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Introduction
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The vegetables play an important role in the balanced diet of human beings by providing not only energy rich food but also promise supply of vital protective nutrients like minerals and vitamins. Comparatively, vegetables are one of the cheapest sources of natural nutritive foods. Some of the vegetables are good sources of carbohydrates (e.g. leguminous vegetables, tapioca, sweet potato, yams, colocasia, potato, garlic, onion, brasses sprouts, methi etc), proteins (leguminous vegetables like peas and beans, leafy vegetables, garlic, Brussels sprouts), vitamin A (tomato, leafy vegetables, root-vegetables like radish, beet, carrot and turnip), vitamin B (peas and beans. Garlic, colocasia, tomato, asparagus, cauliflower, cabbage, knoll, bitter gourd radish leaves and leafy vegetables), Calcium and iron (all green leafy vegetables, drumstick fruits). Carrots are particularly rich in carotene (pro-vitamin A). They are consumed either fresh, as a salad crop, or cooked. Large quantities are also processed, either alone or in mixtures with other vegetables, by canning, freezing or dehydration.

Area under different horticulture crop in kharif, rabi and zaid seasons ever year (agriculture) by board of revenue. U.P. so for, 10 fruits, 18 vegetables and 7 spices in total 35 horticulture crop are included in kharif, rabi and zaid. Total roots vegetable (carrots and turnips) crop grown in 2012 34,000 ha and total production 56,0000 mt. (FOASTATE, 2014).

Although carrot is a cool season crop but it grown all over the world in spring, summer and autumn season. In temperate countries and during winter in tropical and subtropical climate. Carrot is grown all over India, both forage and human consumption. It is taken raw as well as cooked in curries and is made into pickles and sweetmeats. Black carrots are used for the preparation of a sort of beverage called kangri which is supposed to be a good appetizer. The orange-coloured varieties are rich in carotene, a
precursor of vitamin A, and contains appreciable analysis of this type of carrot is given below.

Its history has been confused with that of parsnip, for the Romans ate it as pastinaca, a name later transferred to the parsnip when carrot became *Carota* (Burkill, 1935). The carrot probably originated in central Asia in the hills of Punjab and Kashmir with a secondary center of distribution in Asia, Europe and North Africa around the Mediterranean. Carrot belongs to the family Umbelliferae, genus *Daucus* and species *carrota*. Carrots need a deep, loose, loamy soil for their best development. Highly acidic soil does not produce good carrots. The maximum yield is expected around at pH 6.5. Yield is extremely low at pH 2.5 or less. For early crop a sandy loam soil is preferred, but for large yields silt or silt-loam soil is desirable. The long, smooth slender roots desired for fresh market can successfully be grown on deep well-drained light soils. Carrots grown on heavy soil tend to be more rough and coarse than grown on light sandy soils. Carrots do not grow well on a soil which is highly acidic.

The definition of vegetable implies that these are edible plants which store reserve food in roots, stems, leaves and fruits which are eaten cooked or raw as salad plants. These are the great source of carbohydrate, food which is greatly present in the form of starch and occasionally as sugar, proteins etc. Some indispensable minerals, salt and vitamins also increase the food value of the vegetable. The term vegetable is applied to the edible herbaceous plant or its parts which are commonly used for culinary purpose. Vegetables play an important role in human diet, supplying some of the things in which other food materials are lacking. The nutritional value of vegetables depends upon the edible portion of the plant that is used as food. The edible part may be bulb, bud, flower, fruit, leaf, rhizome, root or seed.

The present day’s cultivated carrots have most probably originated from this subspecies. According to Mackevic (1929), Afghanistan is the primary centre of carrot. Carrots probably were first grown in America in the Salem gardens about A.D. 1620 (Shoemaker, 1947). Like radish carrot is also grown in winter in the plains of India. Its climatic requirements for market crop are more or less like radish. The carrot is a very important vegetable crop in South Africa. Judging by seed usage, it is among the top ten

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vegetable crops on an area basis. In KwaZulu-Natal it is probably one the five most important vegetable crops grown.

Climate is considered much more often as a limiting factor than the soil. Seed germination, root growth are generally influenced by soil temperature. A temperature range of 7.2 to 23.9°C is considered optimum for seed germination. Although oriental types of carrots are well adapted to the climatic conditions of the plains of India and seeds freely under tropical condition the temperate or European types require low temperature (4.8-10°C) for 4-6 weeks at any time during the development of roots or after they mature, either in storage or under field condition. Seed stalk formation results only when these plants are subjected to a subsequent temperature at 12.2-21.1°C Plant grown continuously at a temperature at 21.1-26.7°C fail to develop flower primordial (Sakr and Thompson 1942). It is for the reason the seeds of European types of carrot are produced only in hills of India, where the winter is severe. The colour development and the growth of the root are affected by temperature. Carrots grown at 10 to 15°C develop poor colour. Those grown at 15 to 20°C will develop a good colour, while at 20 to 25°C the colour will be less bright. The highest temperatures, however, produce shortest root and the longest roots are produced at the lowest temperature at 10 to 15°C. The effect, of course, will vary with the soil conditions and the cultivar.

These cultivars do not require any low temperature treatment for flowering they seed freely in the plains of India. These cultivars are biennial in characters and require low temperature (4.8-10°C) treatments for flowering to occur. These do not produce seeds in the plains of India, e.g. Chantenay, Nantes, Imperator etc.

It is European cultivars which can be grown in the plains of India for root production. Its seeds are produced in the hills of India. The roots are half-long, slim, wall-shaped, cylindrical with stumped end forming a small thin tall, deep orange-red cortex and core. It ranks first in quality, but has a weak, brittle top which makes pulling difficult. It does not keep well because of its thin skin and fine texture. This cultivar is suitable for Federal University of Uberlandia in Brazil to produce the Uberlandia carrot variety. Both the wild and the cultivated carrots belong to the species *Daucus carota*. Wild carrot is distinguished cultivation in cooler months. It is excellent cultivars for
canning and storage. Roots are 11.5-15.0 cm long and 3-5cm in diameters with tapering to blunt end, deep orange cortex and core.

The carrot (*Daucus carota* L.) belongs to the family Apiaceae. It is related to celery, celeriac, coriander, fennel, parsnip and parsley, which are all members of this family. The carrot originated in Asia. Initially the roots were long and thin, and purple or yellow in colour. These colours, as well as white and orange, still exist, with the orange or orange-red colours being by far the most popular today. Many shapes of roots also exist, from rather long and thin roots to shorter and thick. Roots may be cylindrical, conical, or even spherical in shape.

The plant is a biennial, i.e. it grows vegetative in the first season and produces seed in the second. For root production the plant is grown as an annual. Low temperatures, as well as various stress factors, will sometimes cause flower production to be initiated, particularly in certain selections of some varieties. Bolting to seed in spring is possible in carrot plantings grown over the winter period.

After independence one of the tasks of the National Government of India was to develop a viable and productive agricultural economy leading to self-sufficiency in our food requirement. Several steps and planned efforts have been made to give effect to this objective. The country is now almost self-sufficiency in matter of food grains. However self-sufficiency in the true sense can be achieved only when each individual in the country is assumed of a balanced diet. Fruits and vegetables are the only natural sources of protective food, as they supply nutrients, vitamins and minerals. In a country where the population is predominantly vegetarian this can only be achieved by increasing the production and consumption of vegetables. In India, the consumption of vegetable is comparatively five times less than other developing countries. So there is an urgent need to popularize vegetables and increase its production.

All of us are aware of the primary challenge to increase the production of food through decreased plant disease loss in order to feed growing population. This of course has been the primary challenge in the face of significant and growing constraints broadly described as economic, social and political. Given our track record we are confident that
if our success depends solely upon technology. We would melt the challenge even under the constraints of time but despite of our technological advancement in agriculture the provision of sufficient food for ourselves and the developing construes like India is a course for great concern for plant pathologists of these countries with explosive population. Prevention of essential crop losses caused by crop diseases will be one of the spokes in the wheel of food production for the 6 billion people who will come to dinner in the year 2012. In these task chemicals for plant disease control, the fungicides will play an important role as the partners with other practices in the food production.

Vegetable losses between production and consumption have recently been studied seriously even in developing like India and attention has been paid to preserve the root vegetables during production and consumption levels. Attack by micro-organisms is probable the most serious cause of pre and post harvest decay of root vegetables.

To prevent crop diseases efficiently acknowledge of nature and cause is one of the fundamental importance to control them. Enormous losses are some times sustained in fruit crops during these above phases due to fungi. The earning can easily be doubled if adequate attention is paid to the improved cultural practices and to control of diseases of root vegetable both in field and in storage. Thus there is an urgent need for undertaking detailed studies of root vegetable diseases and advice suitable method of controlling and management of these maladies both in field and storage.

Cultivated carrots are derived from the wild carrot species, *Daucus carota*. This wild species originated in western Asia in the region including present-day Afghanistan. Cultivated carrots have been known from the 10th century AD but most carrot varieties are temperate biennial plants requiring two years to complete the life cycle. Normally, a cold treatment during the dormant winter season is required for the first year plants to send up flowering stalks producing flowers and seeds during the second growing season. Tropical flowering carrot varieties, called ‘Tropics’ and ‘Brasilia’ developed in the 20\textsuperscript{th} century in southernmost Brazil, flower and set seed in tropical environments in a one-year period. Dr. Warwick Kerr used these tropical carrot strains in a selective breeding program at the Federal University of Uberlandia in Brazil to produce the Uberlandia carrot variety.

Earliest uses of carrots were medicinal rather than for food. Today, carrots are
recognized as an important dietary component principally because carrots are one of the best vegetable sources of pro-vitamin A. This pro-vitamin is from the orange-colored carotene pigments contained in the carrot root. These pigments are converted in the human body to vitamin A, a vitamin known well for promoting healthy eyes in children, prevention of night blindness and promotion of healthy skin. In Java, the leaves sometimes are eaten. Handling raw leaves, however, especially when wet, may irritate the skin and even cause blisters for persons with light-sensitive skin. Roasted carrots have been used as a coffee substitute. Both the tops and the roots have been used as small animal and livestock fodder.

Carrot is used raw as well as cooked alone or with other vegetables. Carrot root are used as a vegetable for soups, stews, curries and pies, while grated roots are used as salad. Tender root are used for preparing pickles, halva and jam. Root in the farm of discs and slices can be dehydrated. Carrot juice is used for coloring button and other food articles. Carrot is canned. The dried root is very popularly in use in North India for making kanji. It has a cooling effect and is supposed to be very beneficial to persons suffering from heart troubles and gall stone. A decoction of carrot is a popular remedy for jaundice in Europe. An infusion of carrot is used as medicine for thread worms. Green carrot leaves are highly nutritive, rich in protein, minerals and vitamins and used as fodder and also for the preparation of poultry feed. The cultivated carrot (Daucus carota sp. sativus) has wild relatives belonging to the same species, among which the wild carrot D. carota sp. carota is commonly found, for instance, along road verges in temperate regions (Brandenburg 1981; Holm et al. 1997), including Denmark (Hansen 1981). It is a common and sometimes serious weed (Mitich 1996; Holm et al. 1997), in particular in no-tillage crop production systems (Stachler and Kells 1997). Cultivated and wild carrots are known to hybridize spontaneously, and wild carrots may therefore contaminate seed crops of cultivated carrots via its pollen (D’Antuono 1985; Hauser and Bjørn 2001), which is a major cause of genetic deterioration of seed stocks (D’Antuono 1985; Wijnheijmer et al. 1989). Also, there are strong indications that reciprocal hybridization and introgression from cultivated to wild carrot take place in nature (Wijnheijmer et al. 1989; Hauser and Bjørn 2001; Magnussen and Hauser 2007), and that hybrids are able to survive in natural habitats of wild carrots (Hauser and Shim 2007). Transfer of genes
from cultivated crops to wild relatives may influence their evolution and ecological functioning. In the case of resistance genes to pathogens and pests, uptake of such genes may give wild plants a selective advantage and potentially make them weedier in fields and wild populations. Increased and more continuous exposure of the resistance trait in wild populations, in addition to in the crop, may enhance the likelihood of resistance evolution in the pest, and deteriorate the possible role of wild relatives as resistance refuges to slow down resistance evolution (Conner et al. 2003; Andow and Zwahlen 2006). It is crucial to know to what extent important pathogens and pests affect wild relatives of our crop species to understand and manage these processes. Considerable work in this fields has been done by many worker in many countries special nutrition may be made of the work of Cunningham (1928), Johnson (1949), Leclerg (1935), McKay and Pool (1918), Leonard (1940), Bockstahler (1940), Stewart (1931), Doran (1928), Hooker (1944), Thomas (1941), Atkinson (1950), Groves (1944), Lauritzen (1926), Meier (1922), Wiant (1941), Chupp (1935), Rangel (1945), Anderson (1933), Strider (1962), Standberg et al. (1972), McLean (1960), Walker (1952), Amador (1976), Henis (1978), Anderson (1952), Netzer (1966), Mukhopadhyay (1969), Narain (1978), Prabhu (1965), Shukla, Singh and Bhargava (1978) and Srivastava (1979).

The common fungal diseases of Carrot-Leaf blight, Black root rot, Brown rot, Canker, Cavity spot, Leaf spot, Crown rot, Damping off, Downy mildew, Leaf rot, Stem spot, Rust, Rusty root and Root canker etc.

**Beta vulgaris L.** commen many-chukander Garden beet is an important home and market garden crop in the U.S.A. and Europe. It is not so important in India as radish, turnip or carrot. Beet is eaten raw as salad, cooked with other vegetables and with meat and is also grown for processing. The crop was introduced in the U.S.A. in 1800 and became known as garden beet. According to Burkill (1935), beet root was introduced into India in remote times, but whilst the plains of the Ganges suited it, did not spread to further east. It was taken by sea by the Arabs to China. Beet-root is rich in minerals and vitamin C. The nutritive analysis of beet-root is as follows:
Beets were well known in ancient Greece and Rome, but it were the leaves which were eaten. The roots developed earlier were of a long carrot-like shape. The native place of beet is probably the Mediterranean region of Europe or around Western Asia and Africa.

In the 16th century, Olivier de Serres discovered the value of sugar beets for preparing sugar syrup. In his notes, he wrote: "The beet-root, when being boiled, yields a juice similar to syrup of sugar, which is beautiful to look at on account of its vermillion color."

During the 18th century, the large-rooted beets, known as the mangel-wurzel, were being fed to cattle. They were introduced into England in the 1770’s for use as livestock feed after being developed from early fodder beets in Germany and Holland. An unfortunate English mistranslation of the German mangold-wurzel (“beet-root”) as mangel-wurzel (“scarcity root”) resulted in the belief that this plant would be excellent food for the poor during periods of famine, but turned out to be better suited for cows.

Beets were brought to North America by American colonists, but it is not known when for certain. They were well established by the eighteenth century, as mention is made of chard, and red, white, and yellow beetroot being grown in U.S. gardens in the early 1800’s. George Washington conducted experiments with them at Mount Vernon and by 1888; Burpee’s Farm Annual offered seven different types of mangels, twelve varieties of table beets, and one variety of chard.

It belongs to the family Chenophodiaceae. The garden beet, sugar beet, swiss chard mangel, palak, all belong to the same genus and species Beta vulgaris. Beta root is a biennial crop.

The beet has an extensive root system, the may penetrate the soil to a depth of 10 ft (Weaver and Bruner, 1927). A number of strong lateral roots grow diagonally for a distance and then downward to depths nearly as that of the tap-root. The extensive root system penetrating to a great depth indicates drought resistant property of root. Beet is considered to be a cool weather crop but can also be grown in warm weather. Under cool weather, the roots have high sugar content. Good colour is not directly related to high

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sugar but low sugar content is associated with poor colour. Temperature has a pronounced effect on the crop with regard to maturity and seeding. At temperatures below 10°C, the crop goes to seeding before attaining marketable size.

The garden beet or table beet is also popular root vegetable grown in home gardens as well as market gardens mainly for its fleshy enlarged roots. In fact, beet is useful vegetable in a number of ways. The swollen roots are eaten bailed or as a salad. They are also used as pickled. The tinder leaves and the young beet plants are used as greens (pot herbs). The large sized but are used for canning. In the 16th century, Olivier de Serres discovered the value of sugar beets for preparing sugar syrup. In his notes, he wrote: "The beet-root, when being boiled, yields a juice similar to syrup of sugar, which is beautiful to look at on account of its vermilion color.

Sugar beet root are rich in Protein, Carbohydrate, Calcium, Phosphorus and Vitamin C. They are also rich in iron and vitamins (Iron 3.1 mg, Vitamin A. 21000 IU, Thiamine 10mg and ascorbic acid 50mg per 100mg edible portion) (Nutrition chart, Heinz Co, 1942). The use of beet probably dates back to the prehistoric times when the leaves were used as pot herbs. According to Anderson (1952) beet was certainly domesticated first as a leafy vegetable, then as a root crop and finally as a source of sugar. The beet is affected by comparatively few diseases. The most serious diseases are leaf- spot, blight, root-rot, wilt and soft-rot are very common. Sugar beet is an important crop of arable rotations throughout the major growing regions of the UK. Commonly grown in conjunction with wheat, barley or pulses, sugar beet provides a valuable break crop returning organic matter to the soil and preventing the build up of disease. The root of the beet has a sugar content of around 17% and in the UK provides over half of the sugar we use. The balance comes from sugar cane that grows in tropical and semitropical regions of the world. Oldest known beet type, chard, was domesticated by at least 2000 B.C, and was grown by both the Greeks and Romans. Chard was originally used medicinally and for its dense foliage growth as a pot herb much like spinach or some of the Chinese leaf vegetables are used today.

The swollen, fleshy taproot familiar today was not known until the second and third century, A.D. Beetroot, both red and white, were developed in Italy (thus known as
the “Roman beet”) by selection from the wild beets The sugar beet as we know it today is derived from many years of breeding the domesticated beet (*Beta vulgaris* L.). It is said to get its name from the Greek letter beta because the swollen, turnip-like root resembles a Greek. However, the native to the seacoasts of the Mediterranean. It was also found throughout Europe and hybridized with leaf beet types (chard) to produce the vast range of color and shape found in table beets today. It was used as a vegetable and was boiled in stews, baked in tarts, and roasted whole. White beets appear to have been more common, but less desirable than the red.

The methodical use of sugar beets for the extraction of sugar dates to 1747, when Andreas Sigismund Marggraf, professor of physics in the Academy of Science of Berlin, discovered the existence of a sugar in beets similar in its properties to that obtained from sugarcane. The discovery was little used at first, however, and the manufacture of sugar from beets did not attain commercial importance for over half a century. Marggraf’s student and successor Franz Karl Achard began selectively breeding sugar beet from the ‘White Silesian’ fodder beet in 1784. By the beginning of the 19th century, his beet was approximately 5–6% sucrose by (dry) weight, compared to around 20% in modern varieties. Under the patronage of Frederick William III of Prussia, he opened the world’s first beet sugar factory in 1801, at Cunern in Silesia.

The work of Achard soon attracted the attention of Napoleon Bonaparte, who appointed a commission of scientists to go to Silesia to investigate Achard’s factory. Upon their return, two small factories were constructed near Paris. Although these factories were not altogether a success, the results attained greatly interested Napoleon, and in 1811, he issued a decree appropriating one million francs for the establishment of sugar schools, and compelling the farmers to plant a large acreage to sugar beets the following year. He also prohibited the further importation of sugar from the Caribbean effective in 1813.

The beet sugar industry in Europe rapidly developed after the Napoleonic Wars. By 1812, Frenchman Jean-Baptiste Quéruel, working for the industrialist Benjamin Delessert, devised a process of sugar extraction suitable for industrial application. By
1837, France was the largest sugar beet producer in the world, a position it continued to hold in the world in 2010. By 1837, there were 542 factories in France, producing 35,000 tonnes of sugar. By 1880, Germany became the largest sugar beet to sugar producer in the world.

Successful sugar beet and associated sugar production started in the United States in about 1890. The states of California, Utah, and Nebraska were early pioneers of sugar beet industry. Arthur Stayner (1899) is regarded as the "father and founder of the movement that made the manufacture of sugar in Utah a success".

Sugar beets were not grown on a large scale in the United Kingdom until the mid-1920s, when 17 processing factories were built, following war-time shortages of imported cane sugar. One factory had, however, been built by the Dutch at Cantley in Norfolk in 1912. Sugar beet seed from France was listed in the annual catalogues of Gartons Agricultural Plant Breeders from that firm's inception in 1898 until the first of their own varieties was introduced in 1909. The world harvested 271.6 million metric tonnes of sugar beets in 2011. The world's largest producer was Russia, with a 47.6 million-metric-tonne harvest. The average yield of sugar beet crops worldwide was 58.2 tonnes per hectare. The most productive sugar beet farms in the world, in 2010, were in Chile, with a nationwide average yield of 87.3 tonnes per hectare. Imperial Valley (California) farmers have achieved yields of about 160 tonnes per hectare and over 26 tonnes sugar per hectare. Imperial Valley farms benefit from high intensities of incident sunlight and intensive use of irrigation and fertilizers. The common fungal diseases of Sugar beet- leaf spot, black root, Damping-off, Downy mildew, Fusarium yellows, Leaf gall, Powdery mildew, Pythium root rot, Seedling rust, Storage rots and Violet root rot.

*Raphanus sativus* Linn. Radish is a popular vegetable in both tropical and temperate regions. It is one of the important root vegetables which are cultivated for its enlarged edible root. Being a quick growing crop, it is easily planted as a companion crop or inter-crop, between the rows of other vegetables. It may also be planted on mends or ridges, separating one plot from another.

*Raphanus sativus* is one of the most ancient vegetables. Inscriptions on the inner walls of pyramids show that radish was an important vegetable in Egypt about 2000 B.C.
Certain remarks of Herodotus reveal that it was cultivated about 2700 B.C. (Becker, 1962). It has spread to China about 500 B.C. and to Japan A.D. 700 (Sirks, 1957).

It is eaten both raw, with salt or a salad, pickle, moraba or as vegetable curry and as parathas with curd in Punjab. Radish has also been tried successfully as a fodder crop in some countries like U. K. and South Africa. It can also be used as green manure.

According to Purewal (1957) it is cooling in effect, prevents constipation, increases appetite and is very useful when both roots and leaves are cooked together. It is considered to be useful for patients suffering from piles, lives trouble, enlarged spleen and jaundice.

Radish is not known in its wild state. It was previous thought to have been evolved from *Raphani strrum* Linn, a widely distributed weed in Europe, but in view of considerable ecological and morphological differences existion among the cultivated radishes in the different regions of the world, they are now presumed to have been evolved from more than one source. The history of this crop is vague. It is probably come from central and western China and where it was used as food long before recorded history.

Radish is an annual or biennial herb depending on types and belongs to Cruciferae family, genus *Raphanus* and species *stativus*. The fleshy edible portion of the root develops from both the primary root and the hypocotyle. According to Banga (1976), there are four types of radish commonly cultivated in various regions of the world:

1. Small cool season radish,
2. Large radish with wider of temperature adaptation
3. Rat-tail or mongri radish forming no fleshy roots but forming long slender (20-60 cm) pods
4. Fodder radish also producing no fleshy roots.

All four types of radish belong to species *Raphanus sativas* L. with 2n=18 & botanically they are known as varieties *radicula, niger mongri* (or *caudatus*) & *oleifera* respectively.
Radish is best adapted to a moderate climate. The Asian cultivars with greater temperature adaptation can resist heat more than the European cultivars. During hot weather the roots become tough and pungent before reaching the edible size, a cool season, with temperature between 10°C and 50°C are required. Radish is a quick growing cool season root vegetable. The seed will germinate in 3 to 4 days with soil temperatures of 18º to 30ºC with good moisture. The minimum temperature for germination is 5ºC, the optimum temperature for germination is 30ºC. The maximum temperature for germination is 35ºC. Germination rates decline sharply when the soil temperature falls below 13ºC. The best quality and root shape are obtained when the crop grows and matures at moderate temperatures (10 to 18ºC) in intermediate to short day lengths. Radish remains in prime condition for only a few days. Roots of globe varieties tend to elongate and develop poor shape in hot weather when the tops also grow taller and larger than in cool weather. Long days induce flowering or seed stalks (bolting) and with warm weather the seed stalk may develop so rapidly that no edible root is formed. Radishes become more pungent in hot weather. Roots remain in marketable condition only a short time before becoming pithy. Growth must be continuous and rapid for good quality

Flowering of radish, especially of biennial types, is greatly influenced by temperature. Low temperature is a critical factor causing flowering, which accelerated by long photoperiod.

Radish can be grown on nearly all types of soil, but best results are obtained on light, friable loam soil that contains ample humus since it is a short duration crop, it can be grown on types of soil that are not considered satisfactory for other root crops. For early crop, sandy or sandy loam soils are preferred; however, for summer crop a cool, moist soil gives best result. Usually heavy soil produce rough, misshapen roots with a number of small-fibrous laterals and such soils should be avoided. Since the crop grows so rapidly, a rich fertile soil is essential. This crop requires a well drained sandy loam or loam with a good supply of organic matter as well as an even moisture supply for good quality (mild, tender and attractive). Rocky or gravelly soils are generally not acceptable especially if bed harvest is to be used. Peat soils are also suitable for production of radish. Regular radish reach market size in 21 to 28 days so crop can be on the market from June to the end of October. Chinese radish take 50 to 90 days to mature. These become available to market in August and with storage can be marketed into November and December. Yields per hectare depend on the variety and the number of crops per year.
Regular radish yield 10,000 to 15,000 kg per hectare. Chinese radish may yield 30,000 to 44,000 kg per hectare.

The radish, *Raphanus sativus*, is a member of the Cruciferae family, native to Europe or Asia. It was once grown on a small scale in all areas of the U.S. and also as a greenhouse vegetable. However, mechanization of harvesting and handling has resulted in more centralized production. The word *Raphanus* comes from the Greek word meaning quick appearing or easily grown. The roots are of many shapes, sizes and colors; e.g., round, turnip-shaped, oval, olive shaped, half-long or long. Color varies from white, pink-red, purple, yellow or even black. However, the most common radish is oval with a dark red skin and white flesh (Thompson and Kelly, 1957; Maynard and Hochmuth, 1997). Radish is a member of the Cruciferae (mustard family). *Raphanus sativus* is a cool season annual (depending on when it is planted). Radishes have been cultivated for thousands of years in both China and the Mediterranean area. Radishes were a common food in Egypt before the building of the pyramids and are one of our most ancient cultivated plants. Generally commercial radishes are approximately 2 cm in diameter and are either red or white. They reach market size in 21 to 28 days (or longer in cool weather). There is also a radish group called daikon (Longipinnatus group) which is the Chinese Oriental radish. These may grow up to 75 cm long with a diameter of up to 25 cm. These may weigh several kilograms. Radish vary in color from white to black. Currently radish is a minor crop and markets are quite limited, but there is room for a few growers to supply regular radish, wholesale (bunching and cello pack), and especially markets with Chinese radish.

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not be stringy or woody, soft, flabby, or wilted. Bunched radishes should have fully intact tops that are dark-green with no yellowing; they may be slightly wilted. Size varies depending on market demand, but larger roots are more likely to be pithy (Carione and Lucas, 1972; USDA, 1975).

Radish is a popular vegetable in both tropical and temperate regions. It is most popular in the North Eastern region including Sikkim. It is cultivated under glass for early production but large-scale production in the field is more common. Radish is one of the most ancient vegetables. Inscriptions on the inner walls of pyramids show that radish was an important vegetable in Egypt about 2000 B.C. It has spread to China about 500 B.C. It has spread to Japan A.D.700.

Radish is a good source of Vitamin C (ascorbic acid) containing 15 – 40 mg per 100 g of edible portion and supplies a variety of minerals. Trace elements in radish include Aluminum, barium, lithium, manganese, silicon, titanium, fluorine and iodine. Pink-skinned radish is generally richer in ascorbic acid than the white skinned one. Vitamin C content of radish roots is greatly influenced by light condition. Radish contains glucose as the major sugar and smaller quantities of fructose and sucrose.

Pectin is also reported to be present. The characteristics pungent flavor of radish is due to the presence of volatile isothiocyanates and the colour of the pink cultivars is due to the presence of anthoynian pigments.

Radish should be fresh, well-colored, tender, firm, and crisp, smooth with no ridges, free from dirt or other foreign material, and free from harvest cuts, abrasions and insect damage. They should not be stringy or woody, soft, flabby, or wilted. Bunched radishes should have fully intact tops that are dark-green with no yellowing; they may be slightly wilted. Size varies depending on market demand, but larger roots are more likely to be pithy (Carione and Lucas, 1972; USDA, 1975; Thompson and Kelly, 1957).

The leaves of radish are a good source for extraction of proteins on a commercial scale and the radish seeds are a potential source of a non – drying fatty oil suitable for soap making, illuminating and edible purposes.
Radish is grown for its young tender tuberous roots which are taken raw as salad or cooked as a vegetable.

It is relished for its pungent flavor and is considered as an appetizer.

The roots are used also for making pickles or dehydrated and used in parathas.

The young leaves are also cooked as vegetables and eaten useful in liver and gall – bladder troubles.

Roots, leaves, flowers are active against gram – positive bacteria.

A salt extracted from roots, dried and burnt to white ash is said to be used in stomach troubles.

It is considered to be useful for the patients suffering from piles, liver trouble, enlarged spleen and jaundice. In Homoeopathy, it is used for neuralgic headache, sleeplessness and chronic diarrhea. The juice of fresh leaves is used as diuretic and laxative.

Radish is also cultivated as a fodder crop in some countries. It also cultivated as companion crop.

The common fungal diseases of Radish- Black spot, Phoma root rot, Black root, Damping-off, Ring spot, White rust, White leaf spot and Powdery mildew etc.

The variation in the number and type of fungal Flora associated with different type of seed tubers differs due to roots variation in the physiochemical nature of Agricultural operations, storage and climatologically conditions of the locality under samplings.

The germ damaged by storage fungi may end up as dust particles in the final production, import undesirable flavours to vegetables and they break down the constituents of seed roots and absorb them. The starch is broken down into carbon-die-oxide and alcohol.

Consumers are interested in vegetables values of the roots while the stockiest are mainly interested in the storability of the roots. The storability is largely dependent upon the chemical changes, which take place in the roots during storage and is governed by temperature, humidity, aeration and microbial activity. It is said that without an ample
storage of seeds, there can be no national measure or no future for the nation.

Biological control involves the use of beneficial micro-organism, such as specialized fungi and bacteria, to attack and control plant pathogens and the diseases they cause. Biological control offers of as environmental friendly approach to the management of plant diseases and can be incorporated into cultural and physical control and limited chemical fungicide use for an effective integrated disease management (IDM). IDM is an approach of making disease control decisions with increased information and involves the use of biological, physical and chemical practice to manage pathogen, population in an economically efficient and ecologically sound way. However, within a given IDM strategy, the establishment view of biological control is safer than chemical control and it is less efficient and less reliable. To be realistic, we should not expect a very broad range of disease control from biological agents, or that they control pathogens in major crops in wide range of environment. Biological control agents are, by their own nature, more limited than their chemical counter parts and the need to be targeted carefully, starting with an appropriate characterization of the bio-control agents and later selecting the antagonist for the given pathogen.

Biological control means the control of a disease through some biological agency. It can be achieved by selection of breeding plant for resistance to particular pathogen or by using micro-organism that are either antagonistic, to the pathogens or parasites. This methods aim at improving the resistance of host. It has been working for decade and continues to be predominant disease control strategy. Biological control accomplished, through introduction or encouragements of micro organism antagonistic to plant pathogens have been slow to develop. Bio-control of plant pathogens such as fungi is currently accepted as key practice in sustainable Agriculture, because it is based on the management of natural resources i.e. certain rhizoplane organism of ecosystem know to develop antagonistic activities against harmful organism. Basically, the role of biological entity in suppression or destruction of an enemy i.e. pathogen or parasite constitute biological control. It is based on the natural phenomenon that bio-control of plant pathogens have been more amendable to its natural occurrence than to introduction or manipulation by man.
The control for plant pathogens is achieved through antagonism, “The balance wheal of mature” that operates through competition, parasitism and antibiosis. Established microbiological associations have developed ecological niches that are interlocking and flexibly buffered.

Garrett, 1970) defined bio-control s “Being mediated by one or more organism expecting man himself and outside the host parasite relationship. Host resistance is concerned with interaction between at least two organisms the host and parasite. “Biological control is the reduction of inoculum density or disease producing activities of a pathogen or parasite in its active or dormant state, by one or more organisms accomplished naturally or through manipulation of environment, host or antagonist or by mass introduction of one or more antagonist.

The present research problem has been undertaken with following objectives.

1. A comprehensive survey and collection of diseased materials from cultivated fields situated in and around Allahabad district.
2. Studies of losses during the cold storage.
3. Pathogenicity test of the isolated fungi
4. Disease management through;
   • Bio-agents,
   • Leaf extracts.