



TERRAVIA ACQUISITION

TerraVia: a new growth platform for Corbion

- TerraVia's **microalgae platform** will significantly expand Corbion's portfolio with fats and oils
 - Corbion can **leverage fermentation skillset** to improve TerraVia's economics
 - Expansion of Corbion's **R&D capabilities**
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- TerraVia is expected to provide a **significant boost to Corbion's sales growth**
 - The acquisition will initially come **at the expense of Corbion margins...**
 - ... but offers a **significant value creation opportunity**

Strategic fit: TerraVia with Corbion

TerraVia brings

- World class **fermentation-based microalgae production platform** and product portfolio covered by extensive patent estate
- **Valuable assets:** Pilot plant (San Francisco, US), Demo plant (Peoria, US) and industrial scale plant in SB Oils JV with Bunge (Moema, Brazil)
- **Opportunities**
 - Omega-3 (DHA) for aquaculture and animal feed
 - Vegetable proteins and specialty lipids in food
 - Healthy, high performance cooking oil (Thrive)
 - Specialty oils and structured fats for Food and Biochemicals
 - Palm-free ingredients for human and animal nutrition

Corbion brings

- World class **industrial-scale, fermentation-based, organic acid production** and down stream processing expertise, with over 80 years of experience
- Strong **application development capabilities** based on biobased ingredients
- **Market access** to key target markets
 - Bakery
 - Food and Beverages
 - Animal Nutrition
 - Health and Personal Care
- **Financial strength and a disciplined approach** to sustainable value creation

A highly versatile bio-platform to produce commercially attractive, sustainable ingredients

Current TerraVia has a broad algae-based product portfolio...



Omega-3 DHA algae biomass

New source of DHA addresses major supply gap in aquaculture



Specialty fatty acids

High purity fatty acids as additional supply source besides palm



Functional fats and oils

Tailored triglycerides for e.g. bakery fats and healthy cooking oils

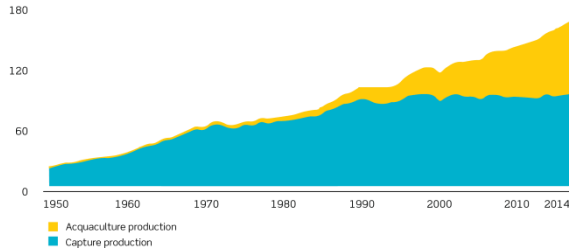


Whole algae proteins and lipids

Healthy lipid-powder and plant-based proteins – dairy free, vegetable source

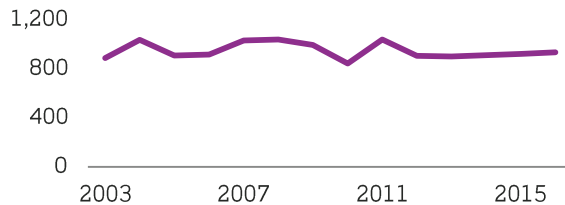
First product to commercialization: AlgaPrime DHA

World capture fisheries and aquaculture production (mt x 1,000)



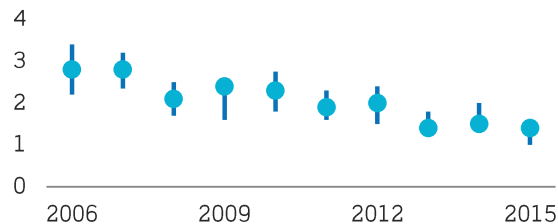
- Fish production: aquaculture production closing in on capture production

Fish oil supply (mt x 1,000)



- Available fish oil supply is limited at ~1,000 kTpa

Omega-3 fatty acids in salmon (EPA+ DHA (g. 100 g-1))

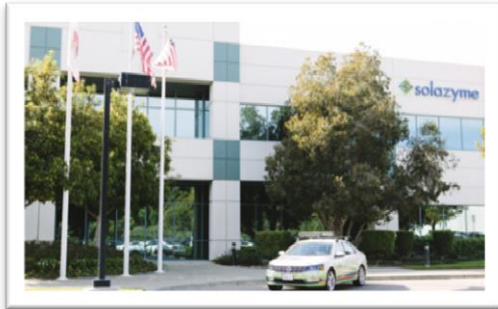


- ...so aquaculture farmers have been reducing fish oil content at expense of Omega-3 fatty acids (EPA+DHA) levels in salmon

TerraVia is producing algae biomass containing high concentration of omega-3 rich oil at industrial scale in the SB Oils joint venture with Bunge

World class algae development and production platform

San Francisco, CA –R&D lab/pilot plant



R&D: world class algae development platform

- San Francisco based lab and pilot plant
- World leading industrial biotechnology capability to engineer microalgae
- > 100,000 micro algae strains screened
- > 300 patents filed – 77 granted
- 2014 green chemistry award

Peoria, Illinois – demo plant



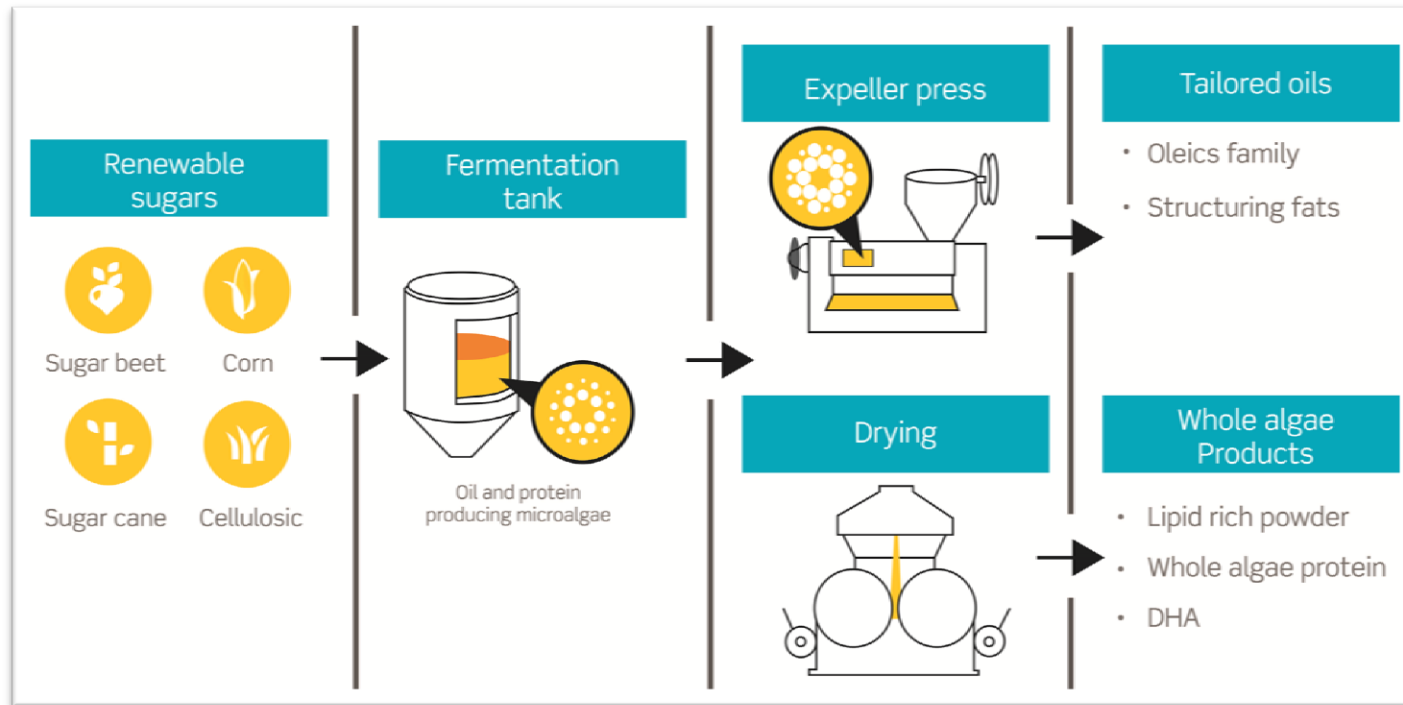
- Commissioned in 2012
- \$45M invested in fixed assets

Moema, Brazil 50/50 JV with Bunge



- Commissioned in 2014
- \$130M invested in fixed assets

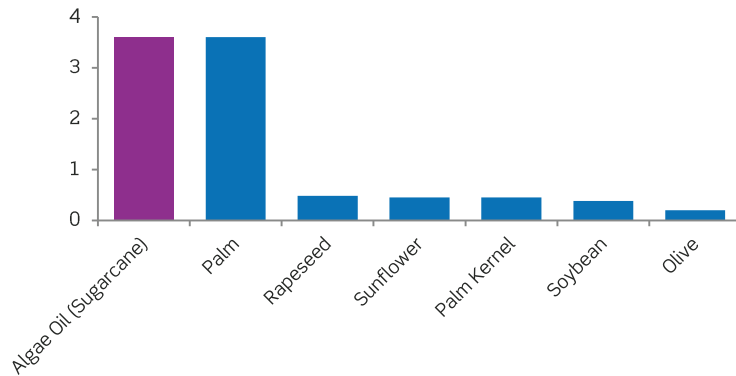
Production process



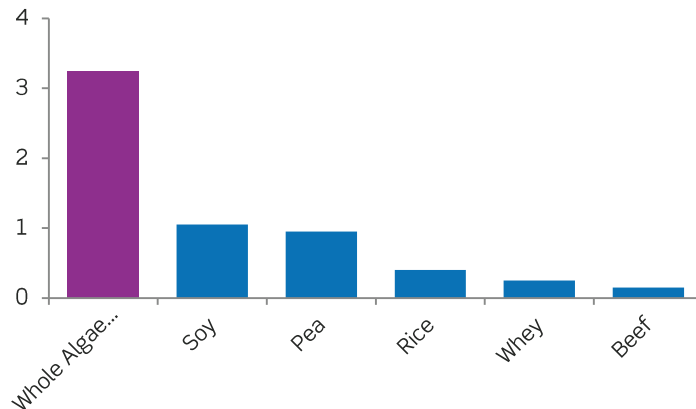
- Raw materials and closed-tank fermentation process very similar to Corbion's
- Multiple purpose production plants for algae-based products

Algae-based products have unmatched sustainability profile

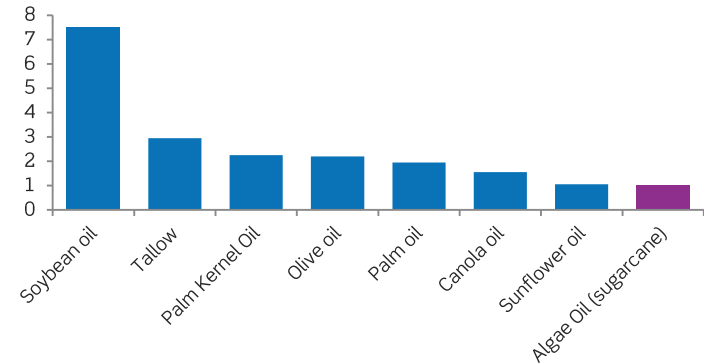
Oil Yield per Hectare (mt/ha)¹



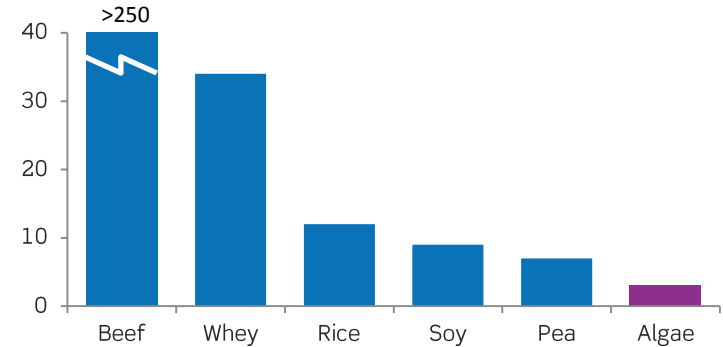
Protein Yield per Hectare²



GHG Emissions per kg of Oil³



GHG Emissions per kg of Protein⁴



(1) Murphy, D. J. (2009). Global oil yields: Have we got it seriously wrong? AOCs.; (2) Calculated from Solazyme Inc. data; FAO and USDA Statistical Databases; Redefining Agricultural Yields: from tonnes to people nourished per hectare, Cassidy, et. al (2013); Proteins From Land Plants—Potential resources for human nutrition and food security, Li Day (2013); (3) Source: thinkstep (2015) Cradle-to-Gate Study of Competing Bio-Based Oils. Third Party Reviewed to ISO 1404/44 Standards.; (4) thinkstep (2015) Cradle-to-Gate Assessment of Whole Algal Protein Products. Preliminary analysis pending critical review (14044, Section 6.3)

Financial key points – P&L impact (1/2)

- **High value creation potential** for Corbion, with ROCE at maturity and post-tax IRR far exceeding 15%
- **Sales and EBITDA potential** of acquired asset base
 - SB Oils JV Moema plant: Net sales potential of US\$ 150-250M (@100%)
 - Peoria demo plant: Net sales potential of US\$ 5-25M
 - EBITDA margins >18% at maturity
- Initially **reported in Biobased Innovations**; reporting lines updated at CMD at 9 November

Financial key points – P&L impact (2/2)

- Acquisition is expected to provide a **new growth platform** and to enhance Corbion's pro-forma¹ sales growth profile by more than 100 bps per annum
- **Operating expense (S,G&A and R&D) : >50% reduction** in 2018 compared to TerraVia reported 2016 levels² (US\$ 74.8M)
- **Pro-forma¹ EBITDA impact:** expected to be positive from 2020 onwards
- **EBITDA impact:** negative in 2017 and coming years due to high R&D intensity, while majority of short term revenue generating capacity is recorded in unconsolidated³ SB Oils joint venture
 - EBITDA impact is expected to be max. US\$ -25M per annum in the coming years
 - EBITDA impact range for 2017: US\$ -7M to -12M

(1) Pro-forma net sales and EBITDA includes Corbion's reported net sales and EBITDA and 50.1% of unconsolidated SB Oils net sales and EBITDA

(2) TerraVia SEC 10K filing 2016, p.62

(3) SB Oils joint venture will be accounted for via equity method. 50.1% of net income will be recorded in Results from joint ventures and associates

Financial key points – funding and balance sheet impact

- **The acquisition will be financed by cash from existing credit facilities.**
- **The total expected funding required to develop the acquired business goes beyond the initial purchase price and comprises the following main components:**
 - Purchase Price: US\$ 20M
 - Guarantee for 50.1% of third party loan into SB Oils JV: US\$ 22.5 M⁴
 - Additional cumulative negative FCF in initial years: related to EBITDA losses, WC and Capex funding
- **Corbion's Net Debt / EBITDA will remain well within covenants:**
 - Corbion H1 2017 net debt/EBITDA: 0.9x
 - Expected max adverse impact on Net Debt/EBITDA ratio: increase by 0.5-0.7 x
 - Corbion covenants: 3.5x

(4) Loan denominated in Brazilian Real. At closing BRL 140.4M at 100%

Corbion's priorities for TerraVia

- **Accelerate product commercialization**
 - AlgaPrime DHA for Animal Nutrition
 - AlgaVia specialty lipids and protein in Bakery and Food and Beverage
- **Reduce operating expenses**
- **Optimize production assets** by applying Corbion's fermentation capabilities
- **Review R&D portfolio**

