

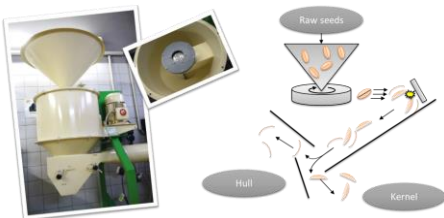
# Seeds dehulling and cleaning



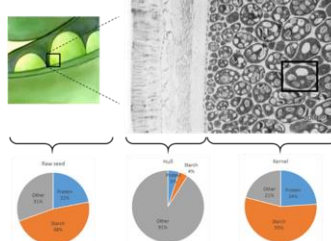
# IMPROVE

Institut Mutualisé pour les PROtÉines VEgétales

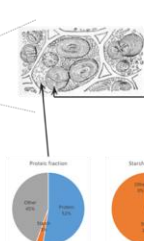
Impact dehuller (Alma®)



Morphology (macroscopic scale)

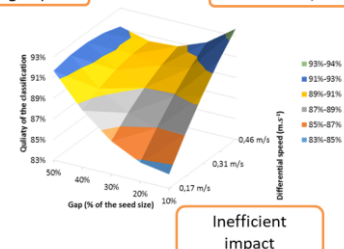


Histology (microscopic scale)



Strong impact

Efficient impact



## Market Issues:

Seed processing often valorizes the kernel generally protected by a hull. The protective role of the hull implies many physiological and structural specificities such as:

- High content in some antinutritional factors,
- High content in molecules having a negative organoleptic impact,
- Generally a high content in fibers and silica,
- Concentration of the majority of the microbiological contamination,
- High pesticides, mycotoxins and heavy metals content,

Dehulling is thus an important subject before any flour or ingredient production as it can limit many cleaning/decontamination steps. Dehulling also offers the possibility to produce a hull by-product rich in value added molecules.

IMPROVE proposes a wide set of solutions for cleaning, decontamination and dehulling processes either by dry and wet treatments. Process definitions, sample production and small series of commercial products are possible on most seeds.

## Services offer:

- ✓ **Dry dehulling** → impact mill, roll crusher, stone mill, hammer mill, abrasion.
- ✓ **Seed cleaning and decontamination** → Seed cleaner, optical sorter, abrasion.
- ✓ **Seed pretreatment** → Roasting, steam treatment, soaking, germination.
- ✓ **Removal of residuals hulls** → Optical sorter, roller mill.
- ✓ **Dehulling yield evaluation** → Manual sorting, image analysis.
- ✓ **All types of seeds** → pulses, oilseeds, cereals, nuts, exotic, small, large...

## IMPROVE SAS

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