Coconut Leaf Mulching
a Boon for Ginger Farming

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Plantation and spices always go hand in hand particularly in humid tropic climate. They are good components in multi-tier / multistory / multi-species cropping systems. Coconut based cropping system is important for the sustainability and better utilization of resources. Spices are another integral part of this system. Ginger is an ancient spice used in culinary, medicine etc. India is a leading producer of ginger which is grown in 27 states in an area of 1,78,135 ha and the production is 18, 68,435 tonnes of fresh ginger during 2019-20. (DASD, 2020) Mulching is an important cultural operation in ginger production, particularly in rainfed area. The mulch material used vary from dried leaves to polythene sheets.

Coconut is a unique crop and is useful to mankind in several ways. Although coconut occupies 41 percent of Kerala's cropped area more than 95 percent of coconut trees are grown in homesteads (Joseph, 2009). Unlike the large, scientifically managed plantations in other south Indian states like Tamil Nadu or Karnataka, in Kerala, the average size of coconut holding is 20-25 cents with an average number of 15-20 palms per holding. In a scientifically planted coconut garden inter and mixed cropping offers a lot of opportunities for improving the sustainability and livelihood security. In the state, coconut price is showing mixed trends and farmers are facing kick backs due to the escalating cost of inputs over the years.

Ginger is an important spice crop being grown by many farmers as a suitable crop for inter cropping in coconut based homesteads.The crop can also be cultivated in open conditions. Mulching in ginger is a common practice in many parts of India and its beneficial effects in enhancing sprouting, reducing soil erosion, conserving moisture, adding

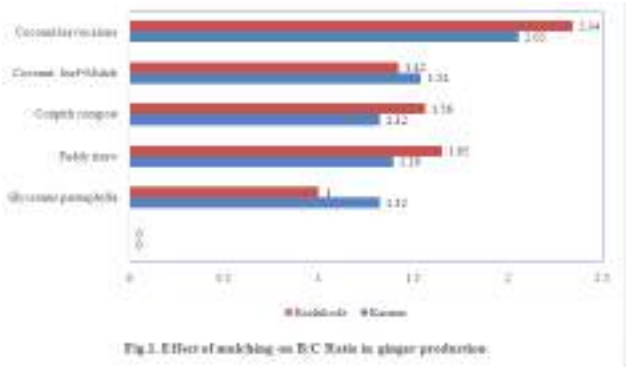

Fig.1. Effect of mulching on B:C Ratio in ginger production

organic matter, improving temperature and physical properties of soil and minimizing weed competition in rhizomatous crops have been reported under various agro-climatic situations by several workers.Mulching with green leaves is an important cultural operation in rainfed ginger cultivation which was in vogue since long due to its role in weed suppression,moisture conservation and ensuring suitable micro environment for rhizome development. Tree leaf mulch (Jayachandran 1997) has reported to significantly increase the yield of rhizomatous crops in India. But due to the fragmentation of land and destruction of trees around the homestead, the availability of green leaves is badly limiting the scientific ginger cultivation in the homesteads.

An adult coconut palm produces 12-16 leaves each year. A mature leaf is 3-4 meters in length and can have around 200 leaflets.In coastal areas leaves are used for roof thatching. Majority of the dried leaves are used for burning and a minor portion is being used for mulching and composting. Burning of dried leaves generates a large quantity of particulates which are carried by the wind which can reach deep in lung tissue of people around and can cause respiratory diseases.In order to reduce the harmful effect,and to utilize the fallen dried leaves effectively, a field experiment was conducted at Indian Institute

of Spices Research(ICAR-IISR), Kozhikode. The aim was to manage weeds in ginger fields and coconut leaf mulch was compared with plastic and control plot *(Glycosmis pentaphyllamulch).*

The trial was evaluated in farmers plot (Mr. Biju,Chowattukunnel,Cherupuzha, Kannur Dt.) and it was found that, 45 days after planting (DAP) there was significant reduction in mean dry weight of weeds(90 kg/ha) in plots where dried coconut leaves were used as mulch (@8kg/3m2or @ 5400kgha-1) compared to control (114 kg/ha) where under *Glycosmispentaphylla* was applied. Ginger rhizome yield (20.25 t/ha) (Table 1) and B:C ratio (2.04) (Fig.1) were high in dried coconut leaf mulched plot compared to control(14.75 t/ha) and B:C ratio (1.32).

Similar performance was also recorded in another farmer's field trial at Kozhikode (Saji Mathew, MadathilParambil house, Koorachundu).Ginger rhizome yield obtained was high(25.35t/ha) in dried coconut leaf used plot compared to control(11.25 t/ha). The B:C ratio for dried coconut leaf mulch applied treatment was 2.34 whereas, it was 1.0 for control.

The existence of more lasting favourable micro environment and microfloral involvement in releasing more N,K, Ca,Mg and Cu from dried coconut leaves compared to other treatments and lesser weed growth and less disease incidence could have contributed to the higher performance of the crop.

Treatments	Tiller (nos)		Dry weight of weeds (kg/ha)		Yield (t/ha)	
	Kannur	Kozhikode	Kannur	Kozhikode	Kannur	Kozhikode
Glycosmis pentaphylla (control)	7.25	6.750	216	114	14.75	11.25
Paddy straw	6.75	7.650	110	46	16.95	18.45
Coirpith compost	7.25	6.650	106	43	15.25	18.58
Coconut leaf+Mulch	6.00	7.000	108	35	19.75	16.20
Coconut leaves alone	10.25	10.750	90	19	20.25	25.35
CD(0.05)	1.59	1.01	12.1	17	4.11	2.72

Conclusion

It is concluded that application of dried coconut leaves@8kg/3m2or@5400kgha-1 at planting as mulch on ginger beds immediately after planting was beneficial in suppressing weeds and augmenting yield of rainfed ginger significantly besides its low cost, local availability, eco-friendly nature and ecosystem services compared other mulches used in the trial. Both the farmers have accepted the technology and wish to adopt the same in future also for ginger farming.

(Contact number of Mr. Saji 9946139248 and Mr.Biju -8075729537)

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