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Programme Activity Report: Online Training Course on Hydroponic Technology of Vegetable Cultivation, 27th until 28th of May, 2021

List of Trainers/Facilitators (*alphabetically sorted*):

Fiadini Putri

Fiadini Putri has more than 10 years' experience in training and teaching human resources working in agriculture. She is an agronomist and horticultural specialist. She has extensive professional experience in horticulture, global trends, research, inorganic nutrients and secondary metabolites of plants. Currently she works at the Lembang Agricultural Training Centre, the Ministry of Agriculture of the Republic of Indonesia as Lecturer. Fiadini is currently completing PhD in agronomy and horticulture at the Bogor Agricultural Institute.

Sani Hanifah, SP., MP

Sani Hanifah has over 15 years of experience in training and teaching agricultural human resources. She is an agronomist. She has extensive professional experience in horticulture. She is now working as Lecturer, in the Lembang Agricultural Training Centre – the Ministry of Agriculture of the Republic of Indonesia. Sani holds a Masters in Agronomy from the University of Sebelas Maret

Shalendra Prasad

Shalendra Prasad has more than 25 years' experience in researching commercial horticultural crop varieties. He specialises in fruit and vegetable production, food security and quality assurance. He has been involved extensively in development partners' projects, such as AusAid, USAID, Market Development Fund and ACIAR. He trains in "Increasing Household Vegetable Production" as part of vegetable cultivation. He currently works at the Ministry of Agriculture of Fiji as Head of Agriculture Research. Shalendra holds a Master in Horticultural Science at Maejo University, Thailand, and is completing a PhD at the University of the Sunshine Coast, Australia.

List of Countries (*alphabetically sorted*):

No	Country	Number of Person(s)
1.	Bangladesh	1
2.	Cambodia	12

No	Country	Number of Person(s)
3.	Fiji	2
4.	India	2
5.	Indonesia	1
6.	Nepal	5
7.	Solomon Islands	7
	Total	30

Distribution of Participants' Background

No	Background	Percentage
1.	Government	36.67%
2.	Higher education institution	56.67%
3.	Private sector	6.6%

Programme Activity Report

Online Training Course on Hydroponic Technology of Vegetable Cultivation

27th - 28th of May, 2021

Background

On 27th - 28th of May 2021, in collaboration with the Ministry of Agriculture of the Government of Fiji and the Ministry of Agriculture of the Republic of Indonesia, the Non-Aligned Movement Centre for South-South Technical Cooperation (NAM CSSTC), hosted "Online Training Course on Hydroponic Technology of Vegetable Cultivation".

Hydroponics is a way of cultivating plants that provide mechanical support for nutrient solutions, with or without an inert substrate, such as soil. For farmers to produce food everywhere without being dependent on season and numerous resources, hydroponics is an efficient alternative. Nowadays, hydroponics on vegetable cultivation have been employed to prevent seasonal issues.

Experts from the Ministry of Agriculture of the Government of Fiji and the Ministry of Agriculture of the Republic of Indonesia attended the virtual training session to present. Discussion sessions proceeded.

Numerous government officers, academics and corporate sectors from certain countries attended this training course.

In the following subjects of discussion participants obtained a better understanding and experience: 1) Improved Vegetable Production Efficiency; 2) Maximised Production for the Economy of Fiji for Vegetable; 3) Reduced Hydroponic Installation System Costs; 4) Growing Hydroponic System; and 5) Effective Selection of Hydroponics.

Discussion

<u>Use of Technology for Efficiency</u>

As time as the people decide to use hydroponics, numerous approaches and methods can be enhanced. For plants classified as short-term plants, technology must be used to monitor crops and improve the varietal and agriculture system. This can be done, not just at the country level, but also society with its little output. The improvised farming technique will demonstrate that the farm's situation in each country/location is well irrigated and adaptive. The employment of technology and the development of variation can also boost farm productivity and efficiency.

For some people, it may be expensive to design their own hydroponic system. However, farmers/growers are advised to consider using an expensive system. The method tends to be employed in the long run, in addition to being more efficient than low-priced. For some (more) cost effective systems, farmers/growers have to regularly alter certain materials/aspects to preserve efficiency.

Hydroponic Systems for Places Which Suffer from Water Limitation

Hydroponic systems offer an easier approach to benefit, especially with regard to fertilisers, the existing resources. Hydroponic can serve as an efficient alternative to maintain vegetable/agricultural products for places which suffer from water limitation.

The aeroponic system is one of the latest systems in hydroponics which does not take a great deal of water. It can not only be used on potatoes, but other vegetable types as well. The formation of fundamental roots and structural strength should one thing be taken into account by the use of aeroponics.

Drip irrigation is also part of hydroponics, although this approach uses a natural substate (soil-less) medium, particularly for the root, only to maintain the plant. Drip irrigation can be used efficiently, especially in areas of water deficit.

Nutrients for Hydroponic Crops

First of all, the hydroponic water must be clean, which means that no dangerous or harmful minerals should be found in it. The pH, must also be 7 (not more or less).

The chemical or plant-producing hydroponic nutrients such as urene fertiliser (in Indonesia), potassium Chloride or the basic SP-36 fertiliser may be used in certain places where supporting nutrients do not have been developed by hydroponic crops. Such material has its own content or percentage use, i.e. only 46% (maximum) of the whole chemical is being used.

Fiji Government Policy on Vegetable Production

Fiji is trying to keep its economy through the export of veggies/agriculture products in the period of the COVID-19 pandemic. Hydroponics, which mainly employed in small farming production, is one of the projects being supported by Fiji's Government.

Most people in Fiji are beginning to realise how important healthy living is for the cultivation. The Fiji government supports the domestic farm mechanisms and the process of production for this beneficial trend.

The government considers that agriculture is a business, hence every farmer/grower has a personal judgement on the value for money. But since Fiji also imports the hybrid seeds, the Government of Fiji is so cognizant of the risk of seeds of their local vegetables that it could one day disappear.

Thus, Fiji's government has established a large production association to ensure that its supply is kept full by hybrid seeds and its indigenous production seeds are analysed and developed for sustainable production.

Evaluation

By the end of the event, 12 random participants attended survey by the organisers. Survey results are as follows (*vide* Chart 1):

- 76% of respondents said the training comply with the country's policies;
- 76% of respondents said the training was relevant with the current's development issues;
- 83.34% of respondents said the training was significant for their works;
- 88% of respondents said the training met their expectation;
- 68% of respondents said the contents were well arranged and easy to follow;
- 97.5% of respondents said the training was interesting.
- 85% of respondents said the training's goals was fulfilled;
- 90% of respondents said their level of knowledge were growing up;
- 88% of respondents said the trainers were keeping them engaged and interested;
- 78% of respondents said the training time allocation was enough; and
- 70% of respondents said the management of the Zoom Webinar was convenient.

Based on the above results, 80% respondents found that the training was very impressive.

Conclusion

Throughout the training organisation, organisers draw the following conclusions:

- The participants have learned how to improve the efficiency of production of vegetables, to reduce the cost of the hydroponic system, to grow the hydroponic system in the crisis region and to make an effective choice of hydroponic material.
- As a country producer of vegetables, the Fiji is recommended to use the off-season production and small-scale hydroponics production to ensure consistency of the supply chain of vegetables.

- The exact number of fertiliser substances needed in the growing hydroponics system, notably nutrients, should be observed. The materials should not be very expensive, however the expenses can be decreased by using the materials supplied in every location.

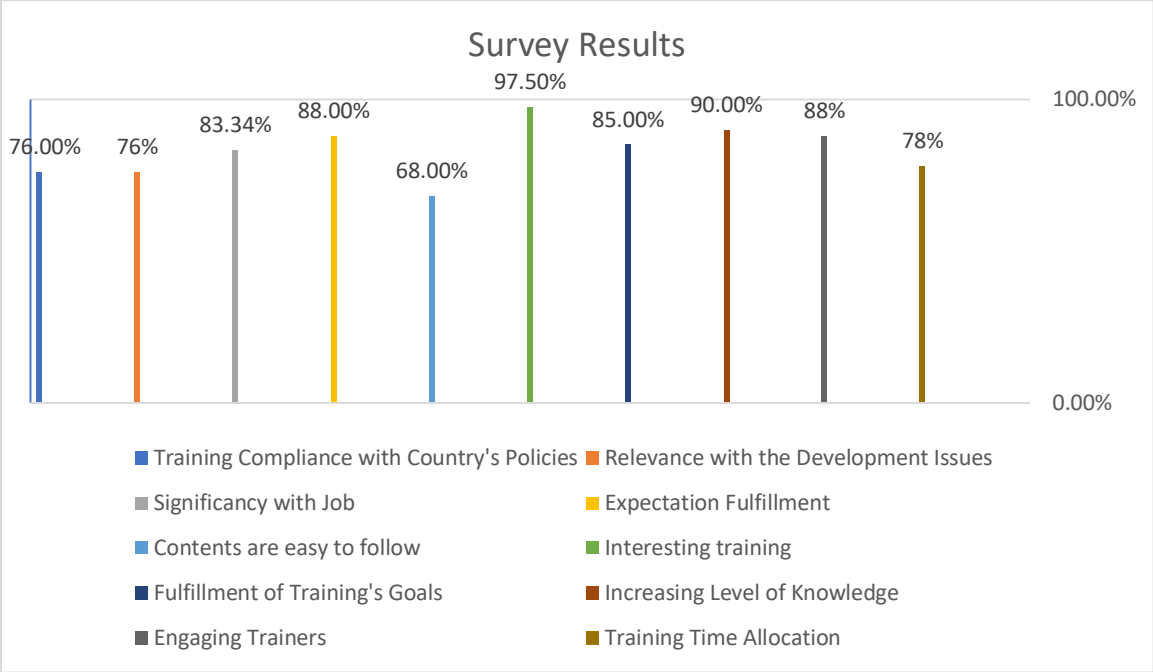

Chart 1. Survey Results

DOCUMENTATIONS