outside (30 plants per row) and 24 plants greenhouse (42 India and 42 Chinese varieties, total of 84 plants). The India varieties produces 780 pieces of fruit and the Chinese variety produced 675 pieces of fruit. However, the Chinese variety produced heavier fruit (average 158.008 per grams) over the India variety (average 89.215 per grams). With Bitter Melon priced between \$3 and \$4.50 a pound from 60 plants a producer would have made between \$1,165.65 and \$1,748.48, therefore, if a small producer planted around 20 rows, his profit would be close to \$18,000, depending on the cost per pound and the limited amount of produce, the profit margin could be quite prosperous.

These vegetables are not new to the International communities; they are new to mainstream American citizens and to the vegetable farming/producers. In healthy individuals, those struggling with obesity and in people who are trying to make better food choices, these vegetables could assist in disease prevention, obesity and provide an alternative selection from traditional vegetables. While providing an alternative market to producers to increase their incomes.



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DOI: [10.19080/JOJHA.2018.01.555561](https://doi.org/10.19080/JOJHA.2018.01.555561)

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