



**Biotica
Research
Today**
Vol 2:9 ⁹⁵⁶
2020 ⁹⁵⁸

Lettuce: A Nutritious Salad Crop

Seema Thakur^{1*}, Jayesh Garg², Devinder Kumar Mehta² and Rajesh Thakur¹

¹KVK, Solan, Dr. Y. S. Parmar University of Horticulture & Forestry, Solan, Himachal Pradesh (173 230), India

²Dept. of Vegetable Science, Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Nauni, Himachal Pradesh (173 230), India

 Open Access

Corresponding Author

Seema Thakur

e-mail: thakurseema76@gmail.com

Keywords

Butterhead, Crisphead, Lettuce, Salad crop

Article History

Received in 19th September 2020

Received in revised form 25th September 2020

Accepted in final form 26th September 2020

E-mail: bioticapublications@gmail.com

How to cite this article?

Thakur *et al.*, 2020. Lettuce: A Nutritious Salad Crop. *Biotica Research Today* 2(9): 956-958.

Abstract

Lettuce is one of the most preferred exotic salad vegetable which has extraordinary health benefiting properties. It can be classified into five types viz., Crisphead, Romaine, Butterhead, Leaf and Stem Lettuce. Lettuce plant has a small and shallow root system; therefore surface soil should be rich in nutrients. In India, it is gaining popularity with the change in food habit and health consciousness among the people. There is an increasing demand by consumers for safe and nutritious foods that improves the physical performance, reduces the risk of diseases and increases the life span. Leaf lettuce is getting more and more preference in the country due to the rise in the tourism sector and its liking by the foreign travelers. It has a bright potential of becoming a business model as well as a healthy food crop for the growers and consumers.

Introduction

Lettuce is an annual leafy salad vegetable of the family Asteraceae. It is one of the most popular vegetables grown in North America and an important component of temperate climatic production systems in Europe and other regions. Lettuce is an ancient vegetable that has been cultivated in the Mediterranean region since 4500 BC.

Nutritional Composition

It is one of the most preferred exotic salad vegetable which has extraordinary health benefiting properties. Lettuce contains a low amount of dietary fats with a high amount of vitamins and minerals. Lettuce contains 95 percent water. A 100 g edible portion may contain about protein content of 2.1 g, 2-5 g of carbohydrates, 250 mg of potassium and 970-1900 IU Vitamin A. Leaves of lettuce have a high amount of vitamin A (present in the form of carotenoids), Vitamin K and Vitamin B₉ and minerals like calcium, potassium and iron. There is a variation in nutritive values in different types of lettuces, romaine or leaf types being the richest followed by butter heads and crisp heads.

Area and Production of Lettuce

In world, lettuce and chicory is cultivated over an area of about of 1.27 million hectare with the production of 27.25 million tonnes. In India, production of lettuce and chicory is around 1.22 million tonnes over an area of 0.19 million hectare (FAO, 2018)(figure 1).

Types of Lettuce

Basically there are five types of lettuce namely Crisphead, Romaine, Butterhead, Leaf and Stem lettuce and each of them serve its purpose differently. Along with this one more type of lettuce is also grown known as oil-seed lettuce which is used for its oil purpose.

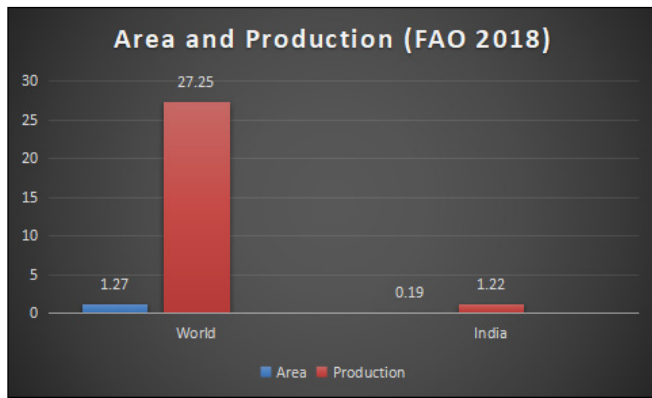


Figure 1: Area and Production of Lettuce and Chicory in World (FAO 2018)

Crisphead Type

It is also known as Iceberg Lettuce. Crisp head cultivars of lettuce are in general heading types with wrinkled non-wrapper leaves, round, brittle-textured and tightly folded with large head (up to 1 kg). These cultivars have excellent shipping and handling qualities.

Romaine Type

This group of lettuce is not so popular and the cultivars in this group have elongated leaves forming a lobed shaped head. The outer leaves are dark to light green in colour with heavy ribs while the inner leaves are finer and lighter in colour. Romaine lettuce is coarse in appearance but have a good taste to eat.

Butterhead Type

The butter head types form relatively small, loose heads with broad oily, crumpled, soft textured leaves. The veins and midribs of butterhead are less prominent as compared to crisphead types. They vary considerably in colour, size and appearance. This kind of lettuce is popular in Northern Europe and consists of summer and winter types as well. Butterhead types are perishable thus have poor shipping and handling attributes.

Leaf Type

The cultivars in this group are non-heading or leaf type. These cultivars vary in colour, heat sensitivity and quality but all produce a rosette of leaves. Most of the leaf type’s cultivars can withstand greater environmental variations and are superior in nutritional and edible quality than other types. This type of lettuce is grown in United States, Europe Australia and India.

Stem Lettuce

This type of lettuce is also known as ‘Asparagus lettuce’ and is grown for its thick stem which is peeled and eaten either raw or cooked as vegetable. This lettuce has inferior quality of leaves than other types of lettuce and is generally grown in United States and Europe (figure 2).



a) Leaf lettuce

b) Stem lettuce



c) Butterhead lettuce

d) Romaine lettuce

Figure 2: Different types of Lettuce

Lettuce bears colours in different colour intensities from yellow to dark green and from reddish tinge to purple hues.

Climate

Optimum temperature is another factor which is required for the good crop production. Earlier researches have shown that both day and night temperatures are important for the lettuce growth and lettuce grown at 20 °C/ 18 °C exhibited better growth than those at 20 °C / 13 °C. Leaf lettuce can be grown during the summers as well as in winters in the mid hills of Himachal Pradesh and is able to fetch a premium price in the market for the growers during the hot summer months of the year. However, high temperature may induce irreversible flowering and accelerates seeds stalk formation.

Soil and Field Preparation

It grows well in a sandy loam soil which is rich in organic matter. Lettuce is highly sensitive to highly acidic soils and thus soils having a pH range of 5.5 to 6.0 are best for its production. Lettuce plant has a shallow root system; therefore surface soil should be rich in nutrients.

Sowing Time

In plains, winter is the perfect sowing time but in mid hills conditions of Solan district of Himachal Pradesh, lettuce can be sown from February to June for remunerative

prices. The produce becomes off-season to the plains. The mid hill conditions of Solan district especially areas surrounding Kandaghat, farmers are cultivating lettuce in summers thereby getting golden returns to their produce.

Seed Rate

Seed rate varies from 375-500 g per hectare depending upon the cultivar. Leafy types of lettuce require more seed per unit area.

Spacing

Generally a spacing of 45×30 cm is recommended for crisphead types and 30×20 cm for leafy type's lettuce.

Manures and Fertilizers

Adequate nutrient availability should be ensured 3-4 weeks before harvest. Application of about 10-15 tonnes of Farm Yard Manure supplemented with about 25 kg each of N and K along with 90 kg P/ha helps to get the good yield in lettuce. The full dose of FYM, Phosphorus, potassium and half of the nitrogen is added at the time of transplanting, while the remaining nitrogen is added one month after transplanting.

Harvesting

Harvesting of lettuce depends on the type and the purpose for which it is grown. Leaf lettuce is highly perishable and generally harvested fresh. It is better to not to harvest the lettuce immediately after the rain or dew, because leaves being crisp and brittle break easily in handling. Lettuce if in good condition can be stored for a period of about three to four weeks at 0 °C and 90 to 95 % relative humidity. Storage helps to prevent market gluts and makes the produce available during the off-season thereby fetching remunerative prices to growers.

Major diseases and Physiological Diseases

Some of the major diseases and physiological disorders of lettuce are:

Damping Off and Root Rot

This is caused by *Rhizoctonia solani* and *Pythium ultimum*. Damping off is characterized in two phases i.e. pre-emergence and post-emergence. In the first case seed germination is inhibited while in post-emergence phase there is shrinking and brown rotting at the stem of the seedling at soil line and thus toppling over of seedlings.

Downy Mildew

This disease is caused by *Bremia lactucae*. This is a serious disease of indoor as well as outdoor crops. Light green to yellow colour areas develop on the leaves which later becomes brown.

Lettuce Drop

This is caused by *Sclerotinia sclerotiorum* and *Sclerotinia minor*. Soft and watery rot appears on the stem and leaf bases. In advanced stages, leaves dry and plant collapse.

Tip Burn

Tip burn is visible on the lateral margins of the inner leaves of mature head. This disorder is more prevalent in glasshouse than in the field crops. This disorder may be due to High temperature, excess of nitrogen, calcium & boron deficiency, light intensity, maturity and duration.

Lettuce has a high content of phytonutrients combined with low dietary fats, which makes lettuce an attractive low-calorie food, whose consumption is highly suggested within weight-loss dietary plans (Kim *et al.*, 2016). In India, it is gaining popularity with the change in food habit and health consciousness among the people. There is an increasing demand by consumers for safe and nutritious foods that improves the physical performance, reduces the risk of diseases and increases the life span (Ogden *et al.*, 2007).

Conclusion

Leaf lettuce is getting more and more preference in the country due to the rise in the tourism sector and its liking by the foreign travelers. Leaf lettuce is now used in almost every cuisine i.e. sandwiches, burgers and Caesar salads which is liked by people of each generation. Besides other important vegetable crops this vegetable has an equal potential of becoming a business model as well as a healthy food crop for the growers and consumers. Leaf lettuce produced in Himachal Pradesh is getting popularity due to its excellent crisp quality, flavor and sweetness. Rise in tourism sector in Himachal Pradesh is also opening its possibilities of cultivation of lettuce. The day is not distant when these crops will find place in the cuisine of every plate.

References

- FAO (2018): <http://www.fao.org/faostat/site/default.aspx>.
- Kim, M.J., Moon, Y., Tou, J.C., Mou, B., Waterland, N.L., 2016. Nutritional value, bioactive compounds and health benefits of lettuce (*Lactuca sativa L.*) Journal of Food Composition and analysis, 49, 19-34.
- Ogden, C.L., Caroll, M.D., McDowell, M.A., Flegal K.M., 2007. Obesity among adults in the United States, NCHS data brief no. 1 Hyattsville, MD. National Center for Health Statistics.