



# Ethnic Vegetables: Asian

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## Introduction

Asian vegetables are generally those vegetable crops originating from East Asia (China, Japan, and Korea) and Southeast Asia (Vietnam, Laos, the Philippines, Thailand, Indonesia, and Myanmar). They may also include crops of South Asia (India and Pakistan). While often referred to as “oriental” vegetables, the term “Asian” is preferred. A number of these Asian crops have been successfully grown and marketed in Kentucky.

## Marketing

Growers must be careful to identify specific markets even before ordering seed. The type of market dictates which crops will be grown and what special cultural or post-harvest practices will be required. Determining what the customer wants is especially critical in finding niche markets for Asian vegetables, as different ethnic groups may prefer different sizes, colors, maturity level, and other characteristics of the same vegetable.

One of the challenges of marketing Asian vegetables is presenting the crop in the correct language(s) for Asian buyers. Crop names may vary by language. Knowledge of the prospective customers’ language and dietary preferences will definitely be an asset in marketing Asian crops. For non-Asian customers, it is important to provide preparation instructions and recipes for ethnic vegetables.

Traditional Asian vegetables can be sold at farmers markets, at roadside stands, to specialty groceries, and to upscale supermarkets. Restaurants, particularly those specializing in Asian or vegetarian dishes, may also be interested in purchasing fresh, locally grown Asian vegetables. Growers could consider adding Asian produce, as well as other specialty vegetables, to a community supported agriculture (CSA)



BOK CHOY

or U-Pick mix. The U-Pick market is particularly strong because the different ethnic groups can select the crop at the stage they want it. Some growers have successfully marketed Asian vegetables directly to ethnic neighborhoods in large cities. Knowing what the prospective customer wants is vital; this includes the preferred stage of maturity, which can differ between various groups of consumers.

## Market Outlook

The demand for ethnic and specialty vegetables is rapidly increasing in the U.S., with Asian vegetables as one of the most popular specialty groups. A larger ethnic Asian population, coupled with a more health-conscious public and the American consumer’s desire for more variety in their diet, continues to fuel this trend. Ethnic cuisine is also desired by restaurateurs and foodservice operators.

Ethnic Asian cuisine, including herbs and breakfast food, appeared at or near the top of several categories in the National Restaurant Association’s 2018 list of top restaurant trends.



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A relatively small volume of each vegetable type is in demand at any one time or place, so this market can easily become saturated. To guard against this, the grower should understand the local market demand and cultivate crops that meet that demand in one or more ways. Kentucky growers could potentially discover local market niches for dozens of Asian vegetables. Freshness of produce is one key to gaining the Asian vegetable market. Local growers may have an advantage over distant producers when marketing niche crops that are often highly perishable.

## Production considerations

### *Potential crops*

Currently, the most frequently grown Asian vegetables in Kentucky are bok choy (a non-heading Chinese cabbage), daikon (Japanese white radish), Asian eggplant, edamame (edible soybeans), and Asian greens. Kabocha squash (Japanese pumpkin) has performed well in University of Kentucky variety trials. Kabocha was also well-received by both Asian and Caucasian customers in a 2004 UK marketing research study. Kentucky consumers have shown interest in celtuce (asparagus lettuce), chayote, garlic chives, and wax gourd. Other crops with potential include asparagus bean (yardlong bean), bitter melon, pea shoots, Chinese broccoli (or kailan), heading types of Chinese cabbage, Japanese greens, and other Asian greens in the Brassica genus including tatsoi. Refer to the table for the common and botanical names of these and other potential crops. Prospective growers should investigate which crops may be suitable for their area and determine the market interest before production.

### *Site selection and planting*

Many Asian vegetable crops belong to botanical families that are well-known to the Kentucky grower, such as cucurbits, crucifers (cole crops), and legumes. Some ethnic vegetables are merely a different subspecies or variety of their western counterparts. Cultural requirements for these closely related crops are often very similar to traditional vegetable crops. Nevertheless, growers may need to rely on their own on-farm trials to identify the best production methods for these specialty crops.

In general, choose a site that is well-drained and warms up quickly in the spring. Avoid low-lying fields that are subject to late frosts and high humidity. Cold-sensitive crops should not be planted until all danger of frost has passed and the soil has warmed sufficiently. Transplants can be grown in a greenhouse or hotbed, both for direct sales or on-farm use.



YARDLONG BEANS

Some crops require a continuous supply of moisture, especially during fruit-set and development. UK research has reported greater yields, increased earliness, and a cleaner harvest when growing most vegetable crops on raised beds with black plastic and drip irrigation. The moisture levels under the plastic must be carefully monitored when using this system.

Some Asian vegetables are suitable for successive plantings, allowing the grower to produce as many as three cropping sequences on the same land. Less land is required with successive plantings and more crops can be produced annually. For example, bok choy planted in early spring can be harvested in time for a summer planting of yardlong beans, which in turn can be followed by daikon radishes or Asian greens in early fall. Potentially higher returns for specialty vegetables often justify the more intensive production methods and exacting management practices that may be required. Asian greens have also been grown successfully in high tunnels in Kentucky for earlier or later harvests in Spring and Fall.

### *Pest management*

Disease and insect pressure for Asian vegetables can vary depending on the crop, the cultivar, and the season. Chemical control methods may be limited since few pesticides are registered for many specialty crops. Integrated pest management (IPM) strategies, including frequent scouting to monitor pests, may be needed to prevent or reduce losses. Bt is a microbial insecticide that can be used for effective pest control on a number of

Asian vegetable crops to control larvae of lepidopterous pests (immature stages of moths and butterflies). Some Bt products can also be used in organic production, but check with your certifying agency before purchasing and applying anything. Controlling weeds, following a good rotation system, and the use of beneficial insects can aid in pest control.

### *Harvest and storage*

Freshness is the key in marketing Asian vegetables; therefore they should be harvested at their peak. Limiting the market radius to easy traveling distance will help ensure the freshest specialty produce. Little storage time is needed for crops to be sold within a few days of harvest. Asian greens and Chinese cabbage can be stored for several weeks at the proper temperature and relative humidity. These crops are usually vacuum-cooled or cooled with cold water (hydrocooled); although forced-air and room cooling can also be used. Small growers can make use of walk-in coolers or use rooms cooled with air conditioners controlled by a device such as CoolBot®.

### *Labor requirements*

Many Asian vegetables are produced using methods similar to comparable vegetables already grown in Kentucky. Producers can refer to Center for Crop Diversification crop profiles to estimate labor requirements for these specific vegetables. Plasticulture will add eight to 10 hours more per acre for the removal and disposal of the plastic.

A producer often begins with small amounts of a new crop for a niche market. Small amounts of Asian vegetables can potentially be added to existing plots using similar cultural techniques. This could help minimize additional labor requirements.

## **Economic considerations**

Initial investments include land preparation and purchase of seed or transplants. Producers need to closely manage costs of key inputs, especially seed, when producing specialty vegetables. Seed for some Asian vegetables can be more expensive, so purchasing a variety that does not meet a customer's preference can be a costly miscalculation. Additional costs are incurred with

the installation of an irrigation system and plastic mulch. Returns over total costs for small-scale vegetable crops such as lettuce and eggplant may begin at about \$80 over total costs for a 100-foot by 4-foot bed. Returns for high-quality ethnic Asian greens and eggplant can approach or exceed a \$200 return over total costs per 400-square foot bed. Returns for specialty ethnic herbs and greens may be potentially greater per square foot.

Pricing a new or specialty crop is also a key consideration. Producers should access available wholesale and retail market prices for Asian vegetables to determine what price the market can bear. Wholesale prices for many Asian vegetables are reported daily or weekly through the USDA Agricultural Marketing Service (AMS) in their Fruit and Vegetable Market News. Visiting Asian food stores or specialty grocers can also provide producers with an idea of what prices to ask for specialty crops.



DAIKON RADISH

## **Selected Resources**

- Growing and Marketing Chinese Vegetables in Central Kentucky (University of Kentucky, 1996) <http://www.hort.purdue.edu/newcrop/proceedings1996/v3-496.html>
- Marketing Asian Produce (University of Kentucky, 2014) <http://www.uky.edu/ccd/sites/www.uky.edu/ccd/files/asianmarket.pdf>
- Vegetable Production Guide for Commercial Growers, ID-36 (University of Kentucky) <http://www2.ca.uky.edu/agcomm/pubs/ID/ID36/ID36.pdf>
- “Winter Squash Variety Evaluation” (University of Kentucky Fruit and Vegetable Research Report PR-706, pp. 23-25, 2015) <http://www2.ca.uky.edu/agc/pubs/PR/PR706/PR706.pdf>
- “2017 Vegetable and Melon Budgets (Small Scale) <http://www.uky.edu/ccd/sites/www.uky.edu/ccd/files/2017vegmelonsmallscale.xlsx>
- Asian Vegetables (Midwest Vegetable Production Guide for Commercial Growers 2018) <https://ag.purdue.edu/btny/midwest-vegetable-guide/Pages/default.aspx>
- Chinese Cabbage and Related Oriental Crops, C-809 (University of Georgia, 1999) 5.19 MB file <http://newhanover.ces.ncsu.edu/files/library/65/chinese%20veggies.pdf>

- Fruit and Vegetable Market News (USDA Agricultural Marketing Service) <http://www.ams.usda.gov/AMSV1.0/FVMarketNews>
- Asian Vegetables (University of California Small Farm Program, 2013) [http://sfp.ucdavis.edu/crops/Asian\\_Vegetables/](http://sfp.ucdavis.edu/crops/Asian_Vegetables/)
- Specialty Vegetables (ATTRA, 2002) <https://attra.ncat.org/attra-pub/summaries/summary.php?pub=36>
- World Crops (Rutgers University, University of Massachusetts, and Cornell Cooperative Extension Services ) <http://www.worldcrops.org/>

*In print*

- *Vegetables in South-East Asia*. G.A.C. Herklots. 1972. George Allen & Unwin Ltd.: Hong Kong. 525 pp.

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TABLE 1. SELECTED POTENTIAL ASIAN CROPS FOR KENTUCKY PRODUCERS.

Common Name	Botanical Name	Family Name	Parts Used/Eaten	Alternate Names
Adzuki bean	<i>Phaseolus angularis</i>	Fabaceae	seeds	azuki bean
Amaranth	<i>Amaranthus</i> spp.	Amaranthaceae	leaves	leafy amaranth, vegetable amaranth
Basella	<i>Basella rubra</i>	Basellaceae	leaves	malabar spinach, climbing spinach
Bitter melon	<i>Momordica charantia</i>	Cucurbitaceae	immature fruit	Chinese bitter melon
Bok choy (boc choy)	<i>Brassica rapa</i> ( <i>Chinensis</i> group); <i>B. campestris</i> ; <i>B. chinensis</i>	Brassicaceae	leaves	non-heading Chinese cabbage, pak choy, celery cabbage, Chinese chard cabbage
Bottle gourd	<i>Lagenaria siceraria</i>	Cucurbitaceae	fruit	calabash, white-flowered gourd, long squash
Broccoli, Chinese	<i>Brassica oleracea</i> var. <i>alboglabra</i>	Brassicaceae	flower buds, stems, leaves	gai-lan, Chinese kale
Celtuce	<i>Lactuca sativa</i> var. <i>augustan</i>	Asteraceae	stem, leaves	asparagus lettuce, stem lettuce
Chayote	<i>Sedum edule</i>	Cucurbitaceae	fruit, shoots, leaves	vegetable pear, pear squash
Chrysanthemum greens	<i>Chrysanthemum coronarium</i>	Asteraceae	leaves, flowers	garland chrysanthemum, chop suey greens
Daikon radish	<i>Raphanus sativus</i> var. <i>longipinnatus</i>	Brassicaceae	roots	Japanese white radish, Chinese radish
Edamame	<i>Glycines max</i>	Fabaceae	Pods	edible green vegetable soybeans
Eggplant, Asian	<i>Solanum melonigena</i> var. <i>esculentum</i> ; <i>S. melonigera</i>	Solanaceae	fruit	Japanese eggplant
Fuzzy melon	<i>Benincasa hispida</i> var. <i>chieh-gua</i>	Cucurbitaceae	immature fruit	hairy melon, fuzzy gourd
Garlic chives	<i>Allium tuberosum</i>	Amaryllidaceae	greens, flowers, flower stems, bulbs	Chinese chives

TABLE 1 (CONT'D). SELECTED POTENTIAL ASIAN CROPS FOR KENTUCKY PRODUCERS.

Common Name	Botanical Name	Family Name	Parts Used/Eaten	Alternate Names
Kabocha	<i>Cucurbita maxima</i>	Cucurbitaceae	fruit	Japanese squash, Japanese pumpkin
Luffa	<i>Luffa acutangula</i>	Cucurbitaceae	fruit	Chinese okra
Mung bean	<i>Phaseolus aureus</i> <i>Vignus radiata</i>	Fabaceae	seeds, sprouts	
Mustard greens	<i>Brassica juncea</i>	Brassicaceae	greens, stem, root	Chinese mustard greens, gai choy
Napa (Nappa)	<i>Brassica rapa</i> var. <i>pekinensis</i> ; <i>B. campestris</i>	Brassicaceae	leaves	heading Chinese cabbage
Parsley, Chinese	<i>Coriander sativum</i>	Apiaceae	leaves	cilantro
Peas, snow	<i>Pisum sativum</i> var. <i>macrocarpon</i> <i>P. sativum</i>	Fabaceae	pods	Chinese peas
Pea shoots	<i>Pisium sativum</i>	Fabaceae	sprouts	
Pepper, Thai hot	<i>Capsicum frutescens</i>	Solanaceae	fruit	Thai chili pepper
Tatsoi	<i>Brassica rapa</i>	Brassicaceae	leaves for greens	rosette bok choy, spoon cabbage
Turnip	<i>Brassica rapa</i> var. <i>rapifera</i>	Brassicaceae	roots	
Wax gourd	<i>Benincasa hispida</i>	Cucurbitaceae	fruit	winter gourd, winter melon, Chinese preserving melon
Yardlong bean	<i>Vigna sesquipedalis</i>	Fabaceae	pods	asparagus bean, Chinese long bean
Yam, Chinese	<i>Dioscorea batatas</i>	Discoreaceae	tuber	cinnamon vine
Yu choy (yu choy)	<i>Brassica rapa</i>	Brassicaceae	young leaves and flowering stalks	

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