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RESEARCH ARTICLE

IMPORTANCE AND PRODUCTION OF BULLET CHILLE PEPPER IN NEPAL; EFFICIENT NUTRIENT AND IT'S ESTABLISHMENT & MANAGEMENT

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ABSTRACT

The Bullet Chilli Pepper (*Capsicum* spp.) is a major vegetable crop grown around the world, owing to its economic and nutritional value. This plant is a member of the broad Solanaceae family. The key challenges for vegetable crop improvement are related to agriculture's long-term sustainability, food stability, and rising market demand. Chilli peppers grow well in a tropical climate due to their adaptation to warm and humid regions with temperature ranging from 18-30 degree Celsius. Nowadays, chilli peppers are cultivated all around the world under different climatic conditions and their production is gradually expanding. The origins of resistance to a wide range of pathogens in pepper, as well as the mechanisms of resistance to various biotic stresses, are discussed in this review article.

KEYWORDS

Agriculture, Chilli production, constraints, management, nutrition, organic manure.

1. INTRODUCTION

Agriculture is Nepal's most important economic field, accounting for 27 percent of the country's GDP in fiscal year 2018/2019, and agriculture employs 65 percent of the country's total population (MOALD 2019). Nepal's agroecology is diverse, allowing for a variety of agricultural systems and crop production, especially chilli. They are the fruit and account for a large portion of the region and development.

Bullet chile peppers, also known as *Capsicum annum*, are a brightly colored Thia chile hybrid belonging to the solanaceae (nightshade) family. Heaven chiles and facing heaven chiles are two names for the same thing. Bullet chile peppers are used in both their unripe green and matured red states, with heat levels varying from 15,000 to 50,000 SHU on the Scoville scale. Bullet chile peppers are rarely found fresh and are commonly sold in small packs of dried pods for flavoring and heat in cooking.

Bullet chile peppers are thin, tapered pods that are conical, straight, or slightly curved, with a diameter of 1 to 4 centimeters and a length of 5 to 6 centimeters in shape with a non-stem end that is pointed. When mature, the semi-thick flesh is crisp, green to red, and the smooth, shiny and thin skin ripens from dark green to bright red under the surface. Bullet chile peppers have a fruity, slightly smoky flavor and a slow-burning, mild to hot spice level.

2. OBJECTIVES

- The primary goal of this paper is to characterize the use of chilli processing.

- To learn about Nepal's current chilli output and productivity.
- To emphasize the significance of the chilli pepper and the reasons for its greater utility.

3. METHODOLOGY

The current paper is focused on secondary data and a study. The study mainly based on literature searches, with secondary data gathered from various journals, annual reports of the Ministry of Agriculture Development (MOAD), Nepal Agricultural Research Council (NARC), and Development of Agriculture (DOA).

The data of area, production and productivity of chilli in Nepal is collected from ministry of Agriculture and livestock Development (MOALD).

3.1 Scientific classification

Kingdom – plantae Clade – Tracheophytes Clade – Angiosperms Clade – Eudicots Clade – Asterids Order – Solanaes Family – Solanaceae Tribe – Capasiceae L. Genus – *Capsicum* L.

3.2 Importance

In the diets of millions of people in developing countries, bullet chilli peppers play a significant nutritional role. In terms of human nutrition, they are an extremely essential fruit in Nepal. The vitamin A and C in bullet chilli peppers are antioxidants that help the body catch invasive pathogens and improve the immune system in general. Capsaicin, a chemical compound found in peppers that causes the brain to perceive

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heat or spice and has anti-inflammatory properties, is also present.

Improves digestive health and metabolism, lowers cancer risk, battles fungal infections, colds, and flu, and relieves joint pain.

3.3 Production

Nepalese green chillies and peppers increased from 5000 tons in 2000 to 120,462 tons in 2019, increasing at a rate of 21.71 percent per year.

Data	Value	Change %
2019	120,462.00	4.32%
2018	115,478.00	14.00%
2017	101,298.00	-10.40%
2016	113,057.00	24.34%
2015	90,928.00	154.93%
2014	35,668.00	27.62%
2013	27,948.00	1.89%
2012	27,429.00	0.83%
2011	27,203.00	1.84%
2010	26,712.00	12.17%
2009	23,813.00	45.54%
2008	16,362.00	

3.4 Seasons/ Availability

Bullet chilli peppers can be found all year.

3.5 Vernacular names of Chilli

- Bengali and Oriya – lanka/lankamorich,
- kannad – mensana kaya,
- Tamil – Mirapakaya,
- Punjabi and Hindi – Lalmirch,
- Guirati – Marcha,
- Malayalam – Mulaku,
- Portugese – Pimento,
- Spanish – Chile dulce; pimiento,
- Myanmar – Ngayok.

3.6 Land preparation

Chillies can grow in a variety of soils, but for the best results, they should be planted in deep soils with good root penetration. They are strong nutrient extractors from the soil, necessitating periodic replenishment by natural or artificial fertilizer, but in the proper proportions to meet the needs and replenish the soil deficit.

Note: Make sure the crop is grown on fertile ground, use manure to enrich the soil with nutrients, or apply a phosphorous-rich base fertilizer like N:P:K at 10gms per hole as a general application at planting time.

Confirm soil nutrient levels using soil analysis to help identify elements in short supply.

3.7 Nutritional requirements

Fertilizer requirement: Top dressing

Top dress the plants with a full fertilizer, such as N.P.K, at a rate of 10gms per plant 3-4 weeks after transplanting, and then repeat the process 2-3 weeks later at a rate of 5-10gms per plant, depending on soil fertility levels. Split top dressing should be applied every three weeks for long cycle growing crops in the green house or shade net as a general rule to ensure consistent production of quality marketable yields.

Foliar fertilizer

It can be used to complement fertilizer applied to the soil, especially during times of crop stress. Hot periods and heavy rains, for example, can obstruct proper nutrient uptake through the roots.

3.8 Nursery establishment and management

- A nursery bed is 1 meter long and 10.15 centimeters deep. For small seeded vegetables, drills should be 3.4cm deep to allow for faster and more consistent growth.
- It's critical to use fine well compost manure to boost early strong seedlings (from goats, cow).
- Chicken manure is not recommended for use in nurseries due to its high nitrogen content, which prevents proper root formation and establishment.
- At the top dressing point, chicken manure is perfect.
- Insecticides should be sprayed on the nursery bed to discourage soil and sucking pest attacks on the young plants.
- Early morning to midday watering is recommended by the nursery, but not in the evening. Evening water promotes pythium activity, which leads to damping.
- Seedlings should be raised in a bed for 6-8 weeks before being transplanted to the main field at the pencil thick point.

3.9 Transplanting stage

- Transplanting is best done when the sun isn't too bright, such as in the early morning or late afternoon. This aids in the reduction of transplanting shock caused by seedling evapotranspiration.
- In a hole where a young plant is planted, wet compost manure mixed with a compound fertilizer, particularly with adequate phosphorous, is essential. This aids in the development and establishment of faster roots, hastening plant growth and reducing the possibility of repeated gapping.
- Standard spacing varies depending on the growing structure.
- The most common size is 60*40 cm, but the vigorous bushy varieties are 60*60 cm.
- To prevent aphids, whiteflies, thrips, and cutworms from attacking the seedling during transplanting, spray it with an insecticide.

3.10 Common pests and diseases during various stages of pepper crop growth.

3.10.1 Nursery stage

Common diseases (s) – Damping off caused by pythium spp, and phytophthora blight.

Common pest (s) – Aphids, whiteflies, leaf miner and cut worm.

3.10.2 Vegetative stage

Common diseases (s) - powdery mildew, leaf spot and phytophthora blight. Common pest (s) – Aphids, whiteflies, thrips, leaf miner.

Powdery mildew on leaves and fruit of chilli.

3.10.3 Fruiting/ Mature stages

Common diseases (s) – powdery mildew, leaf spot, Anthracnose, phytophthora blight, botrytis.

Common pest (s) – Aphids, whiteflies, thrips, fruit worm.

Note: Use the most effective fungicides or insecticides based on the diseases and pests that have been identified.

3.11 Nutritional facts

Amount per 100gramsCalories 40

	% daily value
Total fat 0.4g	0%
Saturated fat 0g	0%
Polyunsaturated fat 0.2g	
Monounsaturated fat 0g	
Cholesterol 0mg	0%
Sodium 9mg	0%
Potassium 322mg	9%
Total carbohydrate 9g	3%
Vitamin A	19%
Calcium	1%
Vitamin D	0%
Cobalamin	0%
Vitamin C	239%
Iron	5%
Magnesium	5%

3.12 Measures to increase the production of chilli

Agriculture in Nepal has unique characteristics due to the wide range of altitude and temperature across the region. Improved varieties that are drought and heat-stress resistant, nutrient-dense, and high yielding should be made available to increase chilli adoption.

To increase chilli production and productivity, the following steps should be taken:

- Farmers should receive agro-training.
- More agro-based industries should be developed.

- Collect, analyze, and choose appropriate varieties from locally available products.
- Varieties with determinant growth habitat and higher yield potential are being created.
- Increasing the efficiency of community-based seed production.
- High-impact crop management innovations are being expanded.
- Develop technology that is appropriate for a high-stress climate.

4. CONCLUSIONS

Bullet chilli peppers are a common food eaten all over the world, and they're well-known for their role in a balanced human diet. It is critical for improving food and nutritional protection, income generation, soil fertility enhancement, soil erosion control, and water conservation, low input use, restricted use of modern agronomic methods, market issues, and poor management. The main constraints for low production and efficiency are business problems and inadequate extension services.

Farmers, on the other hand, have a variety of options for increasing chilli output productivity. As a result, a policy should be implemented to improve, encourage, and build positive awareness of chilli development technologies.

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