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Success Story

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Improved Cultivation Practice of King Chilli (*Capsicum chinense* Jacq.) leads to Sustainability and Income Enhancement of Tribal Farmers of Meghalaya: A Success Story

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ABSTRACT

King chilli (*Capsicum chinense* Jacq.), is one of the cultivated Capsicum species which is indigenous to North Eastern Region of India. This species is considered to evolve through natural outcrossing and occupies a taxonomic position between *C. chinense* and *C. frutescens*, clustering more closely with *C. chinense* group. This chilli species has exceptionally higher capsaicin content (2-4 times higher) compares to normal chilli. This species of Capsicum is one of its kinds with its unique pungency and palatable aroma. It is semi-perennial in nature and widely cultivated in North Eastern Region of India including Meghalaya as vegetable as well as used as spice and condiment. Attributed by its unique pungency and aroma, it has a huge potential in food, pharmaceutical and cosmetic industries. Scientific intervention through improved cultivation practices could leads to higher production and higher net return of tribal farmers of Meghalaya.

***Key word*:** King chilli, sustainability, polyhouse

INTRODUCTION

King chilli is botanically known as *Capsicum chinense* Jacq. It belongs to Solanaceae family and is one of the popular vegetables and spice crop grown successfully in the North Eastern Region of India. It is widely popular in the region for its unique fruit with palatable aroma and high pungency. Attributed by its unique pungency and aroma, it has a huge potential in food, pharmaceutical and cosmetic industries. In Meghalaya, it is normally grown by the farmers as a spring summer crop (sowing on Jan.-Feb and transplanting on March-April). But due to prevalence of abiotic stresses such as heavy rainfall and high relative humidity during this period, there are more incidences of insect pest and diseases especially viral disease under open field conditions leading to shorter harvest duration, lesser yield with low quality. Preliminary study conducted at ICAR Research Complex for NEH Region, Umiam, Meghalaya on autumn winter cultivation of king chilli (sowing on July-August

and transplanting on Aug.-Sept.) under protected structure alongwith ratooning has shown longer harvest duration and increased in net return per unit area. The ratooning of the crop is done in late January when the yield becomes insignificant. The ratooned crop regained its vegetative growth by early February and comes to bearing in mid-late March thus resulting in early spring summer crop. This technology not only reduce the labour and input cost but also provide the feasibility for round the year cultivation fetching good returns to the farmers.

Initiative

Adoption of Scientific Package of Practise for quality King chilli production

The tribal population of Lumdiengngan village situated in Ribhoi district of Meghalaya cultivate king chilli following only the traditional method of cultivation leading to low yield. In this village, king chilli is normally grown as a spring summer crop (sowing on Jan.-Feb and transplanting on March-April). But due to prevalence of abiotic stresses there are more incidences of insect pest and diseases especially viral disease under open field conditions leading to shorter harvest duration, lesser yield with low quality. Keeping in view all this conditions, protected cultivation of king chilli was introduce with scientific approach of cultivation under low cost polyhouse.

Autumn winter cultivation of king chilli (sowing on July-August and transplanting on Aug.-Sept.) under protected structure (low cost polyhouse) alongwith ratooning was introduced in field of four selected farmers. The ratooning of the crop was done in late January when the yield becomes insignificant. The ratooned crop regained its vegetative growth by early February and comes to bearing in mid-late March thus resulting in early spring summer crop. The selected farmers were given both theoretical and hands-on training and demonstration of scientific method of offseason cultivation starting from nursery raising, layout, interculture operation, proper management and handling of protected structure etc. The beneficiaries were also familiarised and demonstrated with the low cost Manual Vegetable Transplanter designed and developed by ICAR Research Complex NEH Region, Umiam. During the whole crop cycle recommended package of practise was followed. A total of four low cost polyhouses were provided to the four beneficiary farmers (one each) alongwith required farm materials such as FYM, vermicompost, irrigation can, seedlings etc.

Nursery Management

It is always advantageous to go for nursery raising instead of direct planting since most of vegetable crops perform better when grown by transplanting of seedlings. Due to lack of knowledge most of the farmers of the region go for direct sowing of the king chilli seeds in the main field leading to high mortality of the plants at early stage and thus lowering yield per unit area. For raising seedlings in soil biotic stresses such as soil borne fungus and nematodes are the major limiting factors. In order to avoid this stress, the farmers were familiarized with the standardized improved techniques of nursery raising for healthy and disease-free nursery i.e., plug tray/pro-tray nursery production.

Steps for filling the Plug trays:

- The seedling tray (pro tray of 1-inch size) is filled with the growing medium (coco peat, vermiculite and perlite) in a ratio of 3:1:1.

- A small depression (0.5 cm) is made with fingertip in the center of the cell of the pro tray for sowing.
- One seed per cell is sown and covered with medium.
- To ensure healthy seedlings it is better to cover the nurseries with 40 mesh nylon nets or seedlings can be raised inside net house to protect from vectors of virus.
- The trays are irrigated lightly every day depending upon the prevailing weather conditions by using a fine sprinkling rose can or with hose pipe fitted with rose.
- Drenching the trays with fungicides as a precautionary measure against seedling mortality may also be done.
- Spraying of 0.2 per cent (2g/litre) water soluble fertilizer twice a week is practiced to enhance the growth of the seedlings.
- Seedlings are ready for transplanting after 50-55 days (3-4 leaf stage) of sowing in trays.
- Systemic insecticides are sprayed 7-10 days after germination and before transplanting for managing the insect vectors.
- The seedlings at right stage of transplanting are hardened by withholding irrigation before transplanting to the main field.

Bed Preparation and Transplanting

Deep ploughings/diggings were carried out and raised beds were prepared well in advance of planting. Vermicompost @ 5-10 tons per hectare wase applied during bed preparation along with basal dose of inorganic fertilizers based on soil test. The healthy seedlings provided by ICAR Research Research Complex for NEH, Region, Umiam, Meghalaya were transplanted in the polyhouse at a spacing of 90 × 90 cm on 2nd September, 2024.

Plant Protection

Unlike other commercially cultivated capsicum species such as normal chilli and bell pepper which are susceptible to diseases such as bacterial wilt, powdery mildew and collar rot, King chilli is less affected by these diseases. The vector transmitted leaf curl virus is the most commonly reported viral disease in this crop. Therefore, timely control of vectors (aphid, whiteflies) or their elimination, are the best remedies. For management of disease vectors eco-friendly techniques i.e., use of sticky yellow traps was adopted to minimize the incidence of vectors and thus prevent the viral diseases.

Impact of the intervention

This technology not only reduce the labour and input cost but also provide the feasibility for round the year cultivation fetching good returns to the farmers. The beneficiary farmers recorded an average yield of 250kg per polyhouse (250 sq. m polyhouse) and earn a net return of Rs.1,00,000/ (sale price of fruit @ Rs 450/kg) with a high B:C ratio (1.34). Thus, with this intervention the selected farmers not only improved their livelihood but also achieved sustainability.

CONCLUSION

Although the agro-climatic conditions of Meghalaya is favourable for production of King chilli, there are challenges in enhancing the production of this potential crop such as lack of scientific methods of cultivation and crop management amongst the farmers and lack of availability of quality planting materials. Intervention through dissemination of scientific method of cultivation amongst the farmers should be encouraged. As this crop has a great market demand and can fetches high price in both domestic as well as international market small and marginal farmers should be encouraged to scientific method of cultivation to obtain high net return per unit area and also enhanced their livelihood.

Beneficiary details:

S.No.	Name	Village Address	Phone No.	Aadhar No.
1.	Phinda Kharumonuid	Lumdiengngan village, Ribhoi District, Meghalaya	9378054855	58632663306
2.	Sasila Kharshning	Lumdiengngan village, Ribhoi District, Meghalaya	8575350729	949919883151
3.	Sarabhelong Khorshing	Lumdiengngan village, Ribhoi District, Meghalaya	9612940093	470190445887
4.	Realdalin Marngar	Lumdiengngan village, Ribhoi District, Meghalaya	9615083539	967176842194

Fig: Frontline Demonstration of scientific method of cultivation of king chilli (*Capsicum chinense* Jacq.)

REFERENCES:

Devi MB, 2018. Capsicum Species in North Eastern Region of India: Diversity and its Potential for Livelihood Improvement of Marginal Farmers. *Agribios* XVII (4): 67-68

Devi MB, Jha AK, Yumnam A, Talang HD, Assumi, SR, Verma, VK, Rymbai, H and Desmukh NA, 2018. Study on Character Association and Path Analysis in King Chilli (*Capsicum chinense* Jacq.). *International Journal of Curent Microbiology and Applied Sciences* 7(12): 2164-2168

Devi MB, Verma VK, Talang HD, Assumi SR, Rymbai H, Vanlalruati and Hazarika S, 2022. Potential genotypes of King Chilli (*Capsicum Chinense* Jacq.) for protected conditions under agro climatic regions of Meghalaya. Agriculture and Environment E-Newsletter pp: 81-82 (Article ID: AEN-2022-03-08-023)