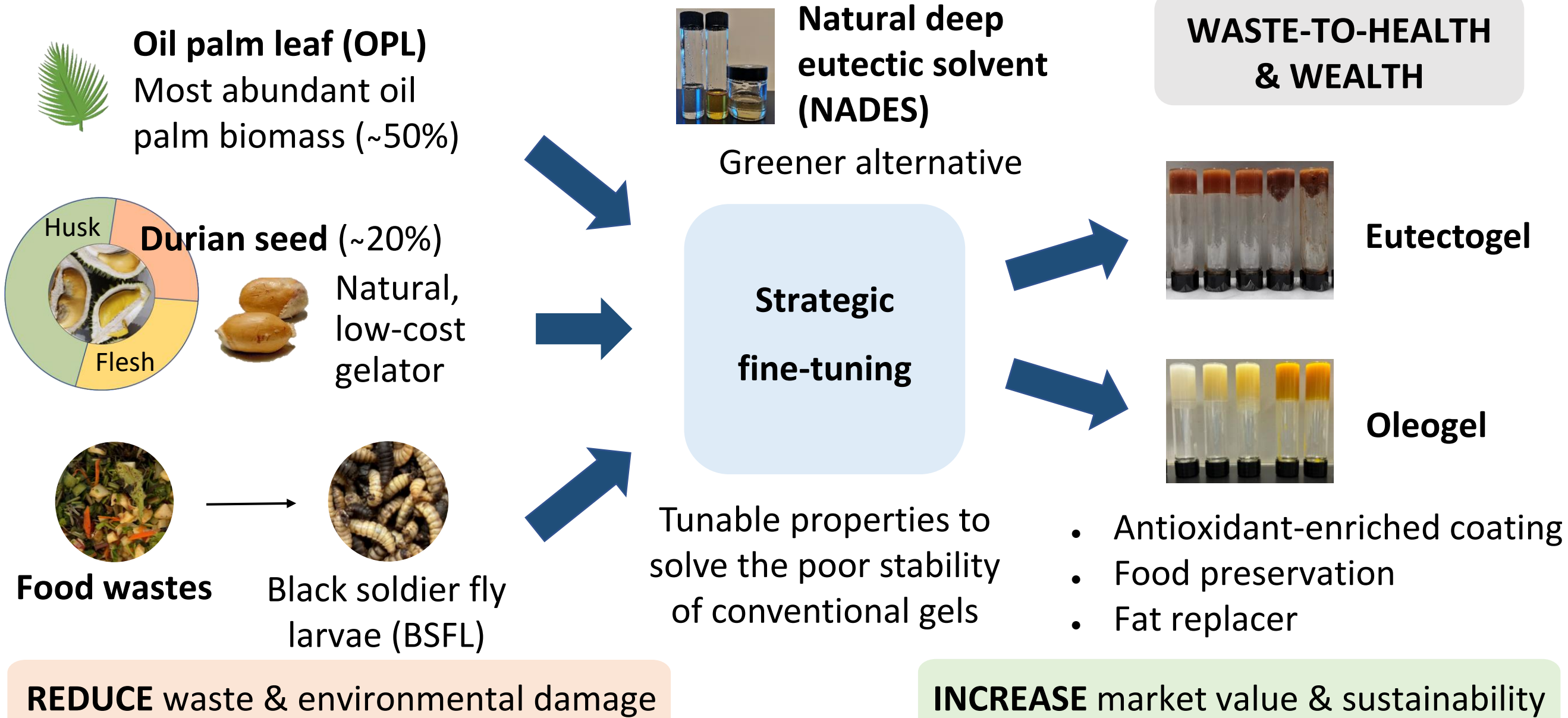


## Priority Topic Area: Responsible Production, Innovation and Industry

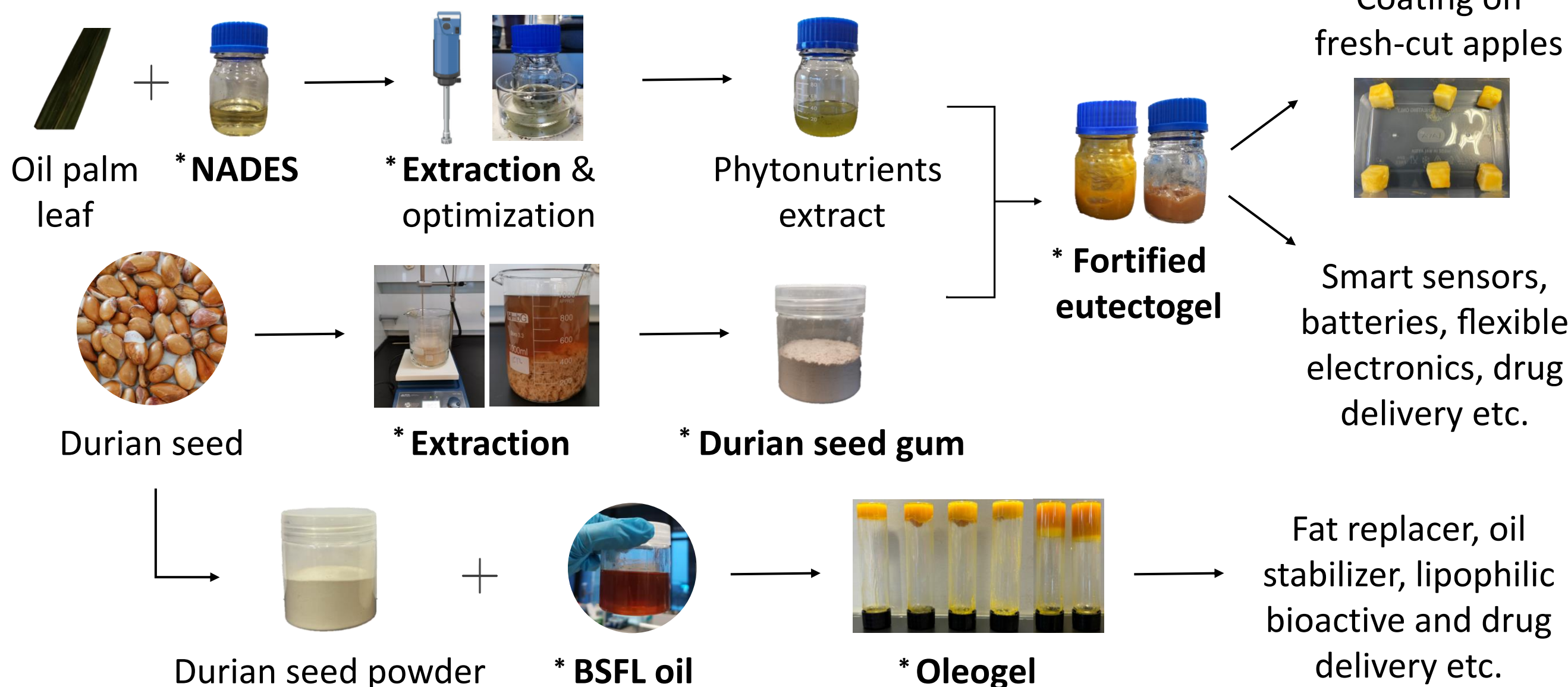
### INTRODUCTION



### OBJECTIVES

1. To assess the process-structure-properties relationship of durian seed gum (DSG) for eutectogel formulation.
2. To synthesize eutectogel with desired properties and stability using tunable sugar-based NADES and DSG.
3. To optimize the extraction of phytonutrients from fresh OPL using NADES.
4. To investigate the stability of nutrients in DSG, NADES, and eutectogel.
5. To evaluate the food coating and preservation performances of eutectogel and fortified eutectogel containing OPL extract.
6. To develop oleogel using durian seed and BSFL oil for use as fat replacer.

### METHODOLOGY

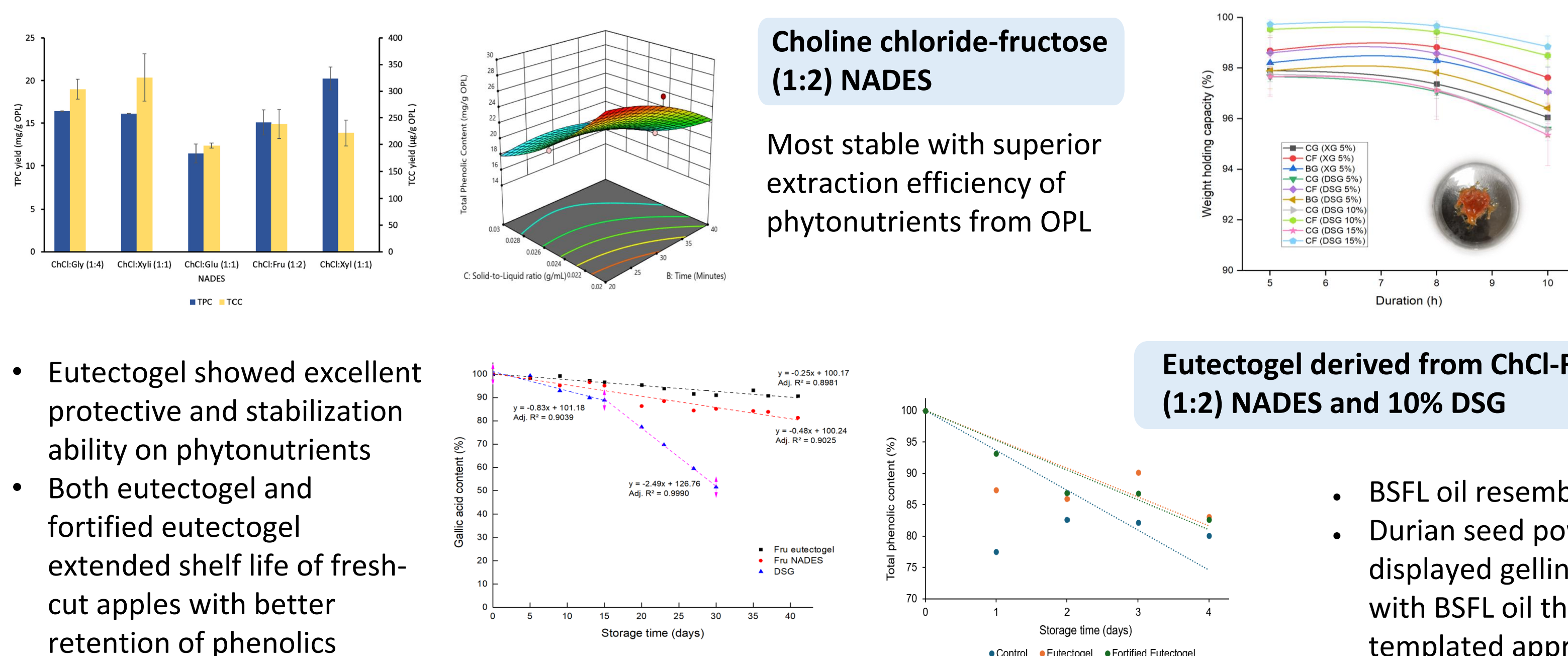


### RESULTS & DISCUSSION

DSG	Chemical method	Cold method	Heating method	Dry seed method
Colour (L*)	95.85	57.83	78.44	95.22
a*	-2.07	18.97	14.98	3.15
b*	21.61	40.81	21.86	5.69
pH	5.68	8.83	5.93	7.52
WAC (g/g)	2.74	2.68	2.00	2.13
OAC (g/g)	0.48	0.99	0.51	0.79
Solubility (%)	16.07	21.77	10.36	9.83
Moisture (%)	9.76	10.59	5.94	3.99
Yield (%)	0.53	2.43	18.54	31.06

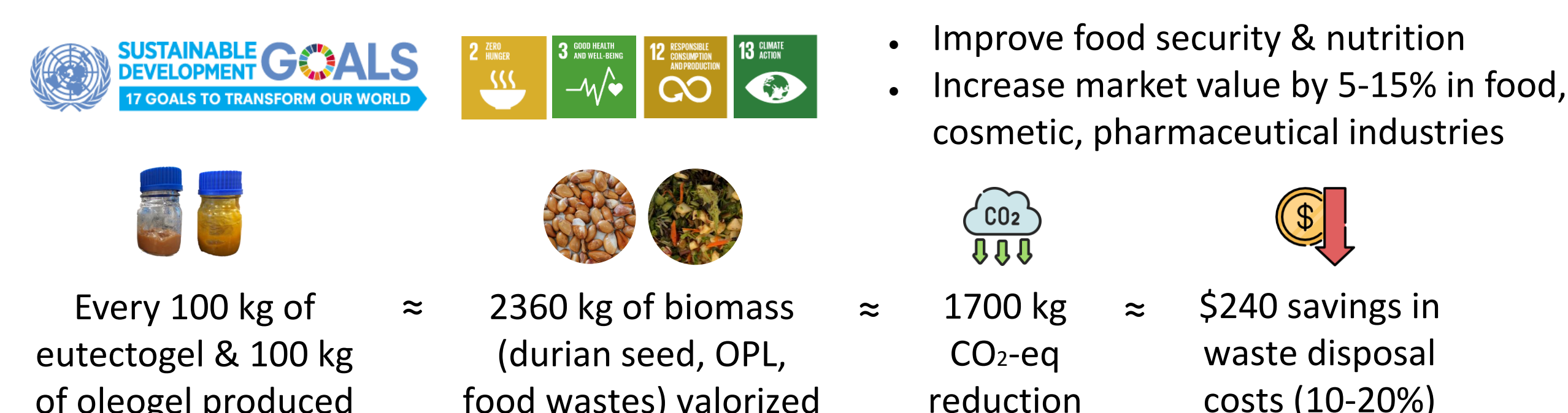
- Extraction process determined the yield, composition and properties of DSG
- Aqueous extraction from dry seed at high temperature and alkaline pH showed the most desired properties

### RESULTS & DISCUSSION



- Stable and compatible upon 12 weeks of storage
- Good weight-holding capacity and barrier properties
- Excellent thermostability up to 200 °C
- Desired shear-thinning, viscoelastic and texture properties

### SIGNIFICANCE OF RESEARCH



### NEXT STEPS

- Develop bigel (oleogel/eutectogel) system as a sustainable co-delivery vehicle for hydrophilic and lipophilic active substances
- Perform life cycle assessment (LCA) and techno-economic analysis (TEA) for sustainable production of durian seed-based eutectogel, oleogel and bigel

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