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IMPACT OF DIFFERENT GROWTH MEDIUM ON SUNFLOWER SEEDS

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Abstract

Sunflower (*Helianthus annus*) is belonging to Asteraceae family. Helianthus is a genus with 65 different varieties and 14 annual plants. The crop is primarily grown for its edible oil. Sunflowers are also used for a variety of other purposes, including wild bird food, livestock forage, and industrial applications. Dyes for textile industries, medicinal purposes, or garden ornaments. There is a lot of in sunflower. Calcium and other essential minerals. It remove toxins such as lead, arsenic, and uranium from contaminated soil. The sunflower crop was first domesticated in America, and it is now popular worldwide. Sunflower is a multi-branched annual plant with large flowers. Sunflowers have a unique trait known as heliotropism, which means that the bud of the plant always faces the sun, all through the day Sunflowers are naturally allelopathic. It is an excellent option for growers on both on a small and large scale. Helianthus annus, on the other hand, is a low-cost, easy-to-manage investment. Furthermore, it is in higher demand in flower markets. To increase production, various media methods were used. To improve the growth of the sunflower crop, five different media were chosen: sawdust, sand, soil, sawdust and sand, and sawdust and soil. Over a 15-day period, germinated seeds were counted daily. Data on seedling height and number of leaves were collected to estimate seedling emergence from two weeks after sowing to four weeks. Germination began in 8 days, according to the results after sowing for the entire substrate. The highest germination rate was recorded on sawdust substrates, while the lowest rate was recorded on sawdust and sand substrates.

Keywords : Growing media, sunflower, germination, productive, yield, oilseed.

Introduction

The sunflower (*Helianthus annus* L.) is a member of the Asteraceae family. Helianthus is a genus with 65 different varieties and 14 annual plants (Andrew *et al.*, 2013). The word Helianthus is derived from helios (the sun) and anthos (a flower), and it means Sunflower, the various times of the day. In general, it is an annual plant with a large inflorescence (flowering head); however, its name is derived from the shape and image of the flower. The plant has rough leaves and circular flower heads (Khaleghizadeh, 2011). Many people make up the head. On a receptacle base, flowers mature into seeds (Seghatoleslami *et al.*, 2012). Sunflower varieties are allergenic in nature (Fabian Fernandez-Luqueno *et al.*, 2014).

Sunflower is the world's fourth largest oil-seed crop, and its seeds and dried stalks are both used as food and fuel. It has been used as an ornamental plant and in ancient ceremonies (Harter *et al.*, 2004; Muller *et al.*, 2011). Furthermore, medical applications for pulmonary diseases have been discovered. Furthermore, parts of this plant are used to make dyes for the textile industry, body paint, and cosmetics. Painting and other embellishments Sunflower oil is used in salad dressings, cooking, and cosmetics. Production of margarine and shortening (Kunduraci *et al.*, 2010).

Sunflower is the fourth largest oil-seed crop in the world, and its seeds and dried stalks are used as both food and fuel. Medical applications for pulmonary diseases have also been discovered. Discovered Parts of this plant are also used to create dyes for the textile industry, body paint, and cosmetics. Painting and other ornamentation Salad dressings, cooking, and cosmetics all make use of sunflower oil. Manufacturing of margarine and shortening (Kunduraci *et al.*, 2010).

Uses

Edible oil

Sunflower seed oil content ranges from 39 to 49 percent in commercially available varieties. In 1985-86, sunflower seed was the world's third largest source of vegetable oil, trailing only soybean and palm. Sunflower accounts for approximately 14 percent of global seed oil production (6.9 million in 1985-86) and approximately 7 percent of total seed oil production. Oil cake and meal made from oilseeds Sunflower oil is widely regarded as a premium oil because of its light colour, high unsaturated fatty acid content, lack of linolenic acid, bland flavour, and high smoke points (Singh, A., *et al.*, 2021). The primary applications are as a salad dressing, cooking oil, and in margarine. It has expanded the use of sunflower oils for frying, tends to increase the shelf life of snacks, and could be used as an ingredient in infant formulas that require stability.

Meals

Sunflower meal has more fibre, a lower energy value, and less lysine but more methionine than soybean meal. Sunflower meal protein percentages range from 28 percent for non-decupled seeds to 42 percent for completely decupled seeds. Depending on the extraction process and degree of dehulling, the colour of the meal ranges from grey to black.

Industrial applications

Sunflower oil is commonly used in the production of soap and detergents. Sunflower oil has been investigated as a pesticide carrier and in the production of agrochemicals, surfactants, adhesives, plastics, fabric softeners, lubricants, and coatings. This application's utility is typically. Depending on the price of petrochemical feedstock. Sunflower oil contains 93 percent of the energy in the United States. Number 2 diesel fuel, and considerable effort has been expended to investigate the potential of sunflower as a biofuel a substitute fuel source in diesel engines.

Non- oil seeds

Over the last 15 years, the use of sunflower seed for birdfeed or as a snack in human diets has steadily increased. Varieties used for non-oil seed purposes have larger seed sizes and require slightly different management practices (Singh, A., *et al.*, 2021). During processing, seed is divided into two types: 1. larger seed for shell roasting and smaller seed for other uses. 2. Large for dehulling, 3. Small for birdseed. The standards for various uses differ depending on the application.

Forage

Sunflower can also be used to make silage. It can be used as a double crop after early harvesting of small grains or vegetables, as an emergency crop, or in areas where the growing season is too short to produce mature corn for silage. Sunflower silage has a higher nutritional quality than corn silage.

Characteristics

Sunflowers attract bees, making them useful in areas where beekeeping is practiced, and more bees are desired. Sunflower petals are not all yellow. There are over 60 different types of sunflowers that can be found all over the world, some of which have striped petals. Some sunflowers have different interiors as well nuances. The French word for sunflower is turnsole, which literally translates to "turned sun." The ability of the plant to turn itself to face the sun. The sunflower is the only flower whose name includes the word "flower" (Colleen Vanderlinden, 2020).



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Different Growth Medium

Sr. No	Treatment	Material used
1	T1	Sawdust
2	T2	Sand
3	T3	Soil
4	T4	Sawdust + sand
5	T5	Sawdust + soil

Fig.1 : Different growth medium.

These distinct treatments were used to forecast better sunflower crop growth. These treatments were carried out over a 20-day period for seed germination, resulting in seedlings with a minimum shoot height of two millimeters. The parameters that were considered on different mediums are seed germination, the impact of substrate on seed germination, and the effect of substrate on seed germination. seed germination and sawdust's effect on seed germination.

Effect of substrate on seed germination

The germination rates for all substrates were less than 90% two weeks after sowing, with sawdust substrate having the highest germination rates. Germination was significantly faster on sawdust and soil than on sand.

Based on the germination rate, the substrate are as follows: Sawdust> soil> sand> sawdust+ sand> sawdust + sand.

Effects of sawdust on seed germination

Sawdust as a component of crop growth media. Furthermore, it has good air-filled porosity and low contact of available water, but this is affected by particle size. The primary effect of sawdust was a significant increase in plant height. The greatest increase in the increase in plant height observed in this treatment could be attributed to an increase in available phosphorus and other nutrients. Dietary supplements Phosphorus promotes cell division in the plant height during vegetative growth expansion.

Conclusion

For a period of 15 days, germinating seeds were counted daily. Data on seedling height and number of leaves were also collected to estimate seedling emergence from two weeks after sowing to four weeks after sowing. Germination began in all substrates 8 days after sowing, according to the results. The very best Germination rates were highest on sawdust substrates and lowest on soil. The seedling on the maximum number of leaves on sawdust substrates was five.

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