
Ethnic and Tropical Crops Corner

Hosted by Hong Chen

Mayhaw, *Crataegus* spp.

Mayhaw, as described in Crop Monograph 368 of the Food and Feed Crops of the United States, is a small arborescent tree growing up to 30 feet tall. It belongs to the genus *Crataegus* in the family Rosaceae. Different mayhaw species are native to the Southern states of the US as well as the temperate zones of China.

Mayhaw is a long-living perennial tree that is readily adaptable to an area and requires little care. The edible portion of mayhaw is a small (1/2 to 1 inch in diameter) pome fruit which has a red or yellow skin with whiteish pulp. The fruit resembles a cranberry and is acidic and juicy, although it is not as juicy and crispy as other pome fruits. Two to five pieces of hard-shelled seeds, unlike other pome fruit, sit in the center of the fruit positioned like a garlic clove. The number of seeds in a mayhaw will vary among different species.

Not many minor crops are more minor than mayhaw in the United States. There are limited production data and unclear acreage figures for mayhaw in any of the State or Federal Agriculture Statistics. In the United States, mayhaw is distributed from North Carolina south to northern Florida and west to Texas. It wouldn't be too big a risk to say that no more than 1% of the US population knows anything about mayhaw. However, people who do know about mayhaw would tell you how delicious mayhaw jelly is to them and how they would bet that mayhaw jelly is the best tasting jelly in the world.

If you travel 8,000 miles west to the other side of the earth within the same latitude range, mayhaw is among the most popular and valuable fruits along with apple, peaches and oranges in the mainland China. Ask anyone on a Chinese street about mayhaw (Shan Zha), and you would be amazed by how they all know about mayhaw, have tasted it, or even take mayhaw supplements daily to control their cholesterol levels or correct digestive dysfunctions. Go and visit some Chinese super markets, fruit stands, general nutrition stores or herbal medicine counters - mayhaw and mayhaw products are everywhere! Based on China's 1996 Agriculture Statistics, China grew 240 million mayhaw trees and produced 4500 million lbs. fruits annually. With the rapid development of the Chinese economy and the increasing demands for mayhaw in recent years, these figures should only be greater today. It is worth noting that on China's vast agriculture land, even with the 240 million trees, mayhaw production was less than 2% of total fruit production.

What makes mayhaw a great fruit crop? Mayhaw contains the highest red pigment and pectin among fruits, which give it a beautiful natural food color and texture for jelly. It has a special natural sweet and sour taste. Its vitamin and mineral components are also among the highest of the fruits. The vitamin C content is next to dates and kiwifruit (yangtao) and is 18 times higher than apple. Mayhaw also has a higher calcium content than the other fruits. Other chemical components in mayhaw include crataegic acid, tartrate, citric acid, flavonoids, procyanidin, lactone, glucoside, lipolytic enzyme, and carbohydrates. Mayhaw seeds and leaves also contain protein, fat, crataegic acid, etc.

How are mayhaw and mayhaw food products consumed? In the United States, mayhaw is basically all marketed as a preserved product, jelly. Mayhaw growers process mayhaw fruit into jelly and sell it on roadside stands, farmer's markets, or through mail order via the Internet. Retail prices for the jelly range from \$7 to 10 per pound. Mayhaw was described in Chinese books more than 3000 years ago, and the first documented food use can be traced back to at least 1000 years ago during the Song Dynasty. The popular mayhaw food products in China include jelly, jam, gelatins, fruit roll, soft drink mixes, dried slices for tea, preserved fruit, icy-sugar sticks (a special winter treat), and mayhaw wine. An important aspect for US growers and researchers to consider is that mayhaw is formulated into more than twenty herbal medicine products in China for internal and external uses, such as for skin care and as an insect repellent. The market value for mayhaw's food products alone in China was estimated at about \$375 million annually.

The mayhaw and its related species Hawthorn (*C. oxyacanthoides* and *C. monogyna*), have chemical components which give them incredible pharmacological properties. In China, mayhaw and its products are registered by the Chinese Department of Health as food, food supplements, and medicine. Mayhaw's medicinal products are used for dysentery, back pain, high blood pressure, high cholesterol, and atherosclerosis. Mayhaw leaf and flower tea are used for elder heart disease. Mayhaw stem and leaf extracts are used for suppression of *Staphylococcus aureus* and *Bacillus anthracis*. Mayhaw seed extract is used against neurodermatitis and other skin diseases.

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We have good reasons to predict a bright future for mayhaw in the US. Mayhaw makes the best jelly, and jelly is loved and highly consumed by any age group in this country. Further clinical trials to establish the true medical usefulness of mayhaw must be conducted in the US. However, if mayhaw can safely reduce high cholesterol and high blood pressure (it was reported that about 50 million Americans age six and older have high blood pressure, and about 20% of adult Americans have high cholesterol levels), its market value would be vast. Mayhaw is used as a skin care and anti-aging candidate, and we are all aware of the great demands on skin care and anti-aging products. The fact that more and more people are seeking healthy food, using healthy food supplements, and increasing their interests in herbal medicine, should bring mayhaw a bright future. Merely a decade ago, how many Americans knew about ginseng, kava kava, fish oil, and even green tea, and look how many people are consuming them today?

The interest in growing mayhaw is reportedly increasing in some states such as Louisiana. In Georgia, there are two research mayhaw orchards, one in Byron and one in Attapulgus near the Florida panhandle border. In these two research orchards, every single tree is a different species, cultivar or genotype selected from the wild.

We hope that mayhaw's nutritional facts, health benefits and medicinal properties will be widely noticed and recognized by food scientists, food producers, health professionals, and the general public. A realization and utilization of mayhaw and mayhaw products will bring benefits to mayhaw growers, food processors, health product producers, and consumers.

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