



# Mangalam Kalpataru Industries LLP

Stepping towards A Sustainable & Circular Economy



[www.mangalamkalpataru.in](http://www.mangalamkalpataru.in)



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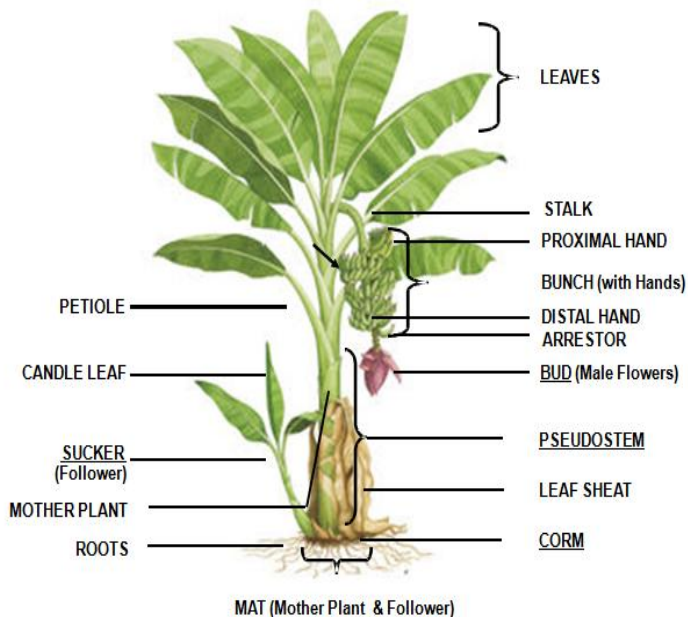


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# WHY ONLY BANANAS ??

## Parts of Banana

Scientific Name : Musa sp.  
Family : Musaceae



- ✓ India contributes **29.19% of global production**
- ✓ Banana contributes **37% to total fruit production in India.**
- ✓ **Banana occupy 20% area** among the total area under crop in India
- ✓ In India It is cultivated in an area of 830.5 thousand ha and total production is around 29,779.91 thousand tons
- ✓ **1500 to 1600 plants** can be grown on one acre land; with 25kg average weight of stem.
- ✓ Planting is done during Feb to May in north India, whereas in south it can be done any time except summer
- ✓ Life span of Banana plant is 9 to 12 months.
- ✓ India generates an estimate of 80 million tonnes of Banana pseudostem waste annually.

# Problem Statement -



## Problem # 1

Farmers faced challenge to dispose huge amount of Banana plant waste generations.

- It takes 3-4 months for stem decomposition.
- It costs 12,000 –15,000 per hector to cut and decompose Banana stems.

## Problem # 2

- Natural Hazards like heavy storms, rains and virus attacks becomes the hurdle to any crop and lead to big losses.
- Some factors are beyond control.

## Problem # 3

Reduction in Natural processing time of crop and maximum yield expectation lead to high consumption of Chemical Fertilizer and Pesticides.

- Impact of same is reported in –
  1. Soil deterioration
  2. Hazardous effect on

# The Objectives & Solutions -

1

- Converting challenges into opportunities



To convert Banana Stalk to Value addition products mainly-

- Banana Fiber
- Organic Liquid Fertilizers
- Handicrafts
- Banana Pulp

2

- Step towards creating Organic fields



Banana Sap is used in making the high-quality Organic Liquid Fertilizers.

- The residue is easily converted into Soil Compost
- Vermicompost
- Zero carbon emission

3

- Sustainable raw material for industries eradicating Plastic



To convert Banana Stalk into Cellulosic material for pulp industry.

- Textile Industry
- Paper Industry

4

- Livelihood promotion by creating employment at rural areas



Generates new employment opportunities for women and Farmers.

- The Idea is highly scalable as Banana is cultivated largely in Maharashtra.
- Generates employment in Rural areas.

# Technology & Product Details cont.. -



Huge Agro-waste  
Globally



Banana Fiber

Textiles  
Paper  
Handicrafts



R&D  
Banana Pulp

Cutlery  
Napkins  
Packaging

- Life cycle of 9 – 11 months.
- Banana fruit ready to Harvest



Use of Chemical  
Fertilizer



Organic Liquid Nutrients (Bio-Fertilizers)

- Vegetables & Fruits
- Millets
- Cash crop
- Kharif crops
- Spices

- After harvest, almost 60% of banana biomass is left as waste.
- India is the top country by bananas production in the world, with almost 27% of world production.

# Technology & Product Detail cont.. -

## ❖ Sakal Samruddhi Organic Liquid Bio-Fertilizer

### Primary Nutrients:-

Nitrogen : 2000-3000 ppm

Phosphorus : 210-270 ppm

Potassium: 1500-2500 ppm

### Secondary Nutrients:-

Calcium : 330-450 ppm

Magnesium: 970-9000 ppm

Sulphur : 130-170 ppm

### Micro Nutrients:-

Manganese: 4-7ppm

Copper: 0.42-0.80 ppm

Zinc: 1.2-4.0 ppm

Iron 15-187 ppm

Molybdenum 0.2 ppm

Boron 2.4-2.7 ppm

### Growth Hormones:-

Cytokinins: 330-450 ppm

Giberellic acid: 970-9000 ppm

Amino acids: 130-170 ppm

### Culture:

Azotobactor 1x10Per ml

Rhizobium

Tricoderma

Pseudomonas Fluorescence



OLF - Technology is internationally tested , Patented & Approved by ICAR, New Delhi

# सकल समृद्धि जैविक तरल पोषक तत्व की प्रयोग विधि -

- ❖ पौधे के जीवन चक्र में कुल 5 स्टेज होते हैं | बीज, पौध (Seedling), वृद्धि काल (Growth), फूल (Flowering) और फल (Fruit) स्टेज |
- ❖ दालों के पौधों को कम पानी की जरूरत होती है। पौधों के बीच 35 सेंटीमीटर की दूरी रखें।



**1<sup>st</sup> spray** – डीएपी (DAP) के साथ बीज डालते हैं, इसीलिए पहला स्प्रे पौध पत्ते आने के बाद और फूल आने से पहले किया जाना चाहिए।



**3<sup>rd</sup> spray** - जैसे ही फूलों से फल आने लगे तीसरा और आखिरी स्प्रे करना चाहिए।



**2<sup>nd</sup> spray** - पौधों में फूल आने पर दूसरा स्प्रे करना चाहिए।



## स्प्रे करने की विधि -

- 1 लीटर पानी में 10ml डाला जाता है।
- यादी 15 लीटर की टंकी है तो उसमें 150ml लिक्विड का प्रयोग करना है।
- यादी आप ड्रिप इरिगेशन करते हैं तो आखिरी के 15 मिनटों में वेंचर सिस्टम में लिक्विड को डालना है।

# SS-OLN Product Dosage Crop wise -

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## Dosage of Organic Liquid Nutrient (OLN) in various crops



Sr.No	CROP	Total Application lifecycle	Ratio (OLN/Water)	Method	Crop Stage
1.	Grain Crops (Paddy, wheat, Maize, millets, etc)	3 Times	1L : 100L	Foliar Spray	<ul style="list-style-type: none"> <li>1<sup>st</sup> spray 2 weeks after Planting.</li> <li>2<sup>nd</sup> Spray at Tillering Stage.</li> <li>3<sup>rd</sup> Spray at Milking stage.</li> </ul>
	Pulses (Grams, cowpea, Chickpea, Pigeon pea, etc)	3 Times	2 L : 100 L	Foliar Spray	<ul style="list-style-type: none"> <li>1<sup>st</sup> spray at 30 days after planting.</li> <li>2<sup>nd</sup> Spray at 60 days interval,</li> <li>3<sup>rd</sup> Spray at 90 days interval.</li> </ul>
3.	Oil seeds (Cotton, sesame, soyabean, etc)	Every Month	1 L : 100 L	Foliar Spray	<ul style="list-style-type: none"> <li>Every month (25-30 days intervals)</li> </ul>
4.	Ground Nut	2 + 3	1 L : 100 L	2 : Fertigation 3 : Foliar Spray	<ul style="list-style-type: none"> <li>1st Fertigation at 15 days after sowing,</li> <li>2nd fertigation at 30 days after sowing.</li> <li>Total 3 Foliar spray at 45, 60, 75 daysinterval</li> </ul>
5.	Sugarcane	3 Times	1 L : 100 L	Fertigation	<ul style="list-style-type: none"> <li>Every month intervals.</li> </ul>
6.	<ul style="list-style-type: none"> <li>Fruit crop (Mango, Bananana, Papaya, Guava, Citrus, Sapota, etc)</li> </ul>				
	Citrus, Guava, Papaya	Every month	1 L : 100 L	3 : fertigation 9 : foliar spray	<ul style="list-style-type: none"> <li>3 Fertigation after planting at every month interval,</li> <li>9 Foliar spray at every month interval till crop end.</li> </ul>
	Mango	3 Times	1 L : 100 L	Foliar spray	<ul style="list-style-type: none"> <li>Foliar Spray after Flowering stage,</li> <li>Foliar Spray Pea Stage</li> <li>Marble Stage.</li> </ul>
	Banana	3 + 2 Times	1 L : 100 L	3 : fertigation 2 : foliar spray	<ul style="list-style-type: none"> <li>Fertigation at 1, 2, 3 month of planting.</li> <li>Foliar Spray after Bunch Initiation.</li> </ul>



# SS-OLN Product Dosage Crop wise -

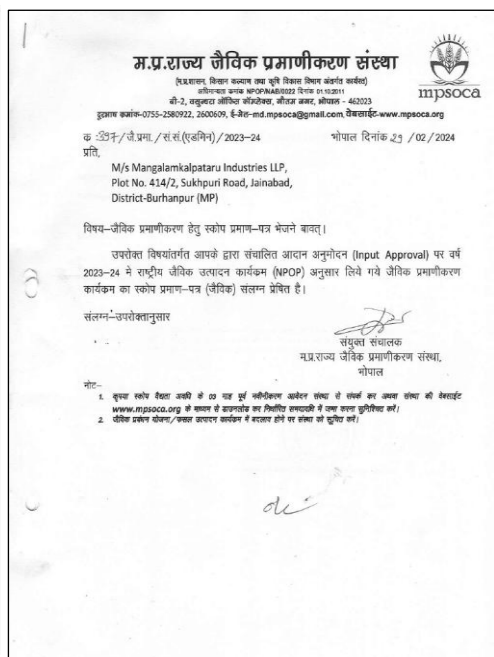
MANGALAM KALPATARU INDUSTRIES

## Dosage of Organic Liquid Nutrient (OLN) in various crops

Sr.No	CROP	Total Application lifecycle	Ratio (OLN/Water)	Method	Crop Stage
<b>Vegetables</b>					
	Tomato/Brinjal/C hilly/okra	2 + 6	1 L : 100 L	2 : fertigation 6 : foliar spray	<ul style="list-style-type: none"> <li>2 times Fertigation at 20 days intervals.</li> <li>Foliar spray at fruiting stage on every 15 days intervals basis.</li> </ul>
	Beans	4 Times	2 L : 100 L	Foliar spray	<ul style="list-style-type: none"> <li>Every month intervals.</li> </ul>
	Tuber crops (Potato, radish, carrot, onion, sweet potato, yams, garlic, ginger, etc)	2 + 4	1 L : 100 L	2 : fertigation 4 : foliar spray	<ul style="list-style-type: none"> <li>Fertigation at vegetative stage</li> <li>Foliar spray at reproductive stage (every month intervals)</li> </ul>
	Leafy vegetables (spinach, lettuce, Mint, parsley, coriander, etc)	Every week	1 L : 100 L	Foliar spray	<ul style="list-style-type: none"> <li>Every week intervals</li> </ul>
8.	Flower crops (Rose, gerbera, jasmine, marigold, tuberose, orchid, etc)	Every 15-20 days	1 L : 100 L	fertigation	<ul style="list-style-type: none"> <li>Every 15-20 days intervals up to crop end.</li> </ul>
9.	<b>Plantation crops (tea, coffee, palms, rubber, cocoa. etc)</b>				
	Tea, coffee, rubber	Every 15-20 days	1 L : 100 L	Foliar spray	<ul style="list-style-type: none"> <li>Every 2 weeks intervals up to crop ends.</li> </ul>
	Palms (coconut, bottle, date, oil palm, etc)	Every month	1 L : 100 L	Fertigation	<ul style="list-style-type: none"> <li>Every month intervals up to crop end.</li> </ul>



## Sakal Samruddhi-OLN License & Quality Control -



# Farmers Testimonials — Happy Health, Happy Farmers — Happy Organic Farming



**Bablu Paswan, Jharkhand**  
Green Capsicum



**Anil Patel-Nandurbar**  
Banana Farmer



**Ashok Patil - Lambola, Shahada**  
Papaya Farmer



**Bhalal Kushwah - Jainabad**  
Tomato Farmer



**Saddiq Bhai - Khaknar**  
Watermelon Farmer



**Jayshankar Malviya – Sulgaon, Khandwa**  
Potato Farmer

# Traction & Milestones : Positive Customer Testimonials




**Conducted Field Trials & demo with FPOs and educated about importance of Organic Farming**

Below is the link to **Testimonials** along with the attached documents for your reference –

1. Potato farmers – [https://youtu.be/\\_nnFir9sH2o](https://youtu.be/_nnFir9sH2o)
2. Watermelon Farmers – [https://youtu.be/OxZ6\\_ZWTinM](https://youtu.be/OxZ6_ZWTinM)
3. Papaya Farmers – <https://youtu.be/n2vimb8v59s>
4. Tomato Farmers – <https://youtu.be/bD7-h3dvK88>

# Successful Pilot Projects & Appreciation:



ITC LIMITED  
AGRI BUSINESS DIVISION  
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Telephone : +91 883 2348000 / 8002  
e-mail : [itd.india@itc.in](mailto:itd.india@itc.in)


**Sakal Samrudhi Liquid NPK Product**

ITC Spices division, as part of Productivity enhancement initiative, has taken trials of sakal Samrudhi Liquid NPK product in 100 acres. The Product has shown promising results in terms of growth and quality enhancement. Farmers have shown good interest in increasing the usage of the product.


S No	Region	Area (Acres)
1	Karnataka	50
2	Andhra Pradesh	15
3	Telangana	35
<b>Total</b>		<b>100</b>

The below are the major positive feedback received from the farmers.

- New branches and increased flowering has been observed in the treated plots.
- Flower Dropping which was a major concern of the farmers has been minimized. Quality, Size and shininess of the fruit is very better than the untreated plot.
- In a conventional field the good grade material (A and B Grade) is usually 70-75% whereas the good grade material has increased by 5-10% which is 80% in the treated plot post usage of the product.
- Increased Yield of 5% approx. 1 quintal is observed which has resulted in average of Rs.20000/acre additional returns for the farmers.



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Great Place to Work  
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Dated 11<sup>th</sup> November 2023.

**Sakal Samrudhi Liquid NPK Product**


Dvara E-Registry in collaboration with Vazhndhu Kattuvom Project alias Tamil Nadu Rural Transformation Project is a World Bank assisted Project that aims at rural transformation. As part of the VKP Project, Dvara E-Registry has been closely working with Srirangan Banana Farmer Producer company Trichy Dist. in market linkages. MK Industries connected with the FPO, and demonstration trials were conducted with Sakal Samrudhi Liquid NPK Product in 30 Acres in the farmer field. Total no of Demos conducted are 30 Nos.

**Product performance**

Village Name	No of Farmers	Average of Ratings (1-5)
Andhanallur	5	4.4
Maiyampathu	5	4.2
Mekkudi	2	4.5
Periyakaruppur	6	4.3
Thuruchendurai	12	4.6
<b>Grand Total</b>	<b>30</b>	<b>4.43</b>


Farmer Name: Sovmya  
Village name: Mekkudi  
Address: Andhanallur Block, Trichy District, Mobile No8524064598  
Crop: Banana Variety: Nendran  
Product: Sakal Samrudhi Liquid NPK Product

**Feedback**  
She has taken spraying in one acre field and After 15 days of spray she observed good vegetative growth which is necessary for Banana crop which reflects in the yield. She is willing to buy the product from FPO for the Banana crop.  
Overall response from other farmers is very good with an average rating of above 4.4/5 in most of the villages. Other observations recorded by us are Banana plants have shown good growth and vigor in the early stage of the crop. The Banana plants with nutrient deficiency have shown good recovery and growth.

  
 Seranthi Kumar  
Co-Founder & Head Agronomy  
Dvara E-Registry Limited

Dvara E-Registry Private Limited  
CIN No: U47100TN2023PTC023786  
Regd. Office: 10th Floor, Phase I, IITM Research Park, Taramani, Chennai 600113, India.  
T: +91 44 66687000 | F: +91 44 66687020

भय्या मिलल  
पा.प्र.सी.  
कोल्हाट एवं जिला एकताधिकारी




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कानूनन कोल्हाट एवं जिला मन्त्रिपेट, बुरहानपुर (म.प्र.)  
अर्द्ध शा.पत्र क्र./पा/अ/21, दिनांक 11.11.2023

॥ प्रस्ताव पत्र ॥

बुरहानपुर जिले में आपके द्वारा महिलाओं को प्रशिक्षित करके उनसे केले के तने के रेशे (Banana Fibre) से उत्पाद बनाए जा रहे हैं। इससे महिलाओं को रोजगार मिल रहा है तथा महिलाएं आत्मनिर्भर बन रही हैं। इससे आपके योगदान सराहनीय है। म.प्र.है-राष्ट्रीय आजीविका मिशन एवं B.S.E.T.A. द्वारा स्वसहयता समूह की महिलाओं को प्रशिक्षण दिया जा रहा है, इसमें भी आपके सहैय योगदान मिल रहा है। जिले में केले के रेशे (Banana Fibre) से निर्मित उत्पादों का उपयोग निरंतर बढ़ रहा है, जिससे जिले को एक जिला एक उत्पाद (ODOP) में राष्ट्रीय स्तर पर पुस्तकार भी प्राप्त हुआ है।

जिला प्रशासन आपके इस महत्वपूर्ण योगदान एवं सहयोग के लिए प्रशंसा एवं सराहना करता है तथा आपके उज्जवल भविष्य की कामना करता है।

शुभकामनाओं के साथ।

  
 (भय्या मिस्तल)

प्रति,  
श्री मेहुल मंगल आर  
संचालक,  
मंगलम कम्पलैक्स इण्डस्ट्रीज,  
बुरहानपुर (म.प्र.)

केले के रेशों से हस्तनिर्मित कागज

Conducted successful trials with various FPOs like DVARA, SAMUNNATI, BIG-HAAT & ITC for the application of Sakal Samruddhi in Organic farming practices.

# Technology & Product Detail cont.. -

## ❖ Banana Stem Pulp -



Wooden Pulp



Banana Stem Pulp

**Banana Stem Pulp** is an eco-friendly material made from the **entire banana stem**, which is usually discarded after harvest. Rich in cellulose, it offers a sustainable alternative to wood-based pulp for packaging, tableware, and paper.

### Key Features & Benefits:

- Derived from the complete banana stem (not just the core)
- High in cellulose, biodegradable, and compostable
- Reduces dependency on wood pulp and deforestation
- Suitable for packaging, molded products, and paper
- Food-safe, non-toxic, and chemical-free
- Boosts rural employment and waste-to-wealth models
- Helps cut Banana Carbon Footprints

# Banana Stem Pulp -

- R&D and trials → Table ware & Cardboard sheets for Packaging Industry
- Patent filing in process



# Technology & Product Detail cont.. -

## ❖ Banana Fiber & Handicraft Division -



Short Banana Fiber



Long Banana Fiber



Clean Banana Fiber



Gifting Box



Wall Clock



Temple Broom



Yoga Mat

## Banana Fiber

Banana fiber is a natural and eco-friendly fiber extracted from the pseudostem of the banana plant, which is typically discarded as agricultural waste after the fruit harvest.

This sustainable material has been utilized for centuries due to its durability, flexibility, and versatility.

# Impact of MVP – One Minimum Viable Production Unit :



## Live Testimonials –

Rural Women – <https://youtu.be/PfZfevGBWsw>

Farmer - <https://youtu.be/n2vimb8v59s>

- ❖ **Averagely 100+ farmer**, with 1000 Acre of Banana Cultivation farmland associated for raw-material in one Year.
- ❖ Approx **1500 Acres** of land converted into Organic Farming.
- ❖ Farmer's Benefits; **100% Agro** waste utilization.
- ❖ **50+ Rural women** Employment generation with averagely 7,000 monthly income.
- ❖ **33,485 Kg of CO2 Emissions** avoided in one year.
- ❖ Trained more than **100+ women in Handicraft** making with Banana Fiber.
- ❖ Collaboration with NRLM, RSETI & various SHGs.
- ❖ Waste management – almost **5000 tons of Agro waste** recycled every year.
- ❖ Organic Farming Promotion.



# MK Awards & Recognition -



Alankaran Award  
from Rotary club  
Burhanpur, Jan 2023



MP Leadership  
Innovation Award  
June 2023, Indore



Received recognition from Governor  
of MP - Mangubhai Patel, Feb 2023



Elle Sustainability Innovation  
Award April 2023, Mumbai



Best Agri Start-up Award  
Nov 2024, Mumbai



Received Award on 15th Aug  
2022 from the Collector of  
Burhanpur - Shri Praveen  
Singh



Team of Atma Nirbhar India  
from Bhopal & Delhi visited  
MK Unit and appreciated the  
work



Received a Grant &  
appreciation from  
S.K.N.U Jobner

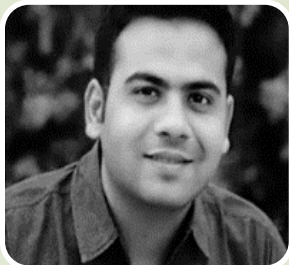


Dainik Jagran & Dainik Bhaskar  
newspaper recognised our work &  
efforts and visited our Manufacturing  
Unit.



On 5th Jan 2023, Our work was  
recognised by Bharia Pravasi  
Divas team for Banana Fiber  
Papers

# MK Team Details



**Mehul Shroff**

- \* MBA-Marketing
- \* Founder & Partner
- \* 7 years of Exp
- \* OLN & Pulping Technology



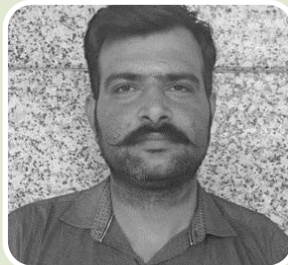
**Nikita Shrimal**

- \* MCA
- \* Partner
- \* 3 Years of Exp \*
- Handling Handicraft division.



**Purvi Shah**

- \* MBA-Finance
- \* Exe. Director
- \* 4 years of Ex
- \* Branding, Marketing & Collaborations



**Kuldeep Singh**

- \* Consultant OLN
- \* Diploma in Agricultural
- \* 15 Years of Agricultural Experience



**Dharmendra Patil**

- \* B-com
- \* General Manager
- \* 35 years of Industry Experience
- \* Managing daily operations



# THANK YOU



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