Algae are the fastest-growing plants in the world. Like other plants, they use photosynthesis to harness sunlight and carbon dioxide. Energy is stored inside the cell as lipids (the source for oil) and carbohydrates. Algae can be converted into biodiesel, ethanol, biocrude and aviation fuels. Among biofuels projects, algae is commonly grown in two scenarios. The first is in ponds, and the second is in biorefineries in the US and Europe. In both cases the growth of algae requires a source of carbon, light, nutrients, and warm water.

For first generation biofuels markets, algal strains with high oil content will help to bring much-needed feedstock to biodiesel production plants world-wide. Several species of algae with a high starch content are now being tested to produce ethanol for 1st generation plants, while other species are being developed specifically for aviation fuels.

Algae for Biodiesel, Biocrude and Drop-In Fuels

Algae 2020 provides a detailed analysis of algae producers in pilot and demonstration projects to supply burgeoning global demands for biodiesel and advanced biofuels. A key finding from Algae 2020 reveals an increasing number of ventures are receiving investments to create algae based bio-crude as a feedstock for petrol, and drop-in fuels for aviation, renewable diesel and renewable gasoline markets. For example, the US has invested 7 trillion dollars in its existing petroleum refining and distribution infrastructure. Algal biocrude is a preferred alternative for petrol and aviation. To supply this massive demand, more than a dozen algae R&D projects, universities, labs and commercial producers are working on pilot tests, demonstration projects, and first-stage commercial ventures to turn algae into biocrude that can be refined into biodiesel, renewable diesel, renewable gasoline, aviation and drop-in fuels.

### Table: Feedstock & Gallons Per Acre

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<th>Feedstock</th>
<th>Gallons Per Acre</th>
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<tr>
<td>Soy</td>
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<tr>
<td>Canola/Rapeseed</td>
<td>120-150 US gallons/acre</td>
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<tr>
<td>Jatropha</td>
<td>175-250 US gallons/acre</td>
</tr>
<tr>
<td>Palm</td>
<td>650 US gallons/acre</td>
</tr>
<tr>
<td>Algae</td>
<td>5-10,000 US gallons/acre</td>
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</tbody>
</table>

Source: Algae 2020 Biofuels Market Survey and Commercialization Outlook

### Player Profiles & Market Commercialization Outlook

The Algae 2020 study examines the business models of leading first-stage algae producers in pilot and demonstration projects as well as major R&D projects in public-private partnerships and collaborative enterprises with labs. Algae 2020 provides player profiles and market opportunity assessments for biodiesel, biocrude, advanced drop-in fuels, & power generation from algae.

#### Algae Target Markets: Biodiesel, Renewable Diesel & Petrol Refineries

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<th>MT/yr</th>
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<td>400</td>
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Source: Algae 2020 update from Biodiesel 2020 study
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