Management of Agricultural Waste for Sustainable Food Production

SUMMER COURSE ON FOOD SAFETY AND SECURITY, TEL AVIV UNIVERSITY.
GROUP 6

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Agricultural waste

- The by-products of agricultural activities are usually referred to as “agricultural waste” because they are not the primary products.
- These wastes chiefly take the form of crop residues (residual stalks, straw, leaves, roots, husks, shells etcetera) and animal waste.
- Also includes harvest waste; fertilizer and pesticide runoff; Agricultural Industrial waste.

The PROBLEM

- Agricultural wastes are widely available, renewable and virtually free, hence they can be an important resource.
- However, many of the agricultural wastes are still largely underutilized, and left to rot or openly burned in the field, especially in developing countries.

Our Proposal

- We the representatives from China, India, Nigeria, Uganda and Vietnam are the first participants of the new United Nations committee: **Sustainable Agricultural Waste Management**
- (SAWM; *Origin: From Islam meaning Fasting*).

Our Mission

- To utilise the agricultural waste which is being unused in most countries.
- Reduce the environmental impact of agricultural waste.
- Find solutions which economically help the farmer, hence sustainable development.
- Educate farmers to the benefits of utilisation of the waste.
- Educate Policy makers on the urgent need of these policies.

SAWM

Recycling agriculture system

Why recycling?

→ “recoverable resources”

Field Wastes
Weeds
Straws

Animal Wastes
Animal Dung
Dead Bodies
Horn

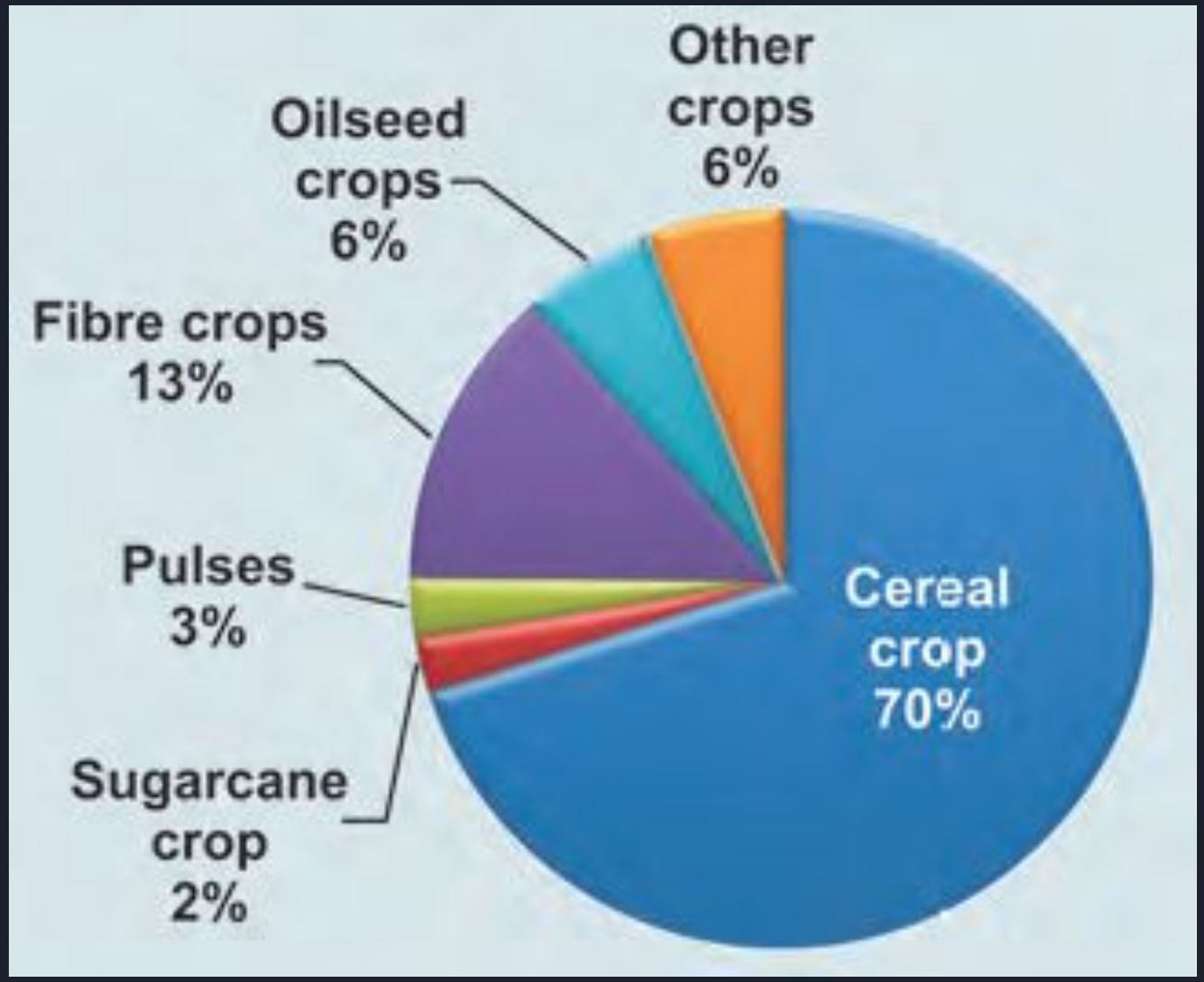
Agro-Industrial Wastes
Sugar cane: Molasses, Peals

CROP RESIDUE

- Crop residues include the above-ground plant tissue (stems, leaves, roots, chaffs and other plant parts) remaining in the field after grains, tubers and other economic products have been harvested
- Returning crop residue and other organic wastes - positive and soil restorative effects - long-term basis (sustainable use of resources)
- The removal of crop residues leads to low soil fertility and thereby decreased crop production

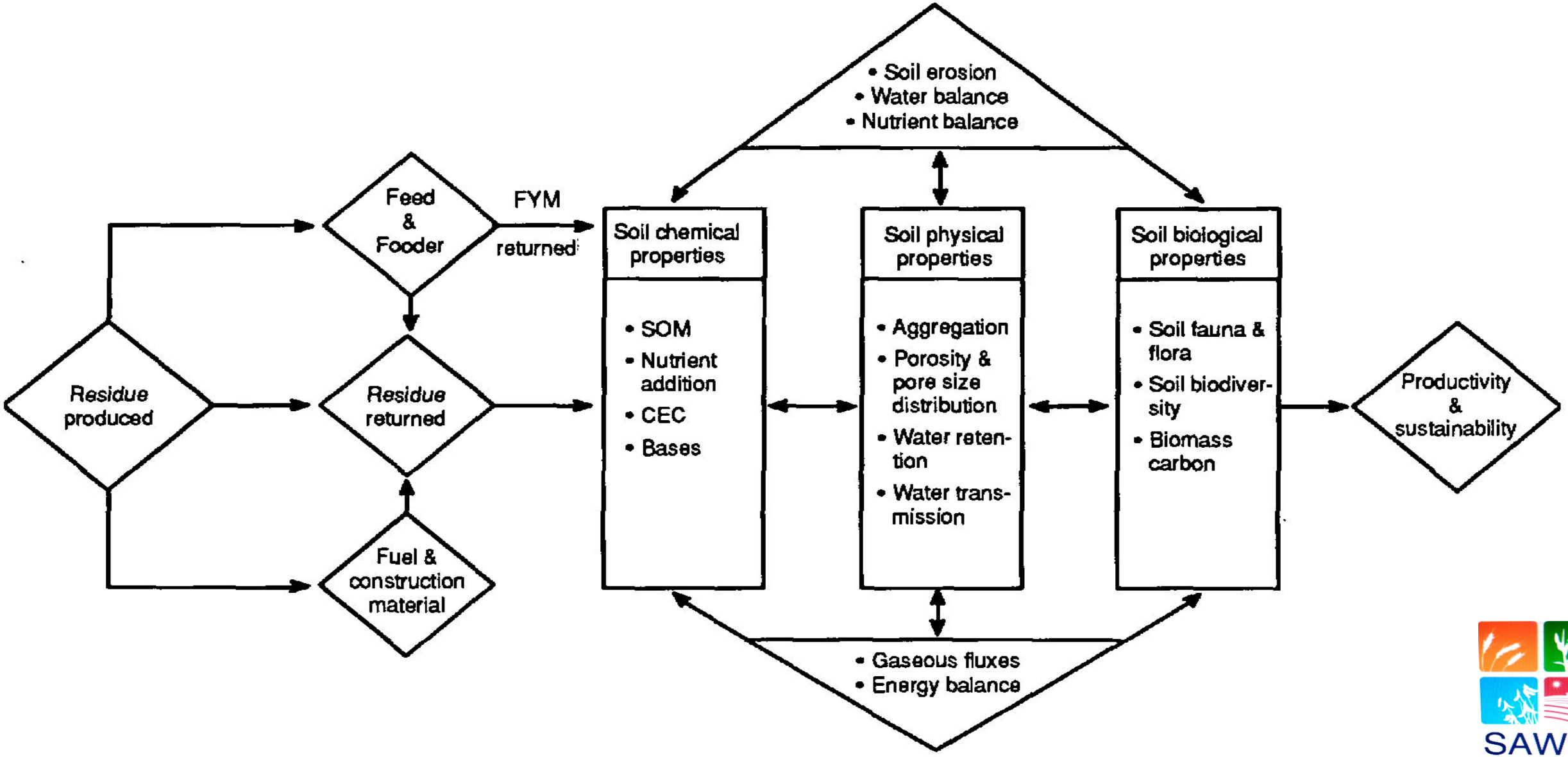
SAWM

Residue generation by different crops in India



MNRE, 2009

CROP RESIDUE- Enhancing chemical, physical and biological properties



SAWM

ANIMAL WASTE

- Animal waste comes from livestock, poultry, fishery, byproducts of meat processing industry and dairy production
- Animal wastes in the form of litter material, are available especially in urban centers and are an effective source of nutrients

MANAGEMENT PROCESSES

- **Collection-** Field, roadside markets, vegetable market
- **Transportation**
- **Treatment processes-** Composting, Recycling

COMPOST

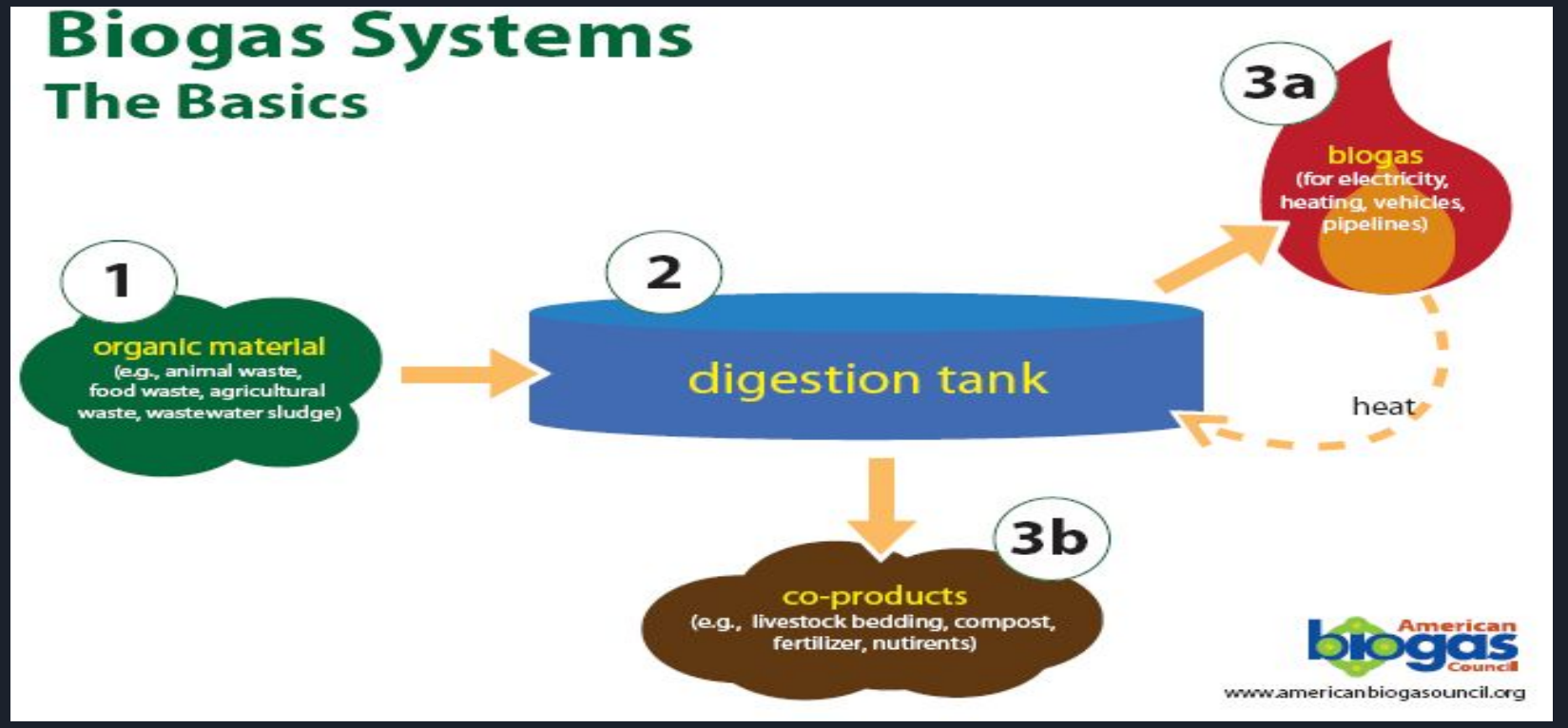
- Compost is an organic matter that has been decomposed and recycled as a fertilizer and soil amendment
- Key ingredient in organic farming

NADEP Compost

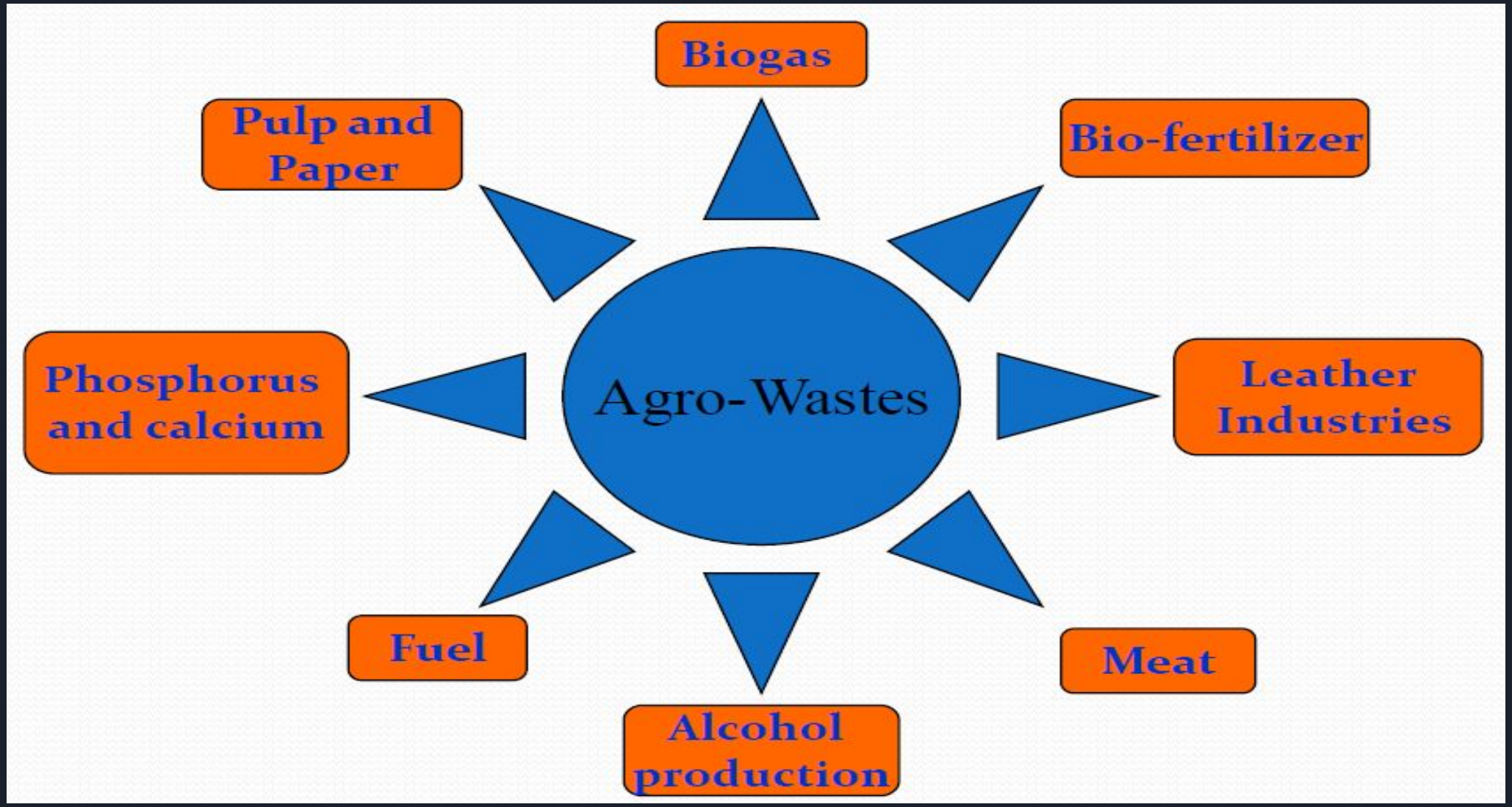
VERMICOMPOST

ANAEROBIC DIGESTION

- Series of biological processes - Microorganisms break down biodegradable material - absence of oxygen
- End products – Biogas and natural gas - fuel



Recycling agro-wastes



Bone utilization

Old animals

Bones

Bone Powder

Drugs

Animal Feed

Fertilizers

Phosphorus and calcium extraction

SAWM

10-12 million tons

2.5 million tons

Crop residue after harvesting season

➡ Contaminate atmosphere, harmful for people health

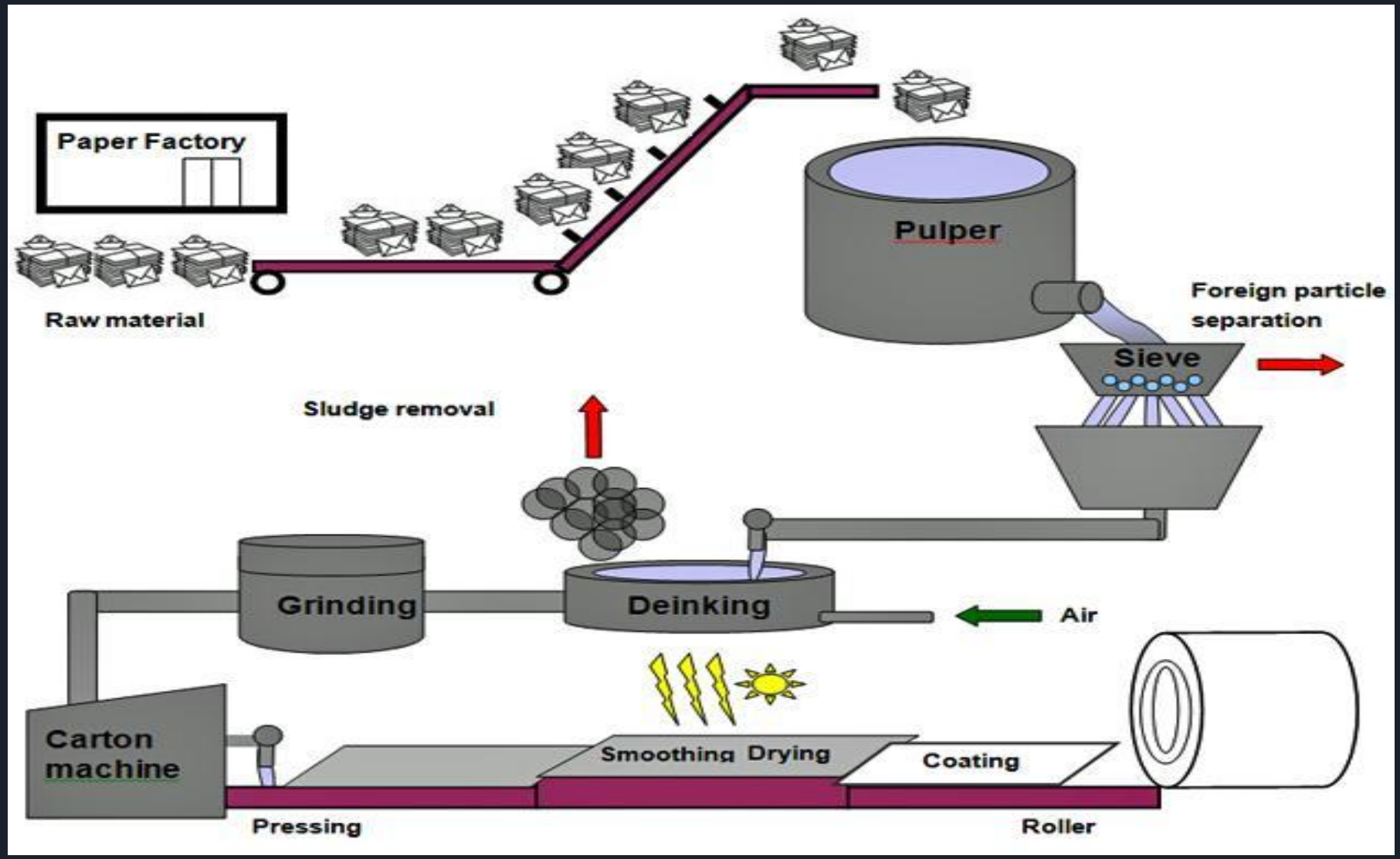
Why recycling?

Bagasse

Straws

Corns

Process


Paper Factory
Raw material
Pulper
Foreign particle separation
Sieve
Sludge removal
Grinding
Deinking
Air
Carton machine
Smoothing
Drying
Coating
Pressing
Roller

Flavor from the field

Future Prospects

- Biodiesel from all the energy potential of waste.
- Utilise it as animal fodder.
- Use of Oil Palm Shells as concrete.
- Bio Thermal Plants.
- Bedding Material for Cattle.
- Produce edible products from leftover raw materials
- Production of Organic compounds present in Plants (eg. Hemicellulose or Lignin)
- Mass Scale Education of Farmers and Policy makers.
- Create Tiers of countries with similar need of waste management, based on the urgency of implementation.

SO WHICH COUNTRIES WOULD LIKE TO JOIN SAWM?

Just Raise your chit :)

THANK YOU FOR LISTENING :)