

From bags for bunches to corner boards for pallets – recycling banana plastic in Peru

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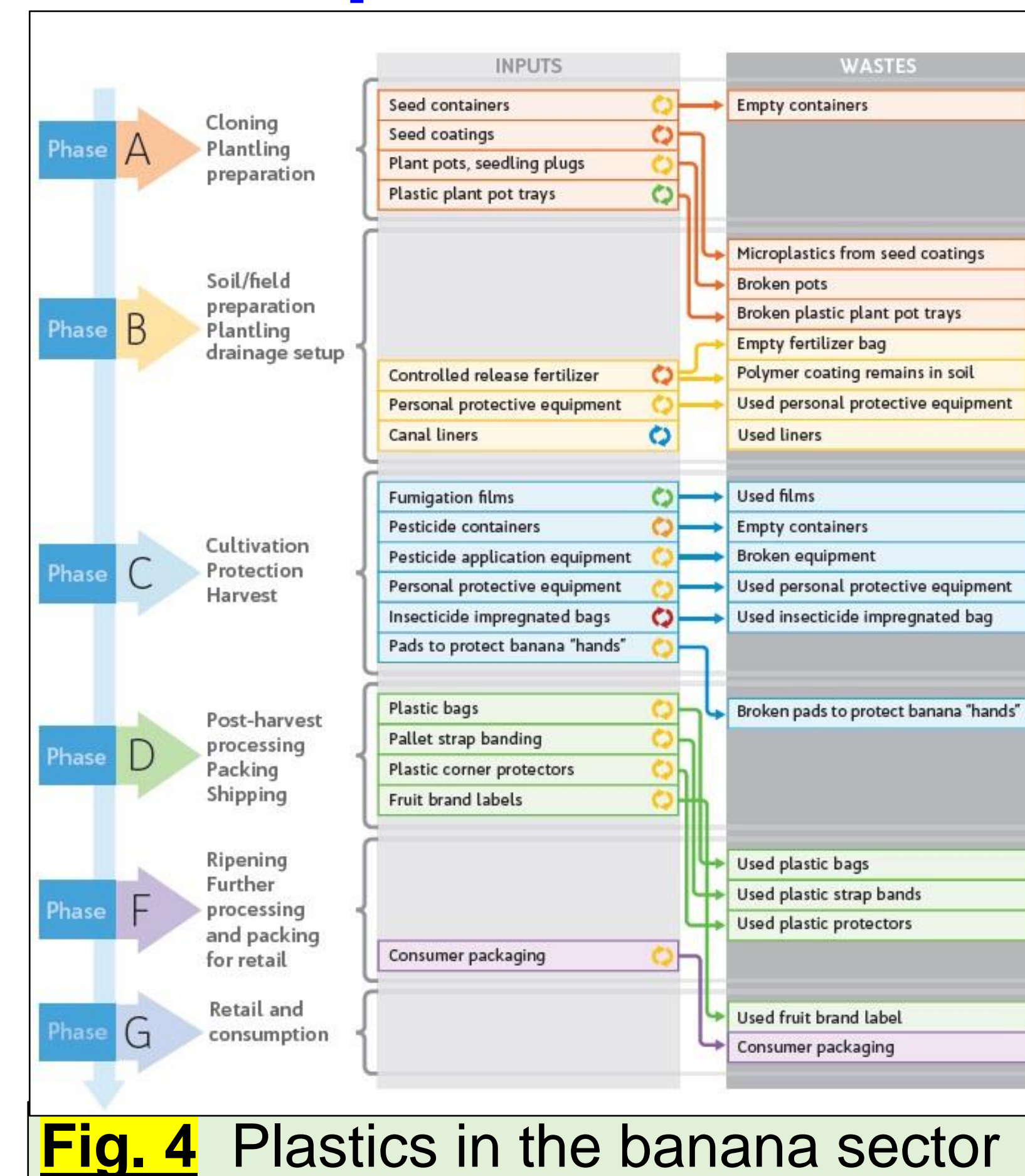
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Production and disposal of plastics: unsustainable trends

- Tendency in global production of **virgin plastic**: **exponential** increase (**Fig. 1**).
- With 'business as usual': **1200 million tonnes** expected by 2060 (**tripling** of 2020!).
- 1950 – 2017: 9200 million tons** produced. In use: **2900 million tons**. Discarded: **5300 million tons**. Burned: **1000 million tons**. Recycled: **only 700 million tons, 7,6%**
- Leakage to terrestrial, aquatic and maritime ecosystems, to a great extent, out of control! (**Fig. 2**).
- Agricultural plastics**: **14% of the total amount**; **75% is packing material**; **60% are foils** (single use, < 12 months, very difficult to recollect and recycle). (**Fig. 3**).

Use of plastics in the export banana sector (**Fig. 4**)



- A. Nursery:** Trays, bags, plant pots, guides.
- B. Planting:** Coated fertilizers.
- C. Cultivation:** Pesticide containers, bunch bags (natural or impregnated with insecticides), protectors.
- D. Packaging / shipment:** Bags in the box, straps, labels, corner boards, consumer packaging.
- Bunch bags** are an important part: 500.000 ha x 2000 bags = **1 billion bunch bags** each year worldwide; equals +/- **20.000 tons** (assuming a weight of **20 grams / bag**).
 - Assuming a length of 1,5 m per bag: **30 - 40 times around the globe, each year**.
 - Peru: 10.000 ha, **20 million bunch bags / year**, +/- **400 tons**. Put in a row: **30.000 km, each year**.
 - EU market alone: **500 million boxes + packaging bags / year**.
 - From Peru: **10,8 million boxes + packaging bags / year**.

Founding of Grupo ECOBAN S.R.L.

- Founding of **Grupo ECOBAN S.R.L.**, January 2021. **Joint venture** of Tulipan Naranja (subsidiary of AgroFair), producer organizations APPBOSA, APOQ, Río y Valle, Valle de Chira; and the Banana Cluster of Peru. **Inauguration: February 2022**.
- Building of the plant**, June – October 2021 in Marcavelica. Production hall, small office, storages for used bunch bags and final product: corner boards. **Total area, 1225 m²**. **Fig. 5. →**
- Equipment:** 1 **agglomerator**, 2 **extrusion lines** from Qingdao Suke Machinery Co. Ltd., China.
- Technical assistance** by **Plastic Fantastic**, Netherlands.

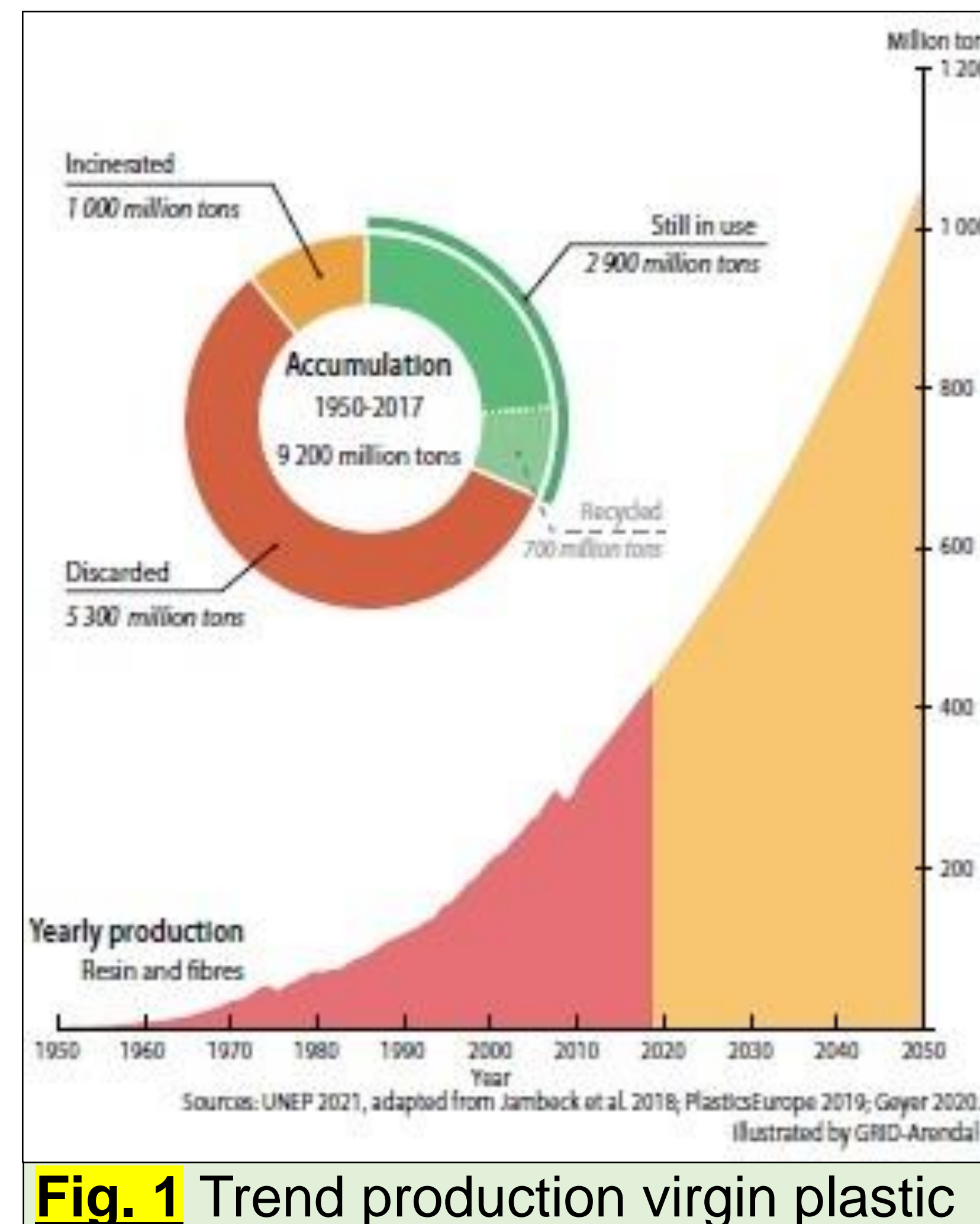


Fig. 1 Trend production virgin plastic

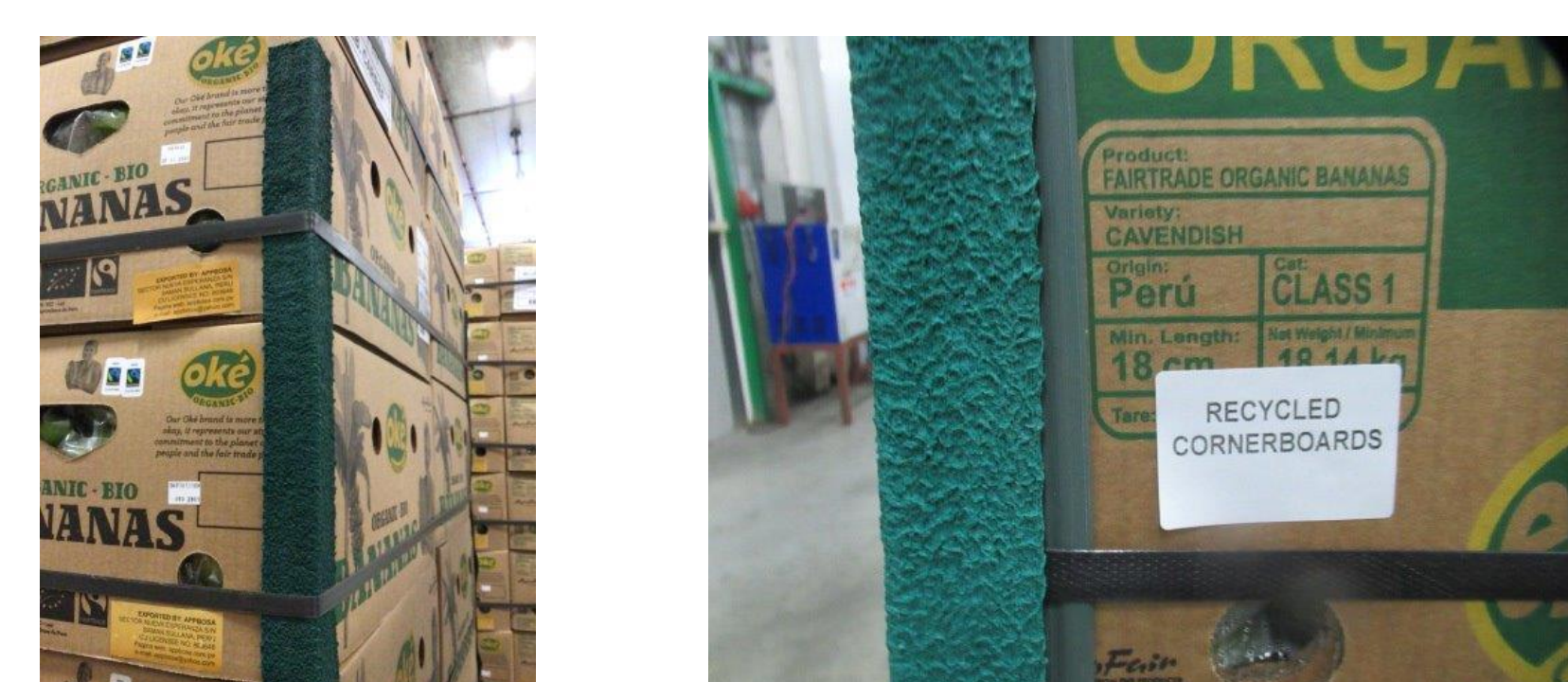


Fig. 2 Pollution of **terrestrial**, **freshwater** and **maritime** ecosystems. Plastic waste breaks down into **microplastics**, and into smaller, **microscopic** particles. Plastic soup; soil ingredient →

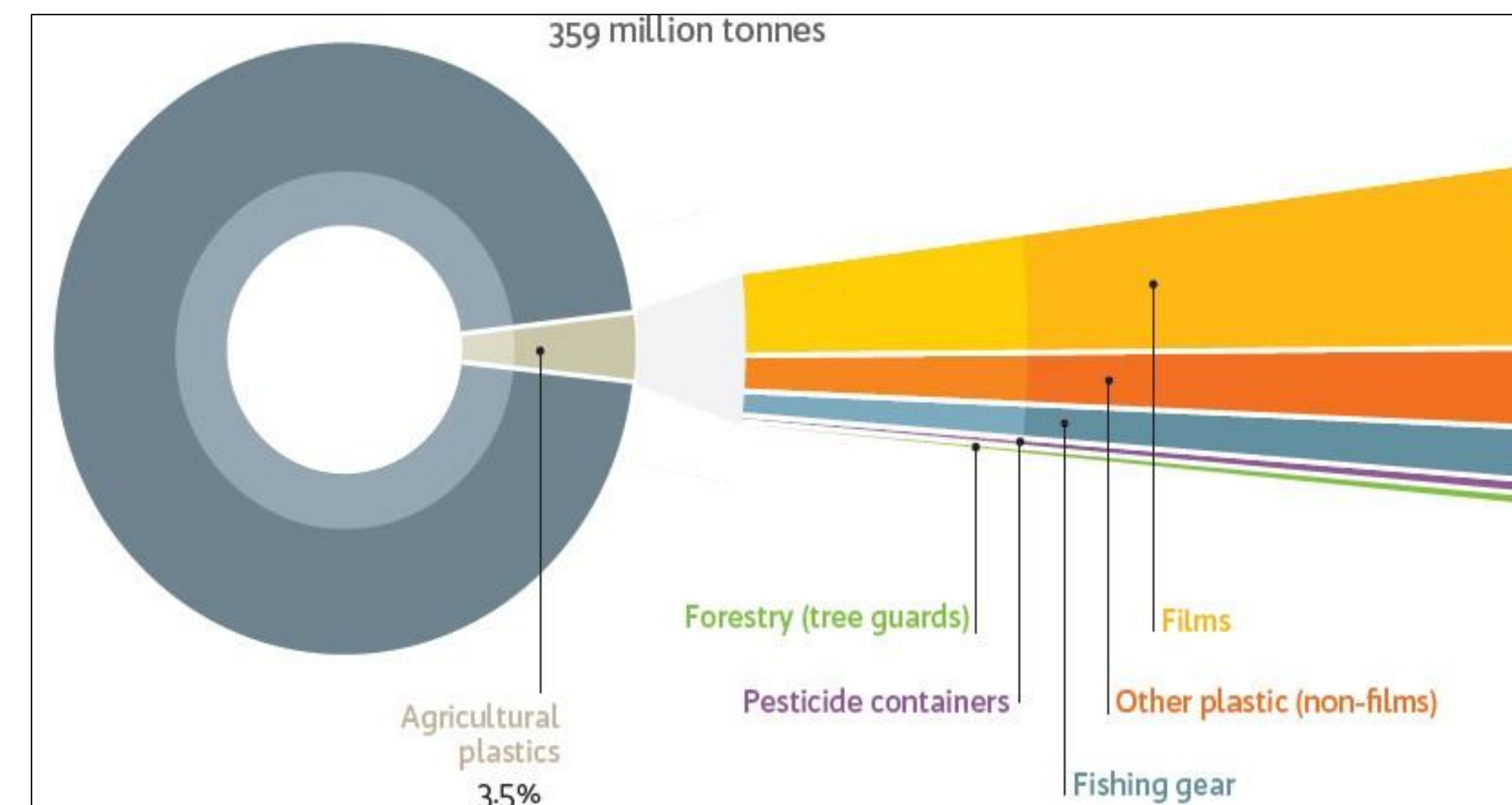


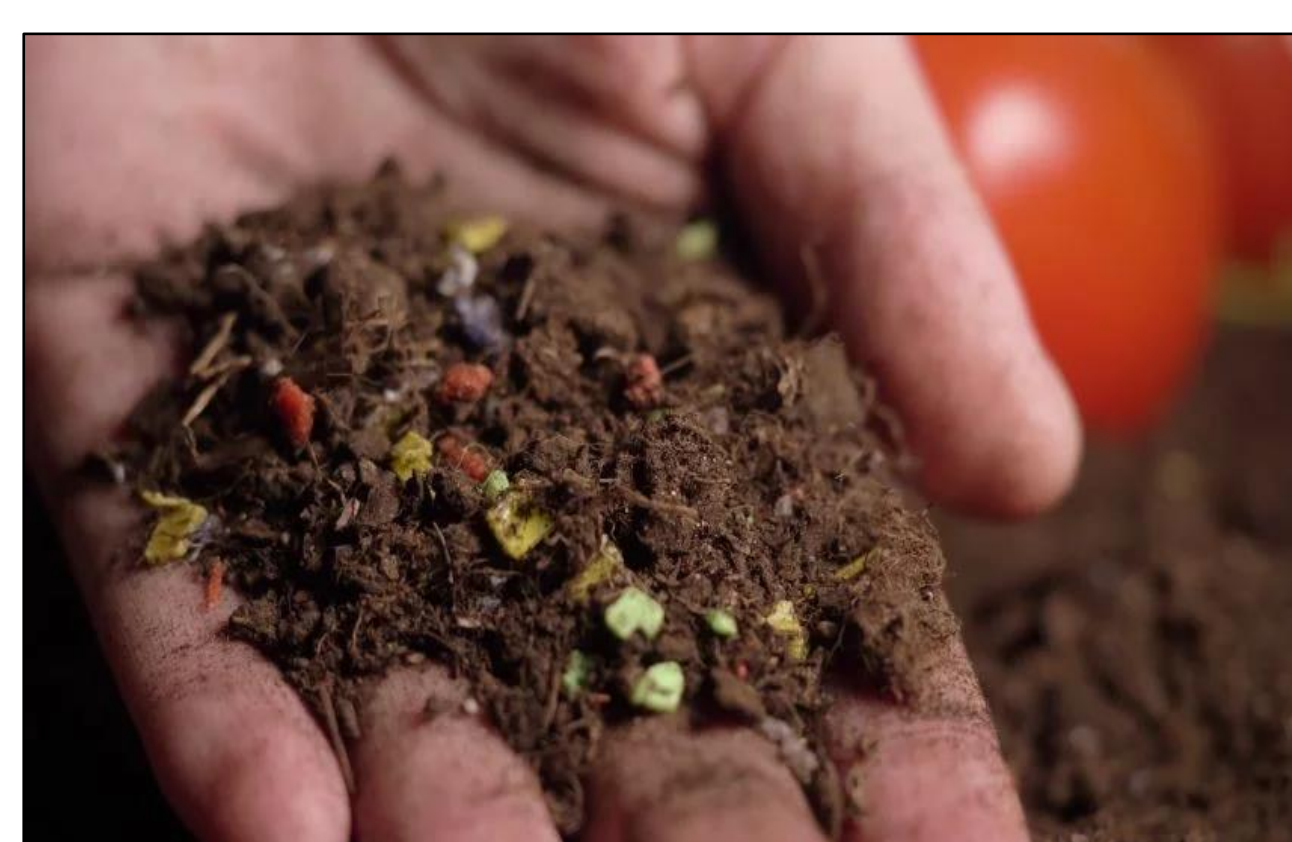
Fig. 3 Use of agricultural plastics: forestry, fisheries, agriculture

ECOBAN metrics and results

- Capacity each extrusion line: **50 corner boards / hour**. In two shifts, maximum actual capacity: **4800 corner boards / week**, sufficient for **60 containers** (20 pallets x 4 corner boards).
- Weight of each corner board: **0,50 kg**. Selling price: **2 Soles (50 Eurocents)**.
- Current capacity: provide **3000 containers** with corner boards (roughly one third of annual banana export of Peru).

Challenges, ambitions, perspectives

- Challenges:** Deficit of **1 TM / week** in the collection of plastic; **growing competition** for this prime material. ECOBAN needs to **raise turnover** for **more solid financial results**.
- Ambitions:** Install **two more lines** to **double capacity**. Contribute in a decisive way to **free the banana sector** of Peru from plastic pollution. Start recycling **other plastics** as well.
- Perspectives:** **Growing concern** about plastic pollution. The **World Banana Forum (WBF)** will work on a **code of conduct** for sustainable use and disposal of plastic. The **UNEP** works on a **legally binding international treaty** on plastic pollution.



References

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Watch two videos on ECOBAN: (1) <https://www.youtube.com/watch?v=mY3cd5cjWg4>; (2) <https://www.youtube.com/watch?v=0A6R7aMlj3l&t=3s>

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