

An Allometric growth estimation of *Mentha longifolia* collected from Gilgit and Ghizer districts of Gilgit-Baltistan, Pakistan

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Abstract: *Mentha longifolia* (Mint) is known with different names in Gilgit-Baltistan such as, Falaling, Ben and Podina. It has a history of wide usage for varied medicinal purposes including chest problems, diarrhea and lowering blood pressure. Besides being used in different food dishes, traditionally it is also used in cosmetics, skin care cream and perfume. It carries antiviral, anti-bacterial and anticancer properties. It is popular across many countries of the world like Europe, America, England, and South East Asia, Pakistan and most particularly in Gilgit-Baltistan. Research revealed that mean allometric (body part to entire plant length) percentage (%) growth to leaf length is 596.545%, (698.15% (Yasin), 494.94% (Gilgit), leaf width is 1222.512% (Yasin 1457.621%, Gilgit 3987.405%), leaf area is 421.93% (Yasin 537.5%, Gilgit 306.369%) and root growth is 641.305% (Yasin 569.87%, Gilgit 712.72%). Average per day growth of leaf length 0.4065 (Yasin 0.012 cm, Gilgit 0.0105 cm), leaf width is 0.0056 (Yasin 0.006 cm, Gilgit 0.0052 cm), leaf area 0.0165 (Yasin 0.016 cm, Gilgit 0.0170 cm), stem 0.0711 (Yasin 0.090 cm, Gilgit 0.0522 cm) and Root length 0.016 (Yasin 0.015 cm, Gilgit 0.017 cm).

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Introduction

Mentha is commonly known as Mint is a herb (Ortiz, 1992). Mint plants are all members of *Lamiaceae* family and the *mentha* genus. It contains a taxon of about 25 species and are perennial plants. Member of *mentha* are known as “True Mints” and some plants in other *Lamiaceae* genera use mint in their common name and entirely family is known as mint family. The members of the plant species are peppermint and spearmints (Ortiz, 1992).

Its species are widely distributed in many countries such as Europe, America, England, South East Asia and Pakistan including Gilgit-Baltistan (Malik, 2012). These plants grow in many habitats like wet or moist environment, gardens. They have underground rhizomes and in network like arrangement and branched stem. They are fast growing and can tolerate a wide range of condition and the leaves are arranged in opposite pairs and dark

green in colour and the leaves are 2-6 cm long and 1-4cm broad.

The plant contain flowers which are white or purple in colour (Brickell and Zuk, 1997). The flower of mint plant forms a rounded spear shape cluster around a long stem. The individual blossoms at the bottom of the cluster open first, to reveal four lobes, not all of the equal size. Ultimately small hard fruit that is produced contain 1-4 seeds (Huxley, 1992). Mint plants are used as food mint lends a boost to drink such as tea. The leaves of the mint are well known in culinary circles for their sweet cool test. Mint jelly often flavours lamb dishes.

Mint flavours everything from tooth past to chewing gum to ice cream and candies (Herbst, 2001). Mint will grow 10-120 cm tall and can spread over an interminate size area (kokkini, Vokou, 1989).



Figure 1: A, *Mentha* collected from Gilgit; B, *Mentha* collected from Yasin and C, Researchers working in the field in Yasin Valley

Material and Method

Ten plants of *Mentha* species were selected from two places of Gilgit Baltistan Yasin (Sultan Abad) and KIU campus Gilgit. From those plants 100 leaves (10 leaves from each plant) had been collected to find the length, width and Area. First of all leaves dried in newspaper and then pasted on white pages to measurement of length, width and Area. For this purpose rubber, ruler, pencil, white pages, gum stick and ruler for the measurement. Shoppers were also used for bringing the plants to the distinct place.

Result and Discussion

We have collected *Mentha* species from Yasin District Ghizir and campus of Karakorum International University Gilgit Baltistan. We have compared the plants of both areas for allometric studies. We observed there is a small difference between the plants of Yasin and KIU campus Gilgit.

Plants of Yasin have high yield as compared to Gilgit. Plants of Yasin were little bit large as compared to KIU campus Gilgit. The stems of the Yasin plants having high length and have thick stem as compared to the stem height of Gilgit plants. The per day growth of Yasin plant having high yield production of shoot then Gilgit. The leaves of Yasin plants are broad from the leaves of Gilgit plants as shown above Figures (A and B) but only the plant root of Gilgit contain larger growth.

Mean growth of leaf length, leaf width, leaf area, stem height and root length of Yasin plants are follow as 2.71 cm, 1.298 cm, 3.52 cm, 18.92 cm and

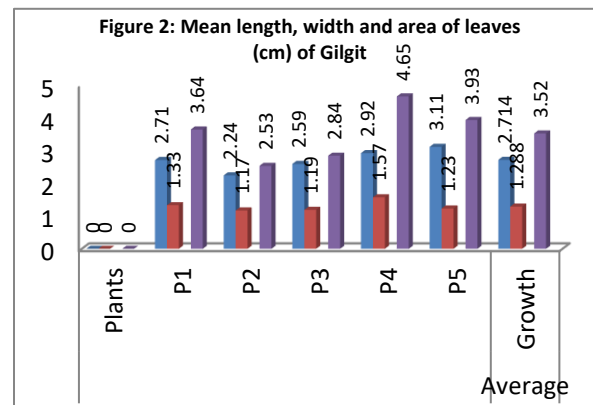
3.32 cm respectively and average growth of leaf length, leaf width, leaf area, stem height and root length of Gilgit plants are 3.168 cm, 1.588cm, 5.118 cm, 15.68 cm and 5.26 cm respectively.

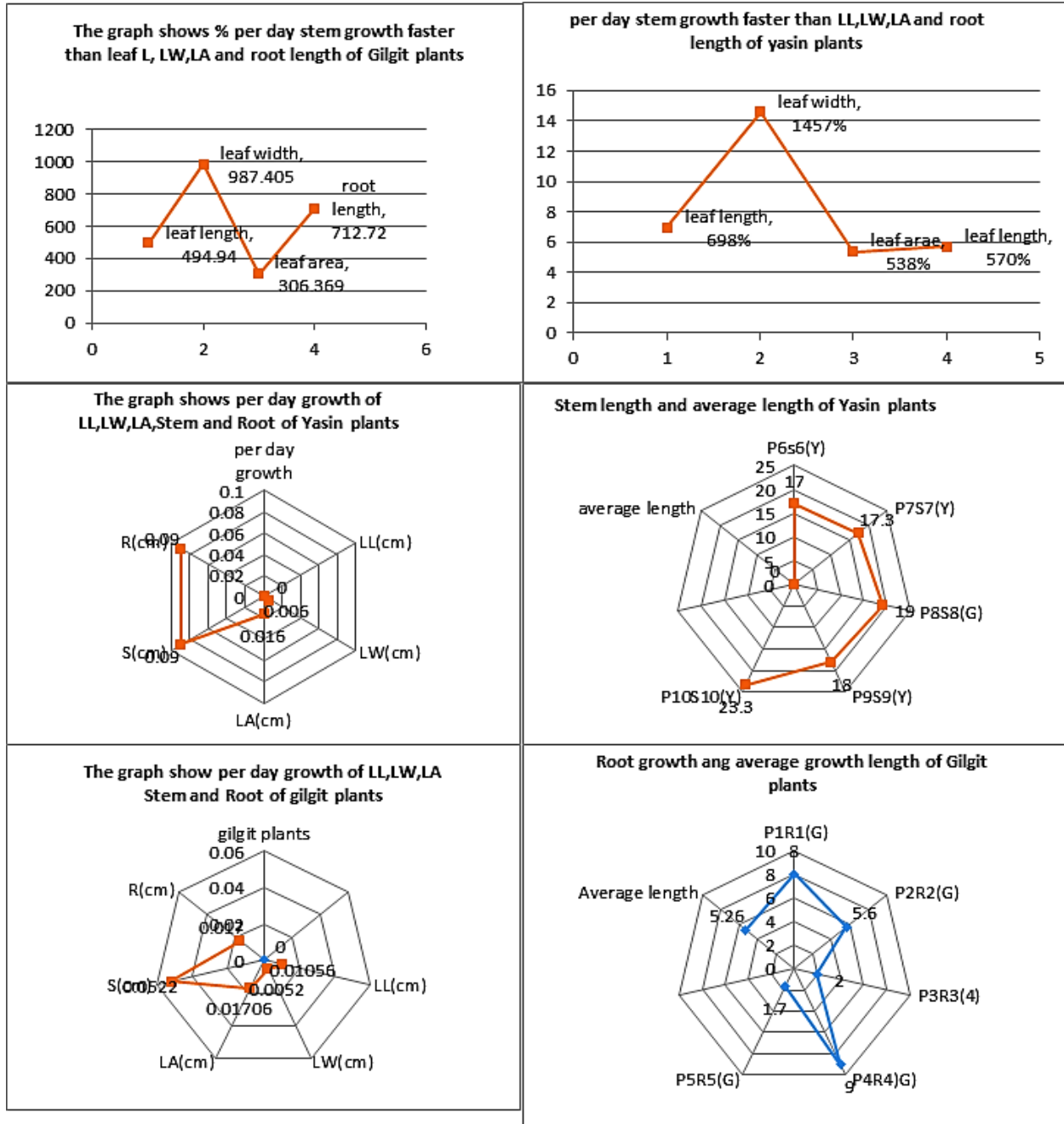
The per day growth of leaf length, leaf width, leaf area, stem height and root length of Yasin plants are follow as 0.012 cm, 0.006 cm, 0.016 cm, 0.090 cm, 0.015 cm respectively and the per day growth of leaf length, leaf width, leaf area, stem height and root length of Gilgit plants are 0.01056 cm, 0.0052 cm, 0.017 cm, 0.0522 cm, 0.017 cm respectively.

From this calculation we get that the little difference is due to the soil fertility, soil texture, temperature, water etc. Average per day growth Average per day growth of leaf length 0.4065 cm (Yasin 0.012 cm, Gilgit 0.0105 cm), leaf width is 0.0056 (Yasin 0.006cm, Gilgit 0.0052 cm), leaf area 0.0165 (Yasin 0.016 cm, Gilgit 0.0170 cm), stem 0.0711 (Yasin 0.090 cm, Gilgit 0.0522 cm) and Root length 0.016 (Yasin 0.015 cm, Gilgit 0.017 cm).

Plant Height

The average height of Gilgit KIU plants is 15.68 cm and Yasin plant is 18.92 cm. The growth of stem is 689.15% faster than the leaf length, 1457.62% faster than leaf width, 537.5% faster than leaf area and stem growth is 569.87% faster than root in Yasin plants. The growth of stem is 494.94% faster than leaf length, 987.405% faster than leaf width, and 306.369% faster than leaf area and 712.72% faster than root length in Gilgit KIU plants.





Research revealed that average stem to leaf length growth is 596.545%, (698.15% (Yasin), 494.94% (Gilgit), leaf width is 1222.512% (Yasin 1457,621%, Gilgit 3987.405%), leaf area is 421.93% (Yasin 537.5%, Gilgit 306.369%) and root growth is 641.305% (Yasin 569.87%, Gilgit 712.72%).

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The first author is student of B.Sc. (hons) at Karakoram International University, Gilgit, Gilgit-Baltistan. This research

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