# FRUITFUL TRANSFORMATION OF ROTTEN TOMATOES INTO A SUBSTRTE FOR BIOPLASTIC PRODUCTION



**AARTI SHARMA PhD** (asharma11@amity.edu)

ASSISTANT PROFESSOR

AMITY INSTITUTE OF BIOTECHNOLOGY

AMITY UNIVERSITY,NOIDA-201303 (INDIA)

# The problem/need

## Plastic waste time bomb ticking for India: Supreme Court

By *Dhananjay Mahapatra*, TNN | 4 Apr, 2013, 02.18AM IST

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NEW DELHI: "We are sitting on a plastic time bomb," the Supreme Court said on Wednesday after the Central Pollution Control Board (CPCB) informed it that India generates 56 lakh tonnes of plastic waste annually, with Delhi accounting for a staggering 689.5 tonnes a day.

*The four metros are major culprits in generating such waste, with Delhi producing 689.5 tonnes a day, followed by Chennai (429.4 tonnes), Kolkata (425.7 tonnes) and Mumbai (408.3 tonnes).*

ENVIRONMENT

## Non-implementation of plastic waste rules chokes cows to torturous death in India

Vishwa Mohan | TNN | Aug 8, 2016, 11.10PM IST



**Mat McDermott (@matmcdermott)**
**Business / Environmental Policy**
**May 8, 2012**



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## Plastic Bags a Bigger Threat to India's Future Than Nuclear Weapons: Supreme Court Justices

# Opportunity






- One million plastic bags are used every minute
- Polyethylene need will increase more than 170 million tons in 2019, growing at a rate of 3.4 percent.
- Global demand will increase 4.7 percent and the largest increases in demand will be seen in emerging economies, like the Indian Subcontinent, Africa and Middle East

# One of the Solution

***Polyhydroxyalkaonate (PHA) -***

**Thermoplastic**
**Biodegradability**
**Biocompatible**
**Non-toxic Piezoelectric**
**Isotactic**
**Insoluble in water**
**Highly crystalline**
**Optically pure**

- **Can be produced from renewable sources**

***Deficiency In Existing Technology:***

**High production cost is the only risk associated with PHA production but this problem can surely be addressed by using cheap substrates**

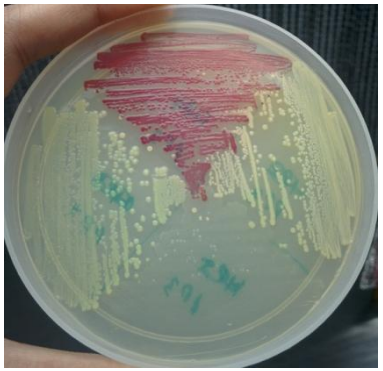
# Cheaper Substrates

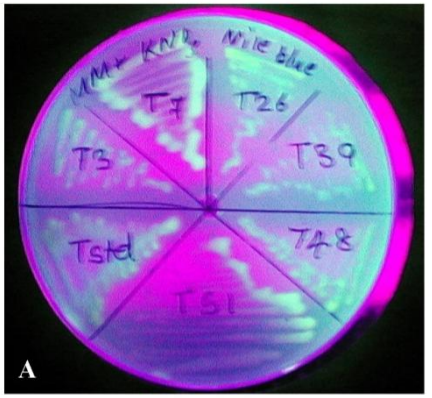


Image Credit:https://hmaaustralia.com.au/tomato-waste-at-rotten-levels-usc-study/

# The study : Isolation and screening of PHA producing bacterial strains







# Designing of rotten tomatoes-based medium



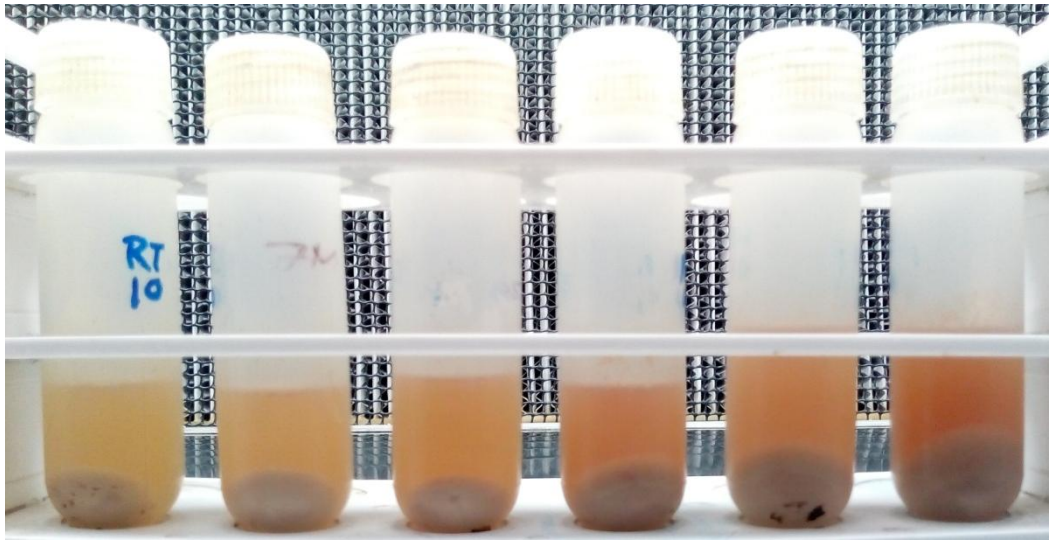
Filtrate



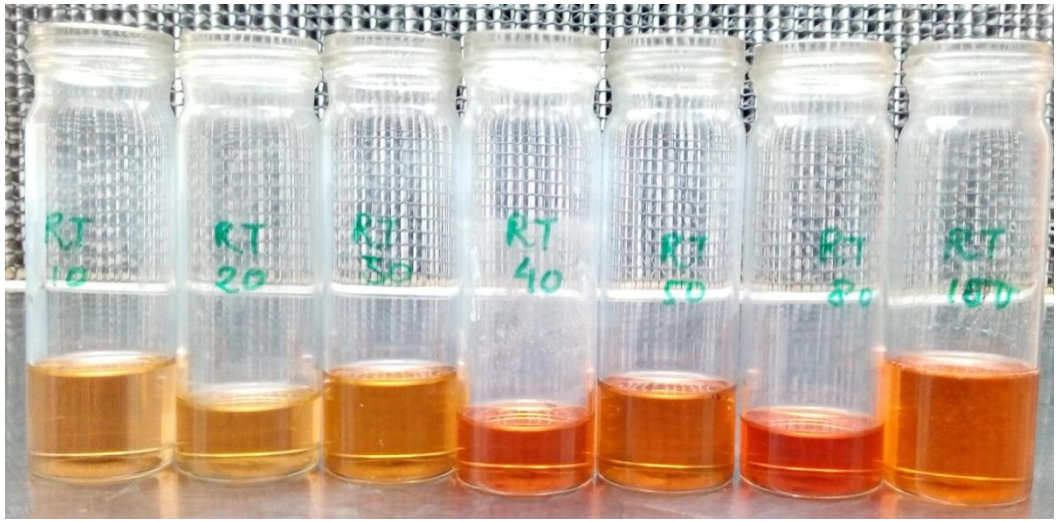
Leftover seeds and peels



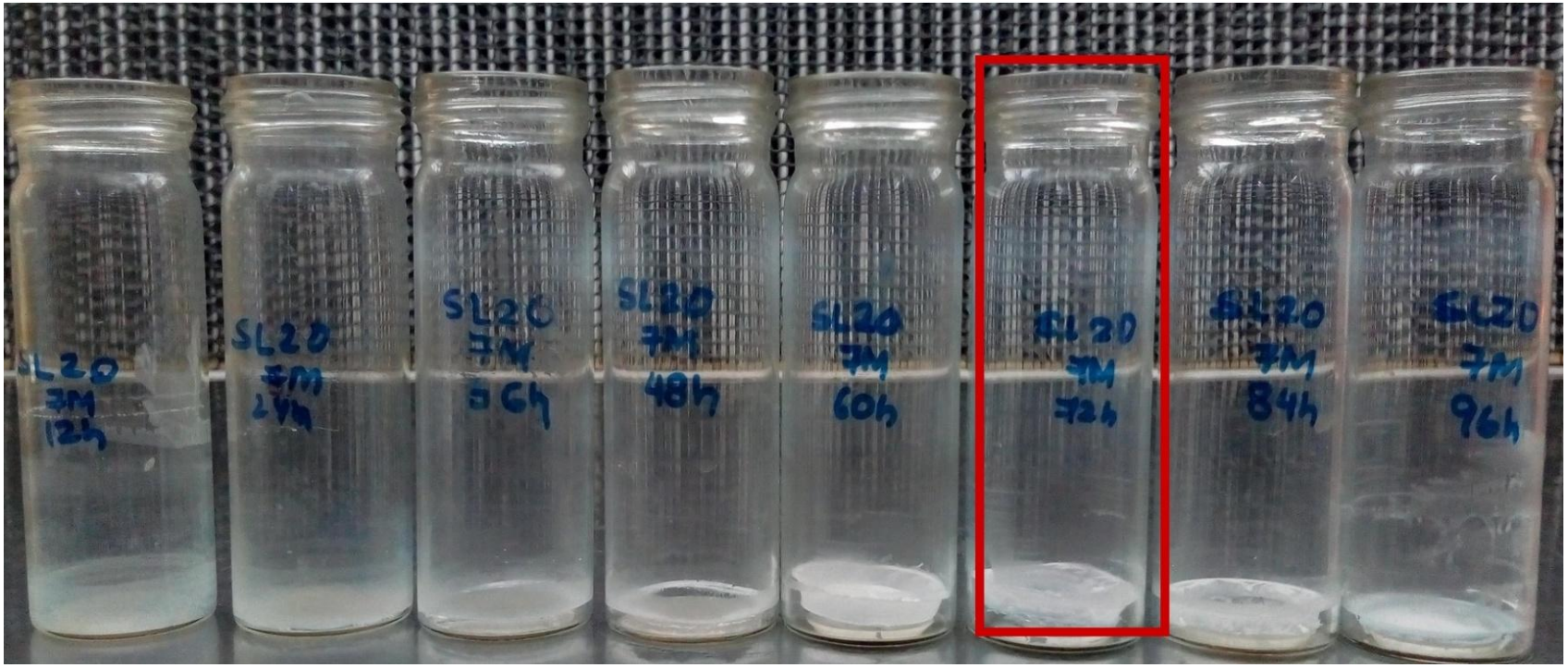
# Extraction of PHA





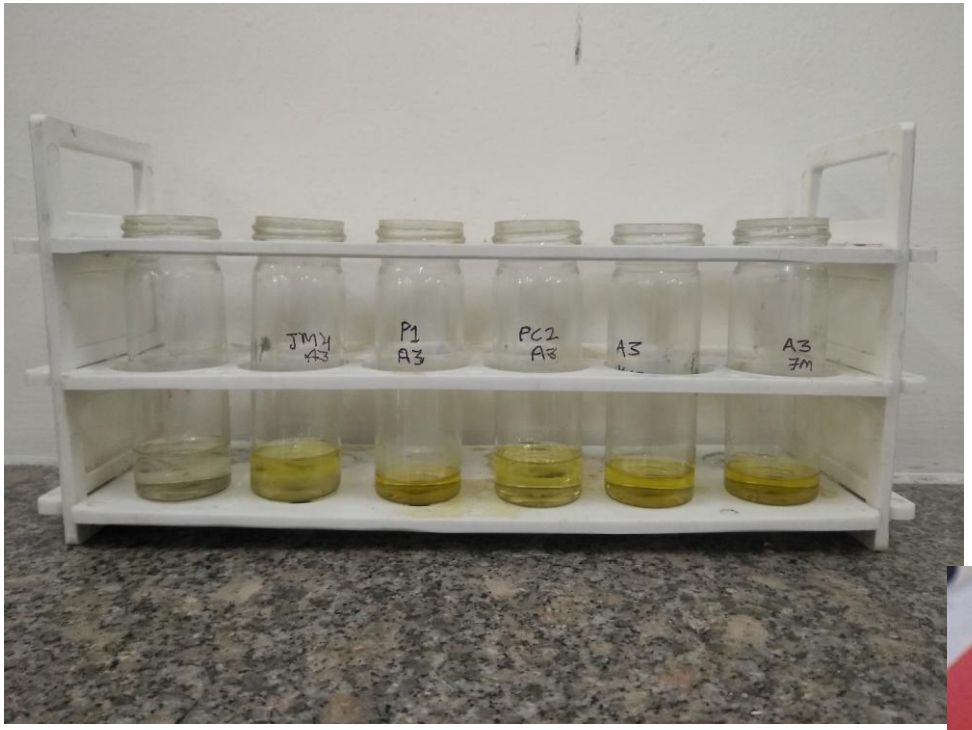



# EFFECT OF INCUBATION TIME




**Maximum production**

# Washing/s of polymer




**Reduction in both colour and size**



# Up Scaling Up to three litres



# A step Towards BIOBASED ECONOMY











In the Field

Biofpr
Biofuels Bioproducts & Biorefining

# Production of polyhydroxyalkanoates (PHA) from a non-lignocellulosic component of sugarcane bagasse: fueling a biobased economy

**Priyam Tyagi, Nitesh Kumar Saxena and Aarti Sharma**, Centre for Cellular and Molecular Biology, Amity Institute of Biotechnology, Noida, Uttar Pradesh, India

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**DOI: 10.1002/bbb.1879; *Biofuels Bioprod Bioref* (2018)**

Thank You