Conference Paper



The Effect of Moringa Climbing Plant (*Moringa oleifera* Lamk) on Growth Herbal Chili (*Piper retrofractum* Vahl) at Bluto Sumenep Madura

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*Corresponding author: E-mail: caturwasonowati@gmail.com	The herbal chili plant (<i>Piper retrodractum</i> Vahl) is one of the potential medicinal plants in Indonesia. This plant includes plants that have climbing roots on their trunk segments so that they require climbing poles for growth. The purpose of this study was to determine the effect of Moringa climbing poles on the growth of herbal chili plants in Bluto Sumenep Madura. This research was carried out in the chili herb garden owned by farmers in Bluto District in September 2022. This research was conducted by survey using an exploratory descriptive method on the land of chili herbal farmers using climbing Moringa plants in Bluto District. Sampling was done by using purposive sampling method. Sumenep Regency is a center for herbal chili plants, one of which is in Bluto District. The herbal chili plants in Bluto are widely cultivated using climbing poles of Moringa plants. Moringa plants are propagated by cuttings because they are used for climbing poles for herbal chilies. The climbing pole of Moringa was chosen because of its long life, the roots of the herbal chili pepper can be attached and grow well, easy to grow, resistant to pruning and do not have a detrimental effect on the growth of the herbal chili plant.				
	Keywords: Chili herbs, moringa, climbing pole				

Introduction

The herbal chili plant (Piper retrofractum. Vahl) belongs to the Piperaceae family and is one of the most widely used medicinal plants in Indonesia. The main benefit of herbal chili is the fruit as a mixture of herbal ingredients. The fruit part contains essential oils, piperine, piperidine, palmitic acid, tetrahydropiperic acid, undecylenyl 3-4 methylenedioxy benzene, N-isobutyl decatrans-2 trans-4 dienamide, sesamin, eicosadienamide, eikopsatrienamide, guinensine, octadecadienamide, protein, carbohydrates, glycerides. tannins, and karyofelina (Aulia, 2009).

The herbal chili grow climbing because they have climbing roots on their trunk segments, so they need a climbing pole as a backrest to grow properly. According to Syakir (2008), the selection of climbing poles must consider the following: the age of the climbing plant is long, the roots of the herbal chili plant grow and adhere well, the climbing pole is easy to grow and resistant to pruning and does not cause adverse effects. such as the possibility of allelopathy, competition for nutrients, sunlight, CO2, and as a host of pests and diseases) and the most important thing is that it is cheap and easy to obtain. Therefore, for the cultivation of chili herbs in Bluto, it is necessary to choose an appropriate climbing pole. The aim of the study was to determine the effect of Moringa climbing poles on the cultivation of chili herbs in Bluto District, Sumenep Regencyimprove their lives.

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Material and Methods

This research was carried out in the chili herb garden owned by farmers in Bluto District in September 2022. This research was conducted by survey using an exploratory descriptive method on the land of chili herbal farmers using climbing Moringa plants in Bluto District. Sampling was done by using purposive sampling method.

Results and Discussion

Chili herbs in Madura grow creeping on the surface of the soil or rocks and climb on tree stands, both in shaded conditions (low light intensity) and in conditions of direct sunlight (Figure 1). This herbal chili plant can grow in the lowlands (near the coast) to the hills of the highlands. According to Diratpahgar (2008) herbal chili plants can grow at an altitude of 1-600 m above sea level, with an air temperature of 20-300 C, rainfall of 1,200-3,000 mm/year and air humidity of 40-80%, sandy clay, loose, well drained and has a soil pH of 5.5-7.0. One of the centers for herbal chili plants in Madura is in Bluto Sumenep District, which has a dry climate (type E), the soil tends to be sandy loam.



Figure 1. Herbal chilli plant with Moringa Plant Climbing

Herbal chili farmers generally have not carried out cultivation techniques that refer to good agricultural practice (GAP) standards to support production quality and safety (Ruhnayat et al., 2011). In the cultivation of chili herbs, farmers should pay attention to the climbing poles used, both in terms of size and tree height. Syakir (2008) reported that in pepper plants, the circumference of the stem used as a climbing pole should not be too large.

Table 1. Data on moringa plants in Pakandangan Sangra Bluto Sumenep										
Location		nting ma-	ig ma- Heigh		Stem circumfer-		Petiole color			
		terial	(m)		ence (cm)					
Pakandangan		Stek			43,4		Green			
Sangra		Stek	6		42,8		Green			
		Stek	7		62,5		Green			
Table 2 Data on herb chilli plants in Pakandangan Sangra										
Location	Planting	Lateral	Branch	Brand	ch	Productio	on Root	Stem Color		
	material	Length	(cm)	Shap	е	Adventive				
Pakandangan	Stek	24	,5	Dimor	fik	> 20 piec	es (lot)	Dark Chocolate		
Sangra	Stek	25	,3	Dimor	fik	> 20 piec	es (lot)	Chocolate		
	Stek	40	,2	Dimor	fik	> 20 piec	es (lot)	Black		

From field observations, it was found that the cultivation of chili herbs in Pakandangan Sangra mostly uses climbing plant from Moringa plants which are cultivated vegetatively using stem cuttings. According to Setiawan et al. (2013) that in climbing pole plants that are easily propagated by vegetative propagation (cuttings), the opportunity for farmers to use them as climbing poles for herbal chili is greater when compared to plants of generative origin (seeds). This is because in climbing pole plants of vegetative origin (cuts) the planting process can be carried out simultaneously between climbing pole plants and herbal chili plants without waiting for the climbing pole plants to be ready or live first. Climbing pole plants of vegetative origin (cuttings) can be prepared or selected, the diameter is large or small and the height of the plant is desired. In terms of efficiency in planting and producing time, climbing pole plants from vegetative origin (cuttings) are easier and are an option for farmers, although in terms of resistance to insect attacks such as termites, they are very vulnerable.

The stem circumference of the climbing plant from Moringa has a stem circumference between 42.5-62.5 cm. According to Setiawan (2009) that the larger the diameter of the climbing pole, the wider the area of attachment of the chili herb roots and the formation of branching and canopy of the herbal chili plant. The large canopy of herbal chili plants correlated with the production of chili herbs. Chili herbs growing on climbing Moringa plants showed good stem and branch growth and a lot of adventitious root growth. This shows that the herbal chili plant can grow well on the climbing of the Moringa plant. This herbal chili plant branch adapts to the soil, has adventitious roots in each node, leaves and stems that are smaller than ordinary branches. If they find a place to climb, these branches will gradually return to normal orthotropic branches and form new trees. According to Syakir (2008), the selection of climbing poles must consider the longevity of the climbing plant, the roots of the herbal chili plant grow and adhere well, the climbing pole is easy to grow and resistant to pruning and does not cause adverse effects (such as the possibility of allelopathy, competition nutrients, sunlight, CO2, and as a host for pests and diseases) and the most important thing is cheap and easy to obtain.



Figure 2. Herb chilli with moringa plant climbing pole

Conclusion

The herbal chili plants in Bluto are widely cultivated using climbing poles of Moringa plants. Moringa plants are propagated by cuttings because they are used for climbing poles for herbal chilies. Moringa climbing poles were chosen because of their long life, the roots of chili herbs can stick and grow well, easy to grow, resistant to pruning and do not have a detrimental effect on the growth of chili herbs.

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References

Aulia, I. P. (2009). Efek minyak atsiri cabe Jawa (*Piper retrofractum* Vahl) terhadap jumlah limfosit pada tikus wistar yang diberi diet kuning telur. Universitas Diponegoro, Semarang. *Laporan Akhir Penelitian Karya Tulis Ilmiah (tidak dipublikasikan).*

Ruhnayat, A., Muljati, R. S., & Haryudin, W. (2011). Respon tanaman cabe jawa produktif terhadap pemupukan di Sumenep Madura. Bul. *Littro*, 22(2), 136-146.

Setiawan, E. (2009). Kajian hubungan unsur iklim terhadap produktivitas cabe jamu (*Piper retrofractum* Vahl) di Kabupaten Sumenep. *Agrovigor, 2*(1), 1-7.

Setiawan, E, Suryawati, S., & Subhan. (2013). Efek ragam tiang panjat terhadap produksi cabe jamu. *Agrovigor*, 6(1), 57-62. Syakir, M. (2008). Ragam budidaya lada. balai penelitian tanaman obat dan aromatik. *Littri, XIX* (3-4), 59-65.