

SAGU:

Bahan Baku Lokal Potensial untuk Industri Ingredient

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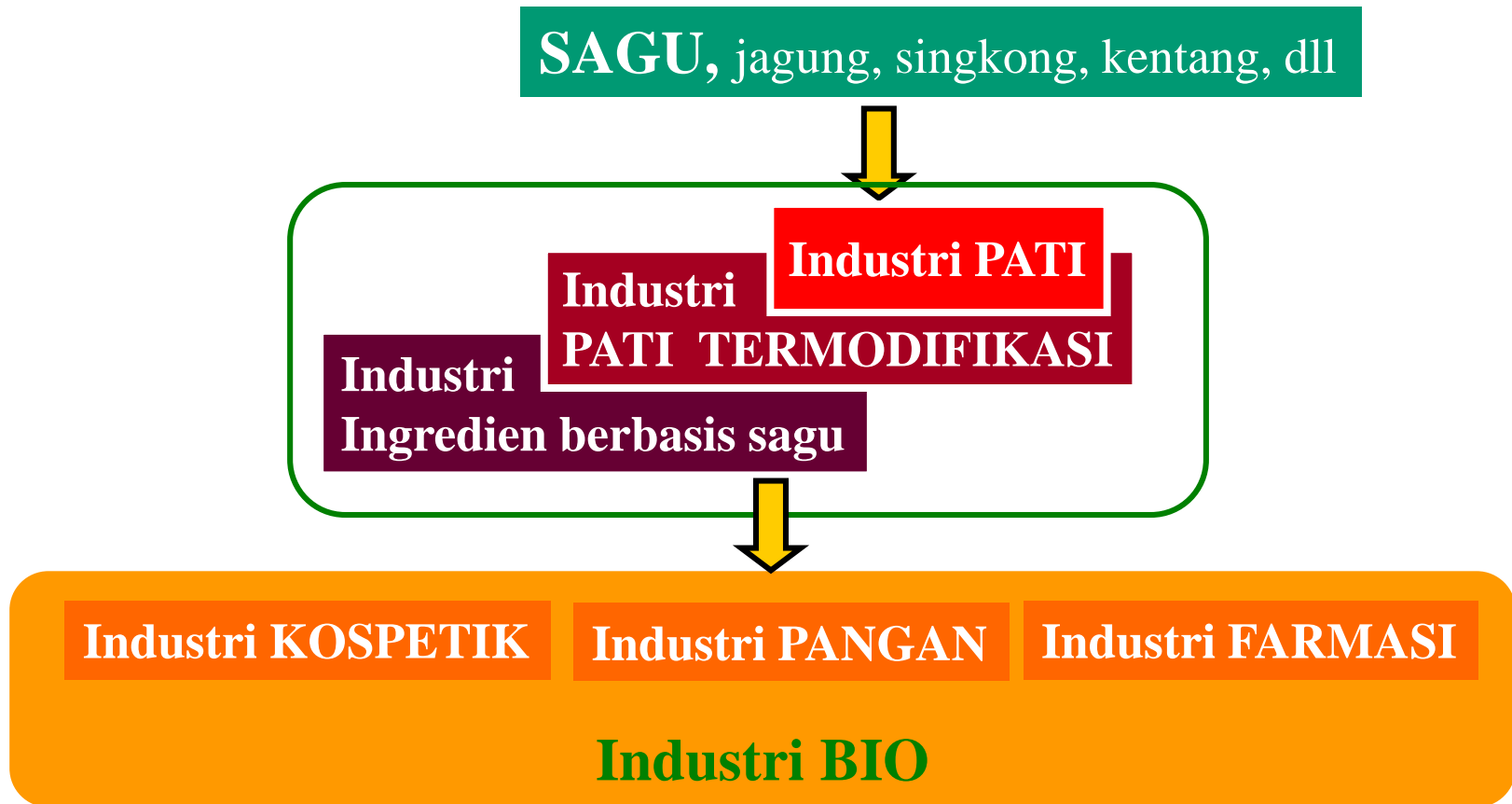
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SAGU

- Sagu berlimpah?
- Kekurangannya???
- Kurang berkembang
- Tidak tersedia di pasar
- Kenapa ???

Padahal

Pati (*starch*) berperan pada setiap rantai pangan



Padahal

Produk berbasis Pati (*starch*) sangat beragam

• 1st generation products

- Glucose syrups
- Isoglucose
- Maltodextrins
- Dextrose
- Modified starches

• 2nd generation products

- Polyols : sorbitol, xylitol, mannitol, maltitol, erythritol, ...
- Fermentation products : ethanol, lactic acid, lysine, citric acid and sodium citrate, ...
- Others : caramel colour, sorbitan esters, ...

Applications

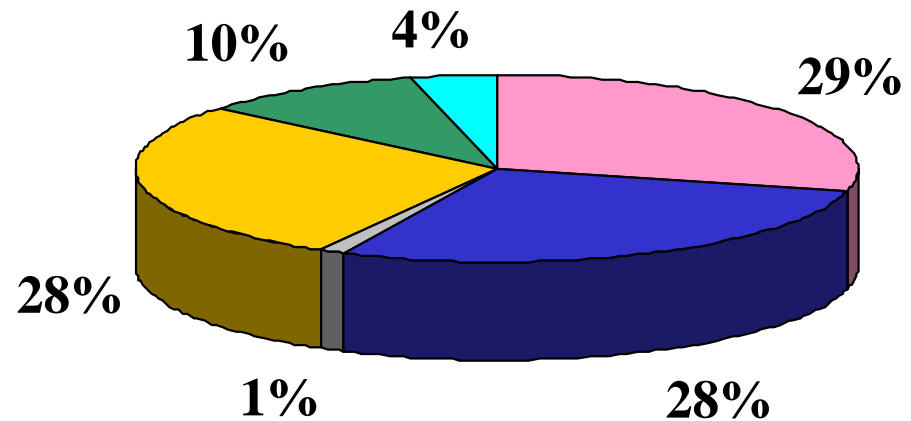
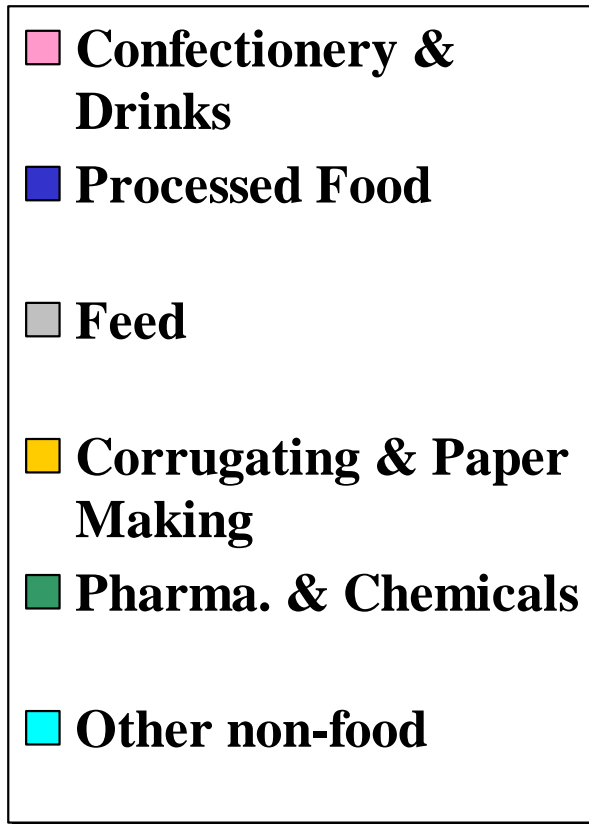
- Soft drinks, confectionery, sauces, ice creams, drinks, ...

Applications

- Sugar-free and energy-reduced products, confectionery, ...
- Alcohol drinks, food supplements, soups, ketchup, ...
- Drinks, puddings, desserts, ...

Padahal

Produk berbasis Pati (*starch*) sangat beragam



Total Market : 8.5 mio tons

In 2004, 42% of the EU starch production was already used in non-food applications and this trend is increasing.

* Excluding co-products

Padahal

Produk berbasis Pati (*starch*) sangat beragam

- Dan .. Potensi pengembangannya sangat besar ?
 - Bahan baku terbarukan dan *biodegradable*.
 - Bahan baku untuk aneka **produk hijau** ("*green*" *products*) :
 - **Bio fuel vs fossil-fuel?**
 - Cerita sukses dari US, Brazil, China dan India.

Padahal

Produk berbasis Pati (*starch*) sangat beragam

- Dan .. Potensi pengembangannya sangat besar ?

- Di sektor industri fermentasi :

- Organic acids (such as citric and lactic acids)
- Amino acids
- Antibiotics
- Vitamins
- Polysaccharides
- Enzymes
- Yeast
- Ethanol

Padahal

Produk berbasis Pati (*starch*) sangat beragam

- Dan .. Potensi pengembangannya sangat besar ?
- Di sektor industri Kimia :
 - Biodegradable plastics (polylactic acid) for the packaging and textile industries
 - Fine chemicals and pharmaceuticals
 - Surfactants
 - Polyurethane
 - Resins

Padahal

Produk berbasis Pati (*starch*) sangat beragam

- Dan .. Potensi pengembangannya sangat besar ?
- Di sektor lain
 - Biodegradable, non-toxic and skin-friendly detergents
 - Binders
 - Solvents
 - Bio-pesticides
 - Lubricants
 - Bio-colorants
 - Flavours

Padahal

Produk berbasis Pati (*starch*) sangat beragam

- Dan .. Potensi pengembangannya sangat besar ?
- Apalagi ... aneka inovasi potensial lainnya
 - bioindustri
 - Bio-degradable plastics (PLA, ...)
 - Lactic acid
 - Bio-detergents
 - Bio-colorants,
 - Vitamins, flavours and aroma
 - Sorbitol, dll

Padahal

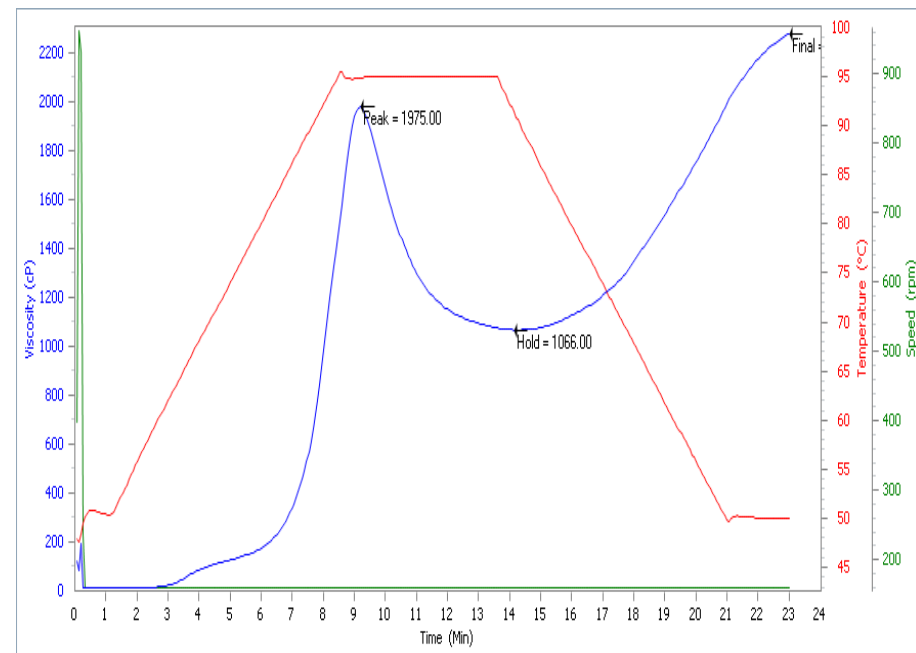
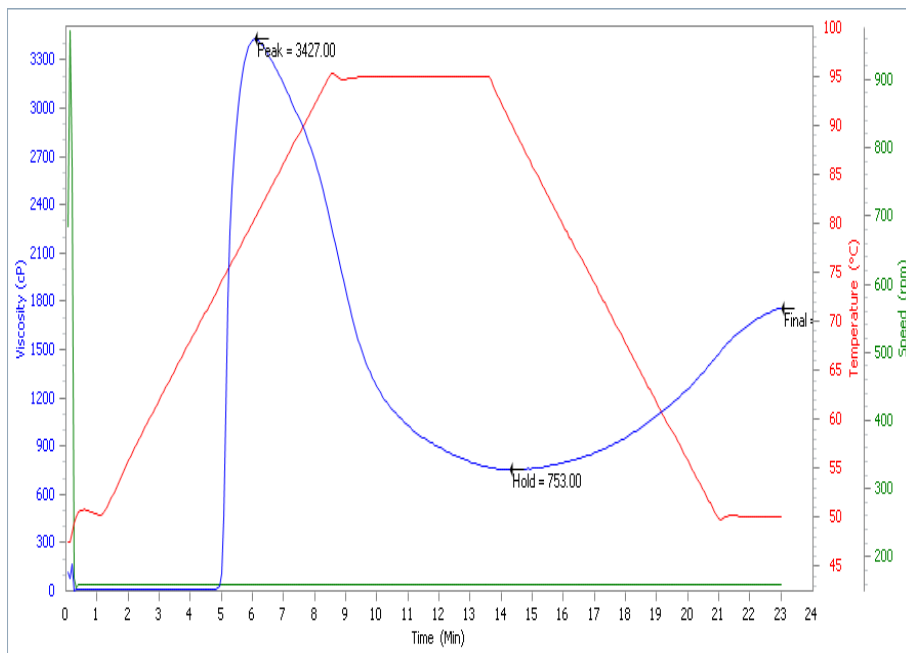
Produk berbasis Pati (*starch*) sangat beragam

- Dan .. Potensi pengembangannya sangat besar ?
- Apalagi ... aneka inovasi potensial lainnya
 - bioindustri → demand of tomorrow???
 - **PET Hot Fill Containers** (The use of isosorbide, a new bio-based monomer, enables to enhance the properties and value of polymers and gives it higher temperature performances for use in multiple markets. - *A Roquette / Dupont partnership*)
 - **NatureWorks™ PLA** [100% maize-based PLA for the packaging of food products and consumer goods, bottles, plates, cups and cutlery. -*A Cargill / NatureWorks partnership*
 - **BIO-PDO™** [1,3 propanediol, a key ingredient of Sorona^R, a polymer for clothing, carpeting, biodegradable plastics etc. -*A Tate & Lyle / Dupont partnership.*

JADI

Perlu mengeksplor keunikan dan kekhasan Sagu

- Sagu (pati) vs Terigu (tepung) ??
→ (Apple vs Orange ???)



JADI

Perlu mengeksplor keunikan dan kekhasan Sagu

- Sagu vs Terigu ?? (Apple vs Orange ???)

| Jenis Contoh : | | | | 0 % Sagu 100% terigu | 5 % Sagu 95% terigu | 10 % Sagu 90% terigu | 15% Sagu 85% terigu | 20 % Sagu 80% terigu | 25 % Sagu 75% terigu | 100 % Sagu 0% terigu |
|----------------|---|--------|----------------|-------------------------|------------------------|-------------------------|------------------------|-------------------------|-------------------------|-------------------------|
| No. | Jenis Uji | Unit | Hasil Analisis | Hasil Analisis | Hasil Analisis | Hasil Analisis | Hasil Analisis | Hasil Analisis | Hasil Analisis | Hasil Analisis |
| 1 | Profil Gelatinisasi Pati | | | | | | | | | |
| 1.1 | Viskositas puncak | cp | 1975 | 1958 | 1966 | 2007 | 1942 | 1995 | 3427 | |
| 1.2 | Viskositas panas | cp | 1066 | 1044 | 1028 | 1033 | 975 | 974 | 753 | |
| 1.3 | Penurunan viskositas karena pemanasan | cp | 909 | 914 | 938 | 974 | 967 | 1021 | 2674 | |
| 1.4 | Viskositas akhir | cp | 2275 | 2170 | 2082 | 2054 | 1904 | 1895 | 1756 | |
| 1.5 | Peningkatan viskositas karena pendinginan | cp | 1209 | 1126 | 1054 | 1021 | 929 | 921 | 1003 | |
| 1.6 | Waktu puncak | menit | 9.20 | 9.27 | 9.20 | 9.07 | 8.93 | 8.80 | 6.07 | |
| 1.7 | Suhu gelatinisasi | °C | 85.30 | 77.70 | 76.10 | 75.75 | 75.25 | 74.90 | 73.70 | |
| 2 | Kadar Air | g/100g | 10.69 | 10.70 | 10.64 | 10.64 | 10.22 | 10.27 | 8.78 | |

JADI

Perlu mengeksplor keunikan dan kekhasan Sagu

- **Kesimpulan?**
 - **Sagu tdk selalu harus diposisikan sebagai produk substitusi**
 - **Sagu berpotensi sebagai bahan baku untuk ingredient (baik untuk ingredient pangan maupun non pangan –termasuk kosmetik, tekstil, dll).**
 - **Modified sago starch??**
 - **dll**

JADI

Perlu mengeksplor keunikan dan kekhasan Sagu

→ ingredient berbasis sagu untuk berbagai aplikasi

Ingredient industri pangan



Ingredient industri kayu & kertas



Ingredient industri Bioteknologi/fermentasi



Ingredient industri Farmasai/Kosmetik



Ingredient industri pakan



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