

VEGETABLES IN EAST AFRICA

Vegetables form an important part of the diet in just about every household in Africa. Various types of vegetables are cultivated, mostly in small back or front yard gardens, but also increasingly in medium to large-scale commercial enterprises. The types of vegetables grown vary with agro-ecology and consumption preferences. Consumer preferences are influenced to an extent by culture, traditions and income available to the household. In almost all countries the vegetables grown can be divided into two categories:

- (a) Introduced vegetables
- (b) Indigenous vegetables



Photo/ MAINA MWANGI/2007

Photo 1: A selection of various vegetables harvested from the author's backyard garden. Visible here are carrots, egg plants (African type has red color while introduced type has the purple blue color), spinach and coriander.

In East Africa, i.e. Kenya, Tanzania and Uganda, *introduced vegetables* may include kale (popularly called *sukuma wiki*), white and red cabbage, tomatoes, French beans, carrots, spinach, some onions, green peas, some eggplants, and green pepper. These vegetables are more popular in urban areas where many households cultivate their own small gardens to meet some of the household

requirements. For many urban households however, a good proportion of vegetables consumed are purchased from markets.

Some common indigenous vegetables include Spiderweed (*tsisaka in Luhya*), Amaranthus (*terere in Kikuyu*), Pigweed (*Mchicha in Swahili*), Black nightshade (*Managu in Kikuyu*), pumpkin leaves, cowpeas and black jack, as well as the less common Sunnhemp (*Miro in Luhya*), jute plant (*Murere in Luhya, mrenda in Swahili*), Stinging nettle (*Thabai in Kikuyu*), African eggplant and okra.

Consumption and nutritional value of vegetables



Photo 2: Kale (left) and spinach (right)

Kale is the most consumed green vegetable in both urban and rural areas of East Africa. Kale is much easier to produce compared to other vegetables, and requires fewer chemical inputs and labor. Another advantage is that when kale is sufficiently nourished with compost manure and well watered, it produces huge volumes of leaves, which can be harvested repeatedly (several times a week from the same plant). The lower production costs translate into lower selling prices in the market, thus making it affordable even to households with less income. In short, kale is readily and cheaply available. Kale is a good source of vitamins A, B6 and C, manganese, copper, calcium, potassium, calcium and dietary fiber. These are important components in the diet:

- **Vitamin A** is essential to overall good health. Individuals that do not get an adequate amount of vit. A in their diet are more vulnerable to infectious diseases, including AIDS, measles, bronchitis, yeast infections, boils, abscesses, rashes, warts. Vit. A deficiency also leads to night blindness and reduced quality of vision.
- **Vitamin C** (also called ascorbic acid) functions as an anti-inflammatory, and helps the body to fight inflammatory diseases like arthritis, chronic fatigue, angina, bronchitis, bruises, canker sores, constipation, diabetes,

eyestrain, gingivitis, glaucoma, hangover, infertility, joint pain, rashes, shingles, sore throat, sprains, sunburn, and yeast infections, urinary tract infections, and scurvy (a disease caused by vit. C deficiency). Vit. C helps the body to absorb iron, thus reduces iron deficiency and anemia.

- **Thiamin**, or Vitamin B1 is one of the substances the body must have in order to convert carbohydrates into energy. Thiamin helps the body to make thiamin pyrophosphate (TPP), without which the body is unable to convert food into energy.
- **Folic acid**, called folate is crucial to the good health of every cell in the body, including skin cells, the cells that line the small intestine, and red and white blood cells. Folic acid helps to form the DNA and RNA in our genes, which are needed to regulate cell development. Because of this function, it is crucial to the development of a normal fetus. All women of childbearing age should get 400 micrograms each day, whether or not they think they are pregnant, because critical events in fetal development, such as regulation of nerve cell development in the embryo occur during the first 6 weeks of pregnancy.
- **Calcium** builds and maintains strong bones, teeth, and connective tissue. Calcium also promotes healthy digestion through the production of hormones and enzymes, helps nerves pass the electrical messages needed to contract the heart and other muscles in the body, assists in normal blood clotting, and may help prevent high blood pressure and colon cancer
- **Magnesium** is reputed to be the "anti-stress" mineral. Magnesium wards off the formation of blood clots, lowers blood pressure, prevents complications related to diabetes, assists in maintaining bone strength, and reduces the risk of heart disease and limits the effects of free radical damage.
- **Iron** is a trace mineral that is extremely important, because a deficiency in this nutrient leads to a shortage of red blood cells, a condition known as anemia. Anemic individuals do not have an adequate supply of oxygen in their body, which leaves them tired, pale, and short of breath. Infants, teenage girls, and women all need to get plenty of iron: —babies and teen aged girls need extra iron for growth, and women need extra iron to make up for the blood lost during menstruation. Pregnant and nursing women need extra iron to prevent premature delivery and support the baby's growth and development. Athletes also require extra iron to keep the blood and oxygen pumping to their heart and other muscles as they contract.

- **Zinc** is an essential trace mineral that helps the body to maintain the immune, reproductive, and digestive systems. It is needed for healthy skin, bones, hair, nails, and eyes, and is essential for making growth hormones and the important male hormone, testosterone. This hormone is very vital in reducing infertility in men.

Cabbage is widely consumed in East Africa, but is normally more expensive than kale. In urban areas cabbage is likely to be encountered more often in households with above average disposable incomes. In less well-to-do households, cabbage is rare, but might be eaten during special occasions or around end of month (when money from wages/salaries is available). In the rural areas cabbage consumption is higher in households that grow them, and might be less in households that do not grow them. Cabbage is an excellent source of vitamins C, A, B6, B1 (thiamin), B2 (riboflavin), fiber, manganese, folate, calcium, potassium, magnesium, protein and omega-3 fatty acids.

Tomato is one of the most widely consumed vegetables in East Africa. Depending on the variety, tomatoes can be expensive but are generally affordable. However, almost all types of tomatoes require chemical sprays during production to avoid losses to diseases. The repeated sprays increase production costs. The seasonal nature of tomato production (cultivation during rainy season) works in the favor of consumers because prices reduce when there is a glut in the market. However, off-season tomato, usually produced with irrigation water or in valleys can be costly since supply is less than demand. Tomatoes are a good source of calcium and iron. They also contain some amounts of phosphorus, sulfur and potassium. Tomato is rich in vitamin C, and contains some vitamin B and A. The vitamin C content increases as the fruits ripen. Tomato also provides energy: 100 g of tomato yields 20 calories, which are easily absorbed by the body.

Carrot is a good source of minerals such as potassium, and manganese. It also contains some amount of sodium, fluoride, phosphorus, iron, zinc, copper, selenium, and calcium. Carrot is an excellent source of beta carotene (which is converted into Vitamin A by the body) and also contains large amount of Vitamin K. Carrots contains traces of Vitamin C, Vitamin E and Vitamin B (Thiamin, Riboflavin, Vitamin B6, Folate, Niacin).

Spinach are a relatively easy to produce vegetable, but are not as widely grown as kale in East Africa. Some people may not like spinach due to its typically 'flat' taste after cooking. Spinach is however quite attractive with a deep rich green color and can be tasty when well prepared. It is also a good source of iron. A 60 gram serving when boiled contains around 1.9 mg iron, and can contain even more when eaten raw. Most green vegetables provide less than 1 mg of iron for an equivalent serving. Spinach still has a large nutritional value, especially when fresh, steamed, or quickly boiled. It is a rich source of vitamins A, C, E, K, magnesium, and several vital antioxidants. It is a source of folic acid, and this

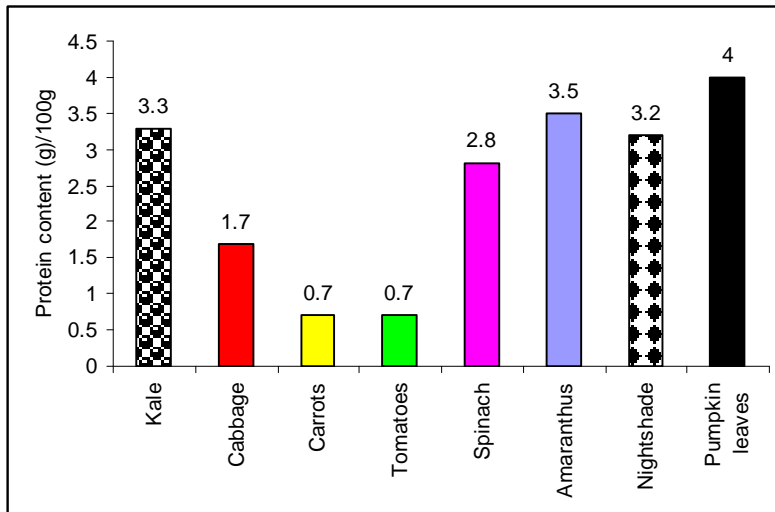
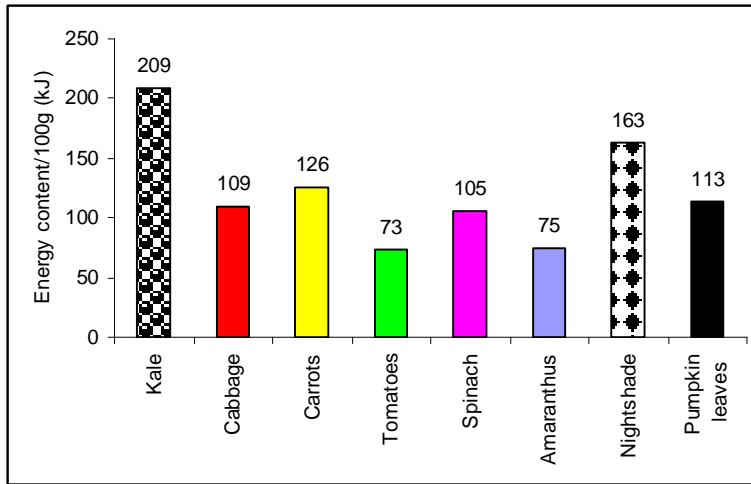
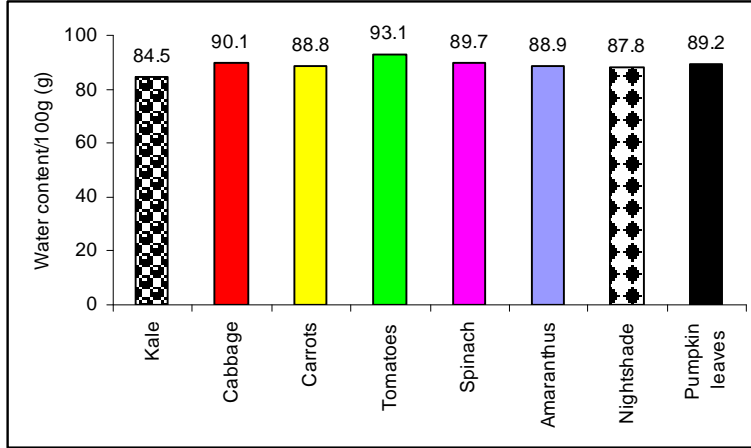
vitamin was first purified from spinach. Folate is good for expectant mothers, growing children and babies. To benefit from the folate in spinach, it is better to steam the vegetable than to boil it. *Boiling spinach for four minutes reduces the folate content by half*, thus some attention is needed when preparing this vegetable.

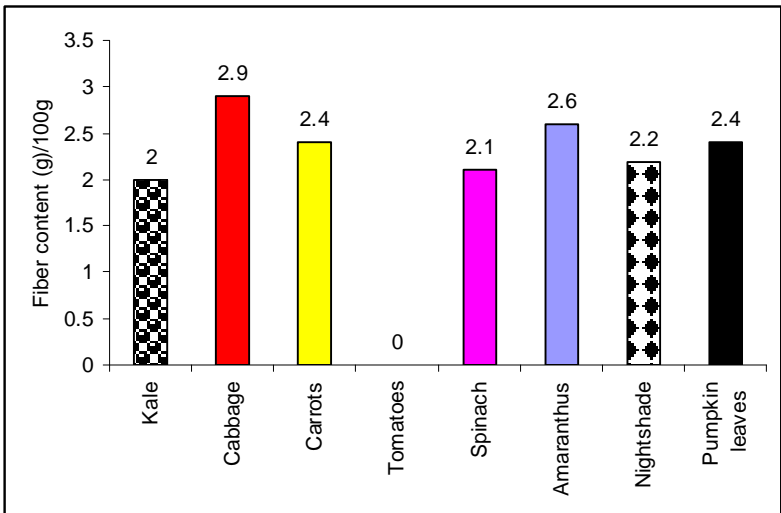
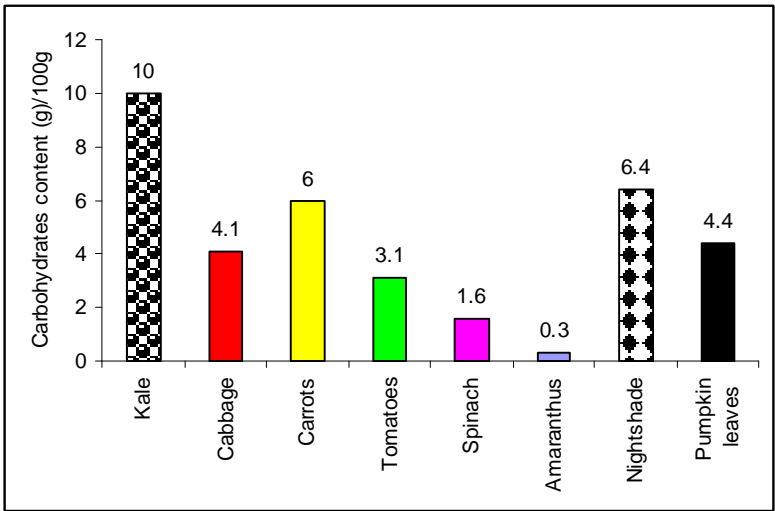
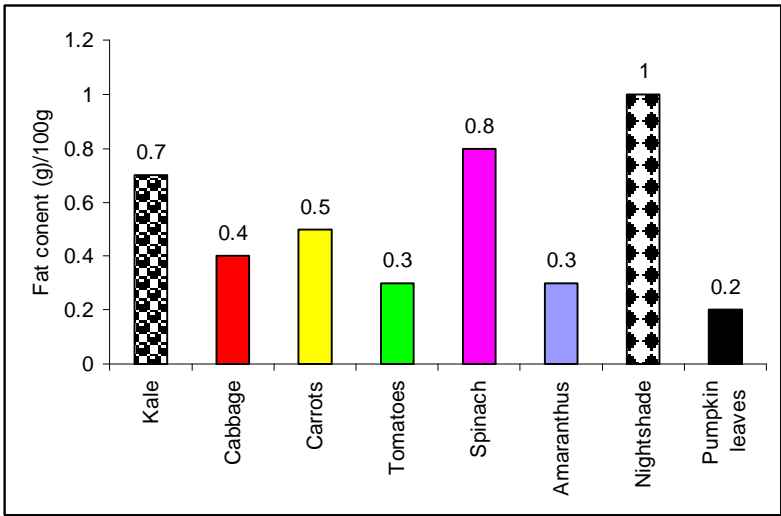
Amaranthus (pigweed). Amaranth is a Greek word derived from the word *Amereino*, meaning immortal, or not withering. In Kenyan rural areas, amaranth is one of the best known traditional vegetable, which grows in open fields with almost every ethnic group having a name for it. The Kikuyu call it *Terere*, Waswahili *Mchicha*, Luhya *Omboga*, Luo *Ododo*, Pokot *Sikukuu* or *Chepkuratian*, Turkana *Lookwa* and Teso *Ekwala*. Amaranth has a high nutritional value because of the high levels of essential micronutrients like carotene, vitamin C, iron and calcium. It is rich in lysine, an essential amino acid that is low or absent in diets based on cereals and tubers. The protein found in young plants can be important for people without access to meat or other sources of protein. Amaranth seed contains more protein than other grains such as wheat, maize, rice or sorghum. It also contains high levels of minerals especially iron, phosphorous and magnesium more than what is found in animal products like milk and meat. It also has high levels of vitamins A, B, and E. The fat content in amaranth seed is high (7 – 8%), which is double that of common cereals. Grain amaranth is highly recommended for infants because of its protein digestibility, absorption and retention by the baby's body system. The greatest advantage of amaranth is that it grows wildly, and does not need any organized planting or attention for it to produce well as long as the soil is fertile.

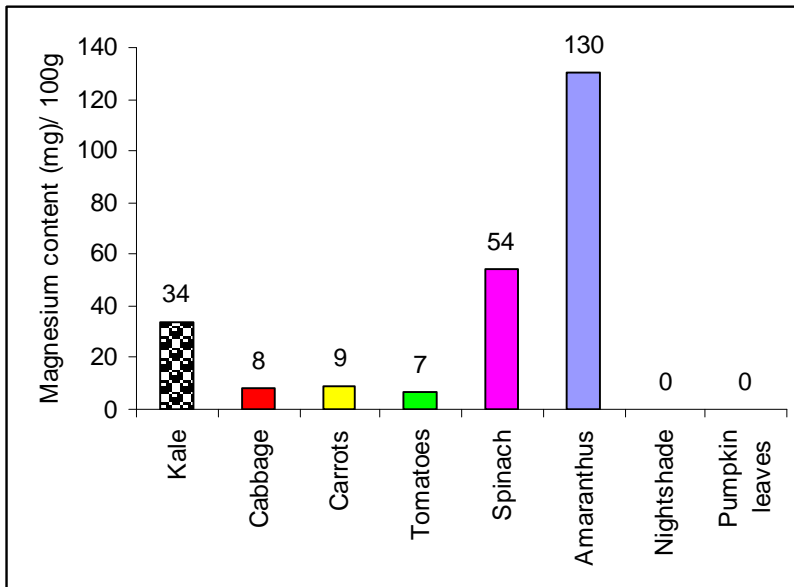
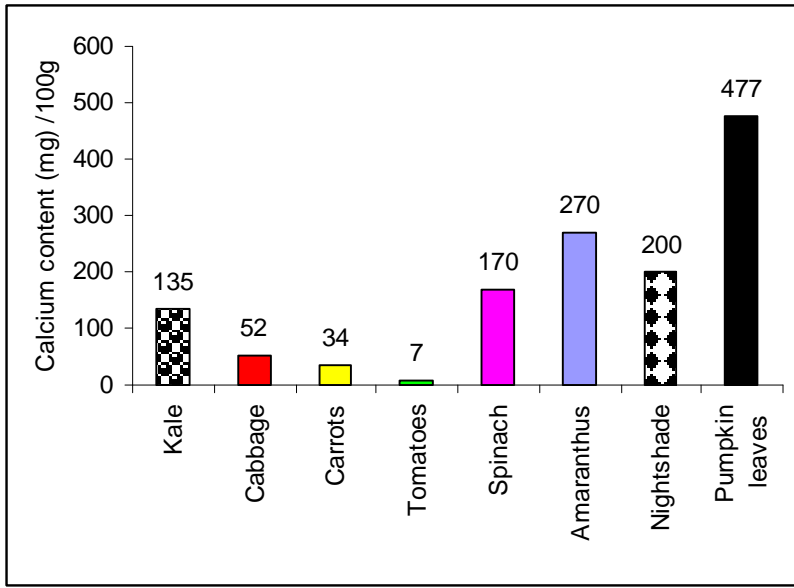
African Black Nightshade-(*Solanum nigrum*): The African Black nightshade *leaf* and seed contain appreciable levels of protein, fiber and carbohydrate. It is a good source of magnesium, phosphorus and the water-soluble vitamins such as vit C, B and folic acid. The leaves in particular contain relatively high levels of oxalate and cyanide, but the processing and cooking done prior to consumption reduces the content of these bitter and potentially toxic compounds. The plant has high nutritional value and is recommended as a cheap source of plant protein, energy and mineral elements. However it is only likely to be consumed in low income rural households who would collect the leaves from wild plants.

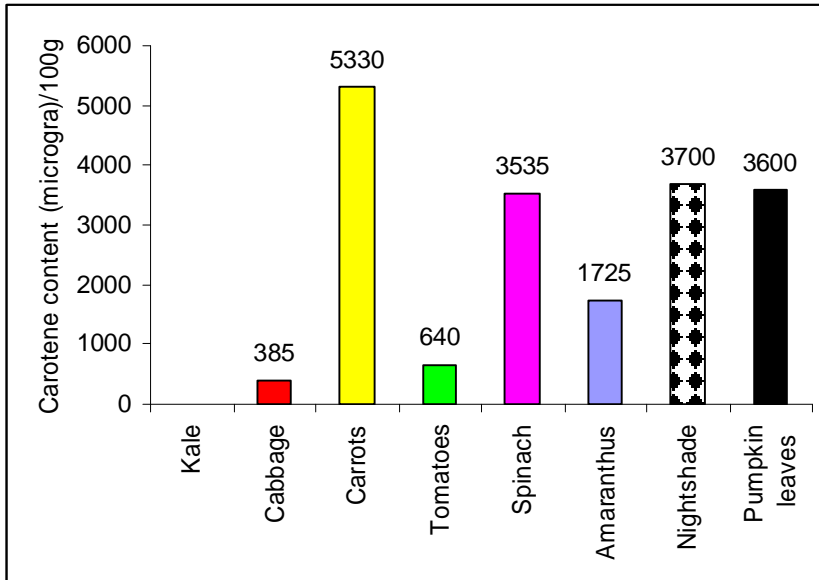
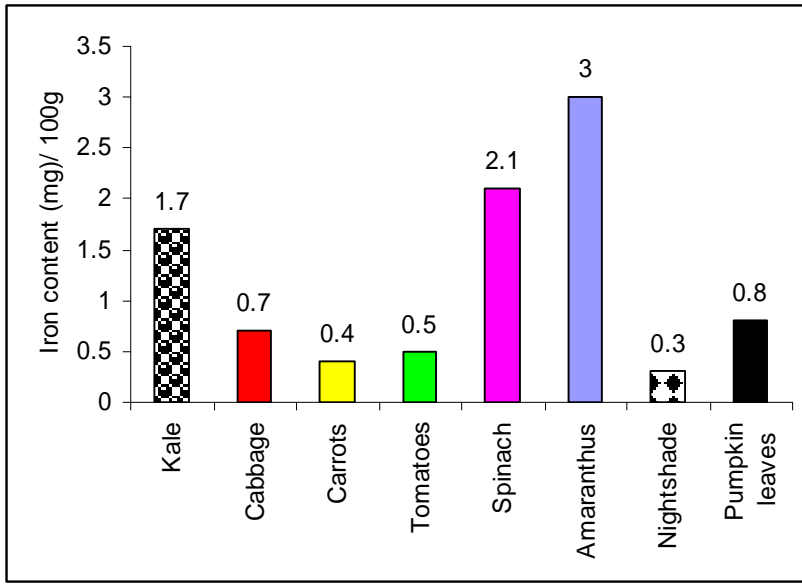
Stinging nettle: Nettles have very high nutritional value, with the species having high content of many important vitamins and essential minerals, e.g. iron, silica and potassium. Nettle also contains histamine, formic acid, acetylcholine, serotonin, glucoquinones, many minerals (inc. silica), vitamins A, B, C and tannins. Various skin disorders and conditions are also effectively treated using herbal remedies derived from the nettle, e.g. childhood eczema and arthritic problems. The herbal remedy is also extensively used in the treatment of very poor or impaired kidney functioning, and fluid retention issues.

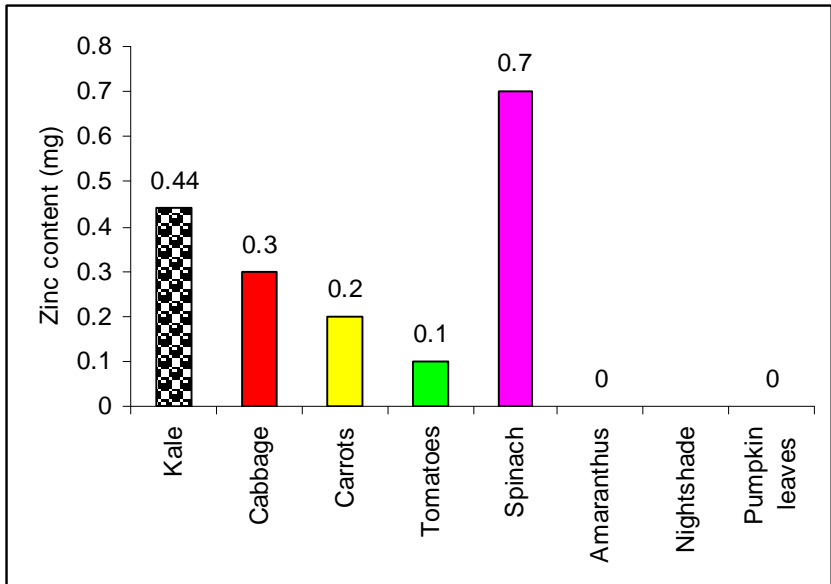
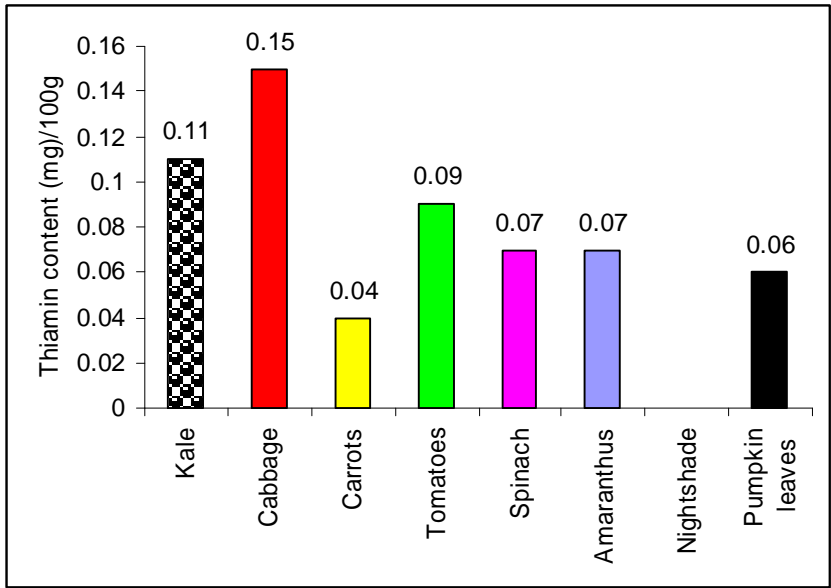
Nutritional Value of some vegetables (In 100g edible portion)

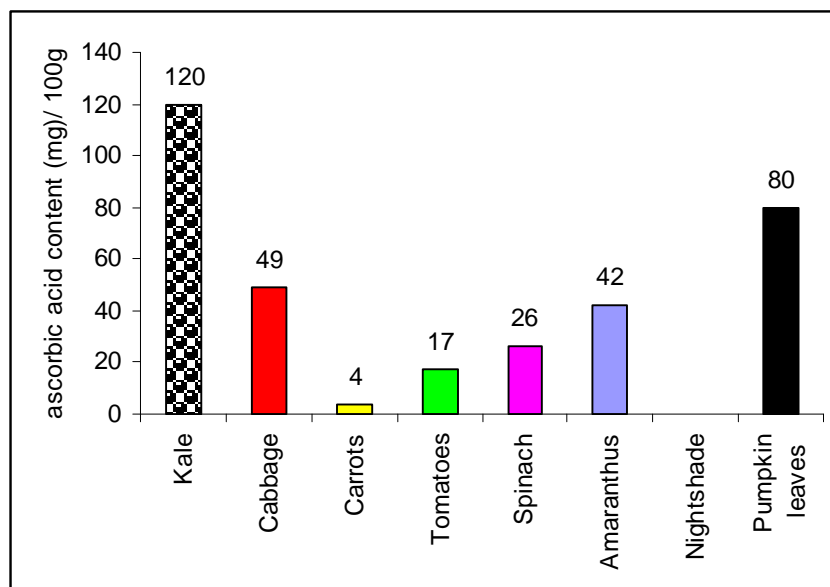












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