LIST OF TABLES

1	**Table 1.1**	Various Generations of Biofuels, Classified on the Basis of Their Production Technologies.....	11
2	**Table 3.1**	Fatty Acid Composition and Important Properties of Straight Jatropha curcas Oil.....	46
3	**Table 3.2**	Comparison of different Catalysis Techniques.....	51
4	**Table 3.3**	Chemical and Physical Properties of Hydrogenated oil, FAME and EN 590 Diesel.....	59
5	**Table 3.4**	Various properties of Jatropha biodiesel in varying blends with petroleum diesel.....	60
6	**Table 4.1**	Effect of temperature deviation on microalgae growth rate.....	71
7	**Table 4.2**	Effect of Changes in Nitrogen Concentration on Lipid Yield of Microalgae.....	75
8	**Table 4.3**	Comparison of open and closed systems for algae cultivation.....	84
9	**Table 4.4**	Comparison of Inorganic and Organic flocculants.	102
10	**Table 4.5**	Comparison of Two step/ Conventional and One step/Direct Transesterification.....	112
11	**Table 4.6**	Comparison of properties of biodiesel, diesel fuel and ASTM standard.....	113
12	**Table 5.1**	Various Parameters Considered for Study.....	141
13	**Table 5.2**	Various Calculation Methods.....	146
14	**Table5. 3**	Energy Share and CO_2 Emissions from each Feedstock in Production of 0.875 MT of Fertilizer	149
15	**Table5. 4**	Total Yield Per Hectare for Initial Five Years from Jatropha Plantation in the Identified Site.....	151
16	**Table5. 5**	Energy Use during Various steps of Oil Processing via Transesterification for converting it into Green	

diesel..... 153

17 **Table 5.6** Energy Use during Various steps of Oil Processing via Hydrogenation for converting it into Green diesel..... 153

18 **Table 5.7** The total energy uses during various steps of green diesel production from Jatropha seed cake... 155

19 **Table 5.8** Stage wise Energy input/output and CO_2 emissions per hectare during first five years of Jatropha life cycle (for oil processing via transesterification)..... 157

20 **Table 5.9** Stage wise Energy input/output and CO_2 Emissions per hectare during first five years of Jatropha Life Cycle (for Oil Processing via Hydrogenation)..... 158

21 **Table5.10** NEB values of the Compared Studies..... 161

22 **Table5.11** Stage wise Energy input/output and CO_2 emissions per hectare during first five years of Jatropha life cycle (for oil processing via Hyrogenation)..... 162

23 **Table5.12** Capital Cost Investment over 20 years, for Green Diesel Production from Jatropha..... 165

24 **Table5.13** Operational Cost Investment over 20 years, for Green Diesel Production from Jatropha..... 165

25 **Table5.14** Total invest over 20 years, for Green diesel production from Jatropha..... 165

26 **Table 6.1** Various parameters considered for study..... 174

27 **Table 6.2** Various calculation methods..... 176

28 **Table 6.3** Based on the Reactor Type and Configuration, Biomass Production over 5 years..... 179

29 **Table 6.4** Composition of the Biomass Obtained from Culture of Microalgae..... 180

30 **Table 6.5** Nutrient requirement based on the biomass composition..... 181

31 **Table 6.6** The Total Energy Input during Microalgae Culture in the Various Reactors..... 182

32 **Table 6.7** CO_2 and NOx Emissions due to Fertilizer and Electricity use during Microalgae Culture..... 183

33 **Table 6.8** Energy Requirements for Flocculation Followed by Belt Drying..... 185

34 **Table 6.9** Energy requirements for Flocculation Followed by Centrifugation and Belt Drying..... 187

35 **Table6.10** Energy Requirements for Centrifugation Followed by Belt Drying..... 189

36 **Table6.11** Energy Requirements for Oil Extraction from Microalgae by Bligh and Dyer Method 192

37 **Table6.12** Energy Requirements During Oil Processing via Hydrogenation..... 194

38 **Table6.13** Energy Requirement During Pyrolysis of Dry Biomass and Oil Up-gradation via Hydrotreating... 196

39 **Table6.14** Energy Requirement during Hydrothermal Liquefaction Wet Biomass and Oil Up-gradation via Hydrotreating 198

40 **Table6.15** Total Green diesel, Energy Content, & CO_2 Emissions obtained over Five years span from Microalgae..... 200

41 **Table6.16** Stage wise Energy input/output, NEB and NER over 5 years..... 201

42	**Table6.17**	Total CO_2 Emissions over 5 years from the Different Routes.....	202
43	**Table6.18**	Capital Cost Investment over 20 years, for Green Diesel Production from Algae.....	205
44	**Table6.19**	Operational Cost Investment over 20 years, for Green Diesel Production from Algae.....	205
45	**Table6.20**	Total invest over 20 years, for Green diesel production from Jatropha.....	205
46	**Table7. 1**	Comparison of Different Agronomical practices & Challenges through entire Life Cycle of Jatropha and Algae.....	208
47	**Table7. 2**	Comparison to Find out the Technical Viability of Jatropha and Algae as An Energy Crop for Green diesel Production.....	209
48	**Table7. 3**	Comparison of Jatropha and Algae along their Life Cylce for Green diesel production, to find out their Environmental Acceptability as an Energy Crop....	210
49	**Table7. 4**	Comparison of Jatropha & Algae, find out their economic competitiveness for Green diesel production.....	211