

## **NOVEL Organic Liquid Nutrients: An effectual tool for organic vegetable production**

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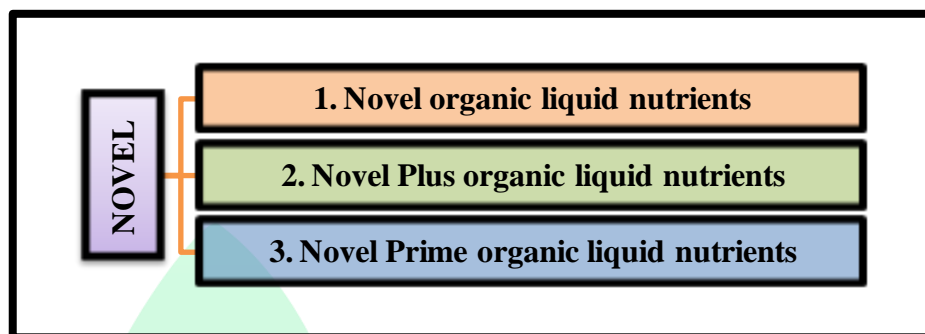
### **INTRODUCTION**

In horticulture sector, contribution of vegetable production remains highest (59 -61%) among all other horticultural crops over the last five years. Vegetables are known as protective food as they provide nutrients, minerals, vitamins, antioxidants and fiber required for optimum health and wellness. Conventional farming played a great role in achieving green revolution at early stage after independence. Green revolution in India helped to fight hunger as well as to strengthen the economy of country but along with these benefits excessive use of chemicals in conventional farming leads to various problems in long run. To overcome problems related to excessive use of chemicals in present time organic farming is a key tool. In recent times, organic produces are in huge demand due to increased awareness about health in public. While protecting the environment, organic farming also provides healthy food and good returns of capital in long term farming (Patel and Champaneri, 2020). Novel organic liquid nutrients are series of products developed by Navsari Agricultural University which are used as organic liquid fertilizers to supplement nutrients in variety of crops.

### **NOVEL**

Novel organic liquid nutrients are banana pseudostem sap obtained as a byproduct during extraction of fiber from banana pseudostem. The banana pseudostem sap is collected by squeezing scutcher waste either manually or by press obtained during the process of fiber extraction. The sap obtained is to be filtered for removing the suspended material. Mixing of different organic inputs and sap has to be done in sequential manner. The whole mixture is then filled in bio-digester and incubated under anaerobic condition. The mixture is to be

stirred periodically. After specified period the supernatant is to be collected, filtered and stored in air tight container (Desai *et al.*, 2016). Presently there are three products available which developed through this method at Navsari Agricultural University.




**Containers of Novel organic liquid nutrients, Novel Plus organic liquid nutrients and Novel Prime organic liquid nutrients**

(Source: Banana Pseudostem Processing Unit, NAU, Navsari)

### 1. Novel organic liquid nutrient:

Novel organic liquid nutrient is a product of Navsari Agricultural University which was patented in the year of 2012. It is banana pseudostem based organic liquid nutrients. Nutritional and biochemical composition of Novel organic liquid nutrient is given in Table - 1 (Desai *et al.*, 2016).

Chemical		Biochemical	
Parameters	Mean	Parameters	Content
N	0.062 %	Total phenol	48.0 to 49.1 mg/100 ml
P	0.018 %	Urease activity	63 to 81 U/ml/min
K	0.180 %	Gibberellic Acid	110.2 to 205.0 mg/l
Ca	0.031 %	Cytokinin	137.8 to 244.3 mg/l
Mg	0.092 %	<b>Microbe</b>	<b>Population</b>
S	0.010 %	Total viable count	$1065 \times 10^3$ CFU/ml
Mn	5.73 ppm	PSB	$1025 \times 10^2$ CFU/ml
Cu	0.40 ppm	<i>Rhizobium</i>	$285 \times 10^2$ CFU/ml
Zn	2.92 ppm	<i>Azotobacter</i>	$460 \times 10^2$ CFU/ml
Fe	109.3 ppm	Fungal count	1200




**Table: 1: Nutritional and biochemical composition of Novel organic liquid nutrient**

### 2. Novel Plus organic liquid nutrient:

Novel Plus organic liquid nutrient is a new generation crop protector which is used as organic pesticide. It is an upgraded product of Navsari Agricultural University similar to Novel organic liquid nutrient but it has additional insecticidal properties which is due to incorporation of different botanicals in formulation. Nutritional composition of Novel Plus organic liquid nutrient is given in Table - 2 (Champaneri *et al.*, 2021).

Parameters	Mean
N	0.071 %
P	0.016 %
K	0.158 %
Na	0.059 %
Ca	0.026 %
Mg	0.147 %
S	0.015 %



Fe	742.0 ppm	
Mn	11.53 ppm	
Zn	2.30 ppm	
Cu	0.26 ppm	

**Table: 2: Nutritional composition of Novel Plus organic liquid nutrient**

### 3. Novel Prime organic liquid nutrient:

Novel Prime organic liquid nutrient is a new generation crop protector which is used as organic fungicide. It is an upgraded product of Navsari Agricultural University similar to Novel organic liquid nutrient but it has additional fungicidal properties which is due to incorporation of different botanicals in formulation. Nutritional composition of Novel Prime organic liquid nutrient is given in Table - 3 (Source: Banana Pseudostem Processing Unit, NAU, Navsari).

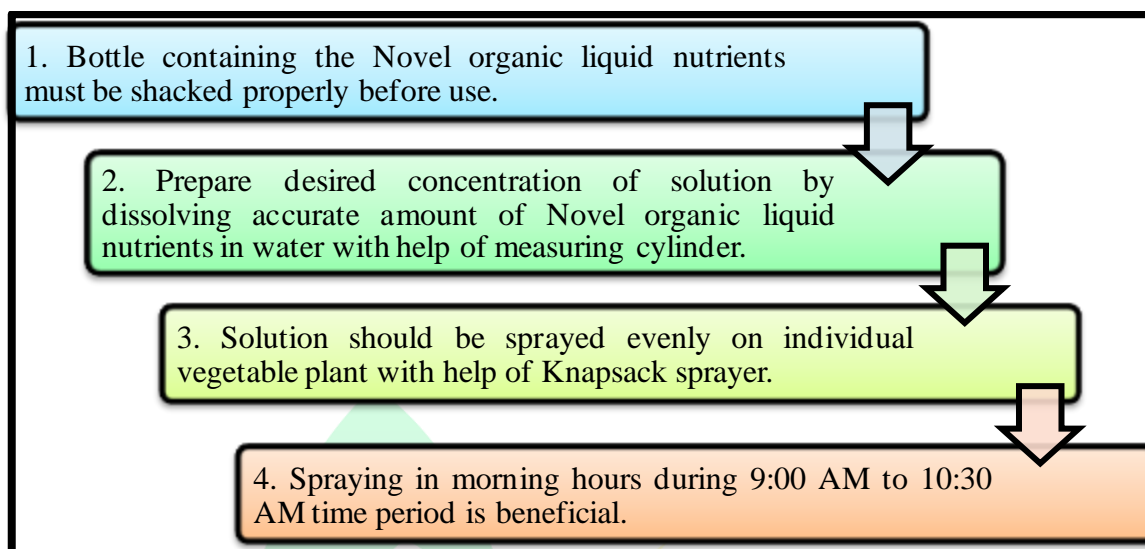
Parameters	Mean
N	0.124 %
P	0.018 %
K	0.211 %
Na	0.020 %
Ca	0.090 %
Mg	0.385 %
Fe	205.0 ppm
Mn	8.84 ppm
Zn	1.77 ppm
Cu	0.76 ppm



**Table: 3: Nutritional composition of Novel Prime organic liquid nutrient**

### METHOD OF APPLICATION

Method of application plays an important role in effectiveness of Novel organic liquid nutrients towards growth and production of vegetable crops. Steps for using Novel organic liquid nutrients as foliar spray are given below:



### REVIEW OF RESEARCH WORK

Various experiments were done to register effectiveness of Novel organic liquid nutrients on different vegetable crops. Summary of these experiment is given in Table - 3.

Crop	Title of experiment	Results	References
<b>Indian bean</b>	Efficacy of Novel organic liquid nutrient and Novel Plus organic liquid nutrient on quantitative traits of Indian bean [ <i>Lablab purpureus</i> (L.) Sweet]	Application of 1.0 % Novel Plus organic liquid nutrient spray executed maximum fresh weight (30.87 g per plant), dry weight (8.01 g per plant) and pod yield per hectare (5,619 kg).	Champaneri <i>et al.</i> (2021)
	Economics of Indian bean [ <i>Lablab purpureus</i> (L.) Sweet] production influenced by application of Novel organic liquid nutrient and Novel Plus organic liquid nutrient.	Higher net income (Rs. 1,05,178 per ha) and BCR (1.21) were found under application of 0.5 % Novel Plus organic liquid nutrient spray.	Champaneri <i>et al.</i> (2020)
<b>Tomato</b>	Effect of silicic acid and Novel organic liquid nutrient on growth, yield and quality parameters of greenhouse tomato	Maximum number of picking along with higher net return was observed under application of 0.3 % Silicic Acid + 1.5 % Novel organic liquid nutrient spray in tomato.	Patel (2019)
<b>Sweet</b>	Response of sweet potato	Tuber yield (30.58 t/ha), tuber weight	Shah (2019)



<b>potato</b>	[ <i>Ipomoea batatas</i> (L.) Lam.] to fertilizer levels and Novel organic liquid nutrient	(189.69 g), harvest index (46.14 %) and BCR (2.10) were registered maximum under application of 100 % RDF along with four sprays of 2 % Novel organic liquid nutrient.	
<b>Okra</b>	Effect of different levels of nitrogen and Novel organic liquid fertilizer on growth and soil properties of okra cv. GAO 5	Application of 100 % RDN and 2 % Novel organic liquid fertilizer had the maximum plant height (97.89 cm), number of branches per plant (2.70), total dry biomass (1,477.58 g/plant) and net realization of okra.	Chotaliya <i>et al.</i> (2018)
	Effect of foliar application of micronutrients, Novel organic liquid fertilizer and seaweed extract on yield of okra [ <i>Abelmoschus esculentus</i> (L.) Moench]	Foliar spray of Novel organic liquid fertilizer @ 1.5 % found to be beneficial to get maximum pod length (8.64 cm), pod diameter (1.43 cm), number of pods per plant (24.35), pod weight (11.45 g) and marketable pod yield (0.28 kg/plant and 15.537 t/ha).	Kalariya <i>et al.</i> (2018)
<b>Cabbage</b>	Cabbage ( <i>Brassica oleracea</i> var. <i>capitata</i> L.) yield, nutrients uptake and soil available nutrients as influenced by nitrogen and foliar nutrients application under south Gujarat condition	Maximum diameter of head (15.79 cm), weight of head (705.2 g) and head yield (23.65 t/ha) were observed under application of 1 % Novel organic liquid nutrient.	Patel <i>et al.</i> (2018)

**Table: 3: Review of research work**

## CONCLUSION

By considering all these information it can be concluded that application of Novel organic liquid nutrient, Novel Plus organic liquid nutrient and Novel Prime organic liquid nutrient along with recommended dose of fertilizers improves the growth and yield parameters of vegetable crops. These organic formulations can be an effective tool towards the era of organic vegetable farming in future tenure.

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