Philippine Agricultural Development and Commercial Corporation

Department of Agriculture

BIOFUEL PRODUCTION AS AN AGRICULTURAL MOVEMENT:

PROSPECTS FOR AGRICULTURE IN BIOFUELS

ENSURING NO CONFLICT WITH EXISTING AGRO-INITIATIVES

DA BIOFUELS FEEDSTOCK PROGRAM

Department of Agriculture

DA BIOFUELS FEEDSTOCK PROGRAM

Approval of the Biofuels Law:

- Local producers are guaranteed of a market for biofuels in the Philippines with the issuance of Republic Act 9367, otherwise known as the Biofuels Act of 2006.
- The said Act mandates the local production and use of biodiesel and bioethanol. The law requires meeting local demand first before any biofuels exports is allowed.
- In the Philippines, biodiesel is sourced from coconut and jatropha (R&D), while bioethanol is from sugarcane, cassava and sweet sorghum (R&D).
- The Department of Agriculture is currently implementing its Biofuels Feedstock Program which is mainly aimed at assuring the supply of feedstock by encouraging investments, which in the process provides employment and additional income to rural farmers as well

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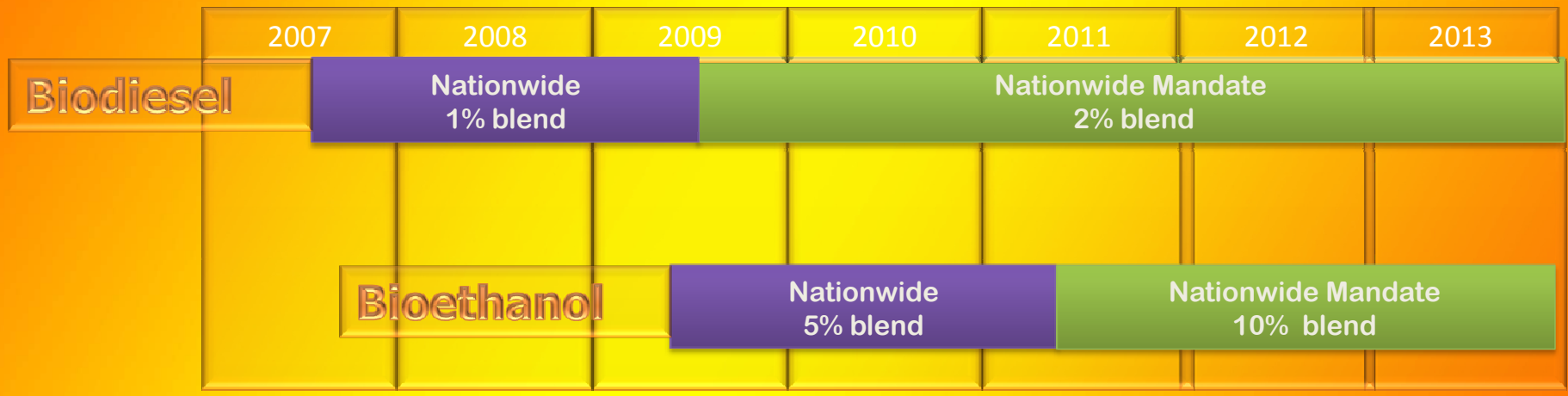
DA BIOFUELS FEEDSTOCK PROGRAM

Biofuels Implementation

- Mandatory use of biofuel-blends
- Export
- Communal uses



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DA BIOFUELS FEEDSTOCK PROGRAM

Demand for Biofuels

BIODIESEL

- **Processing Plant Requirement (30 MLi capacity):**
  - **2007 – 3 refineries**
  - **2010 – 6 to 7 refineries**
  - **2015 – 7 to 8 refineries**

Blend	Year	Demand (M liters)	Equivalent Feedstock Volume (MT)		Equivalent Area for Production (Has)	
			Coconut	Jatropha	Coconut	Jatropha
1%	2007	77	122,222	256,667	119,826	51,333
2%	2009	177	280,952	590,000	275,444	118,000
	2014	198	314,286	660,000	308,123	132,000

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DA BIOFUELS FEEDSTOCK PROGRAM

Biodiesel Accounts

PLANT REQUIREMENT (Rated Capacity)				
Biodiesel	Required Capacity	Existing/projected Total Rated Capacity	Surplus/Gap	Plant Requirement
2007	77	253*	176	
2010	177	673	496	
2014	198	988	790	

Note: Number of plants required was derived using a 30 Mli/yr capacity (economic size of a biofuel plant)
*Biodiesel will be sourced from existing CME producers

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DA BIOFUELS FEEDSTOCK PROGRAM

Demand for Biofuels

BIOETHANOL

- **Processing Plant Requirement (30 MLi capacity):**
  - **2009 – 9 distilleries**
  - **2011 – 17 to 20 distilleries**
  - **2015 – at least 25 distilleries**

Blend	Year	Demand (M liters)	Equivalent Feedstock Volume (MT)			Equivalent Area for Production (Has)		
			Sugarcane	Sweet Sorghum	Cassava	Sugarcane	Sweet Sorghum	Cassava
5%	2009	223	3,185,714	4,460,000	1,238,889	49,011	44,600	154,861
10%	2011	482	6,885,714	9,640,000	2,677,778	105,934	96,400	334,722
	2014	537	7,671,429	10,740,000	2,983,333	118,022	107,400	372,917

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DA BIOFUELS FEEDSTOCK PROGRAM

Bioethanol Accounts

PLANT REQUIREMENT (Rated Capacity)				
Bioethanol	Required Capacity	Existing/projected Total Rated Capacity	Surplus/Gap	Plant Requirement
2009	269	39	(230)	8
2011	594	373	(221)	13
2015	721	489	(232)	17

Note: Number of plants required was derived using a 30 Mli/yr capacity (economic size of a biofuel plant)

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DA BIOFUELS FEEDSTOCK PROGRAM

Area Planted to Food Crops

COMMODITY	AREA PLANTED (ha)
Palay	4,272,889
Corn	2,648,317
Abaca	136,049
Banana	436,762
Cabbage	8,502
Calamansi	20,544
Cassava	209,633
Coconut	3,359,776
Coffee	123,975
Eggplant	21,613
Garlic	3,863
Mango	184,174
Mongo	39,011
Onion	15,879
Peanut	28,316
Pineapple	53,978
Rubber	110,972
Sugarcane	382,958
Tobacco	23,863
Tomato	17,544
Total	**12,098,616**

Source; BAS (2007 report)

Required Expansion Areas To Attain Sufficiency:

- Rice Sufficiency Target 400,000has
- Corn Sufficiency Target 254,000has
- Biofuels Requirement to Meet the Mandated Blend 660,000 has

Available Areas for Agribusiness Investment Matching

Location / Region	Area (ha)
PHILIPPINES	1,997,642.16
	-
Northern Luzon Agribusiness Quadrangle (NLAQ)	638,820.07
CAR	46,571.88
REGION 1	80,154.72
REGION II	512,093.47
Luzon Urban Beltway	390,242.41
REGION 3	131,217.83
REGION IV-A	23,301.47
REGION IV-B	235,723.11
Central Philippines	385,659.67
REGION V	117,555.05
REGION VI	48,782.18
REGION VII	114,133.44
REGION VIII	105,189.00
Agribusiness Mindanao	582,920.00
REGION IX	30,867.00
REGION X	78,850.00
REGION XI	279,274.00
REGION XII	109,169.00
REGION XIII	66,177.00
ARMM	18,583.00

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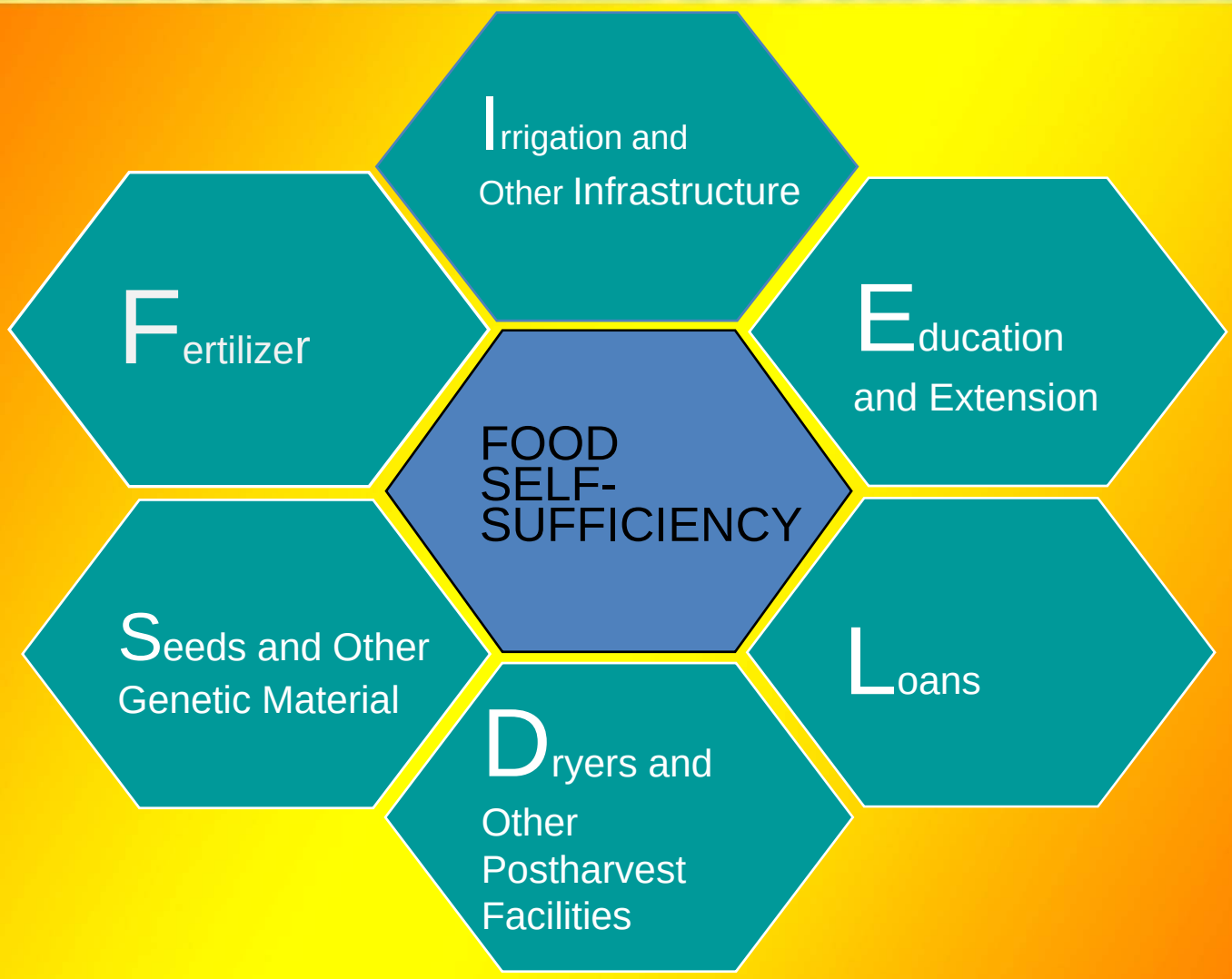
DA BIOFUELS FEEDSTOCK PROGRAM



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DA BIOFUELS FEEDSTOCK PROGRAM

Accomplishment by FIELDS 2008

Fertilizer

- Distributed 3.4 M fertilizer coupons to farmers
- Established four Bio-N mixing plants in Tampakan, South Cotabato; Maguindanao;Davao Oriental; and Zamboanga City while two were maintained in Iloilo and Capiz
- Increased farmers' income by 40-50% due to the reduction of input costs and 45% increase in farm productivity

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DA BIOFUELS FEEDSTOCK PROGRAM

Accomplishment by FIELDS 2008

Irrigation & Other Infrastructure

- Generated 10,828 ha of new areas, rehabilitated 74,259 ha and restored 45,252 ha
- Constructed/rehabilitated 3,229 kms of farm-to-market roads (including those from the continuing fund from 2007) and generated 35,351 jobs with an estimated 217,669 farmer household beneficiaries
- Established 15 mariculture parks
- Constructed 16 tramlines (7 in Benguet; 3 in Mt. Province; 2 in Nueva Vizcaya; 2 in Luzon; 1 in Pampanga; and 1 in Negros Occidental)

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DA BIOFUELS FEEDSTOCK PROGRAM

Accomplishment by FIELDS 2008

Extension, R&D & Capacity Building

- Conducted 5,783 training and training-related activities for 126, 718 farmers/fisherfolk/AEWs
- Established 2,564 techno demos on rice varietal improvement, Diversified and Integrated Farming System (Palayamanan) and Palay Check System
- Conducted 212 various research and development activities on Integrated Pest Management, Varietal Improvement, Postharvest and Processing/Value Added, etc. to generate production-enhancing and cost- reducing technologies

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DA BIOFUELS FEEDSTOCK PROGRAM

Accomplishment by FIELDS 2008

Loans

- Released a total of Php 3.18 B loans to 108,760 farmers/fisherfolk under the various lending facilities of the Agro-Industry Modernization Credit and Financing Program
- Released Php 6.32 B production loan assistance for palay through LBP to 221,110 farmer beneficiaries

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DA BIOFUELS FEEDSTOCK PROGRAM

Accomplishment by FIELDS 2008

Dryers & Other Postharvest/ Post-Production Facilities/Activities

- Distributed/Installed 596 flatbed dryers to minimize post-harvest losses and maintain grain quality for better prices
- 15 Corn Post-harvest Processing & Trading Centers are being established in addition to the four that are operational, each serving an area of 2,000 hectares of corn land geared to produce high quality corn and reduce post-harvest losses for additional income of farmers

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DA BIOFUELS FEEDSTOCK PROGRAM

Accomplishment by FIELDS 2008

Seeds and other genetic materials

- Distributed 56,086 MT of certified rice seeds and 5,847 MT of hybrid rice and corn seeds
- Distributed 8.2 million pieces of planting materials (e.g. sugarcane, mango, coconut, cashew, citrus, lanzones, durian, cassava, mushroom (spawn), & forage cuttings)
- Distributed 28,279 head of various animals (large & small ruminants, poultry & swine)
- Distributed 122.3 M pieces of fingerlings and broodstock

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DA BIOFUELS FEEDSTOCK PROGRAM

AGRICULTURE PROGRAMS COMPLEMENTATION FRAMEWORK

AGRICULTURAL MODERNIZATION

ANCHOR PROGRAM: FISHERIES MODERNIZATION	GRAIN SECTOR DEV'T. PROGRAM	DIVERSIFIED AGRL / UPLAND MGMT.	FOREST MANAGEMENT
• Integrated Fisheries Development • Equipment Support • Aquaculture Development • Mangrove Mgmt. • Marine Protected Areas Mgmt. • Foreshores Land Mgmt.	• Modernized Small Holder - Agricultural Development • Infrastructure Development & Improvement (Irrigation, Roads, & PHF) • Sustainable Agriculture • Marketing Assistance • Agricultural Extension • Credit Support • Patent Issuance • Mineral Land Resource Dev't. (Sand/Gravel Quarrying)	• Sustainable Agriculture • High Value Crops Development • Tree Crops Development • Productivity Improvement of Marginal Lands • Credit Support • Pasture-Based Livestock/Grazing Land Mgmt. • Production Under Coconut Areas • Agro-Forestry • Mineral Resource Dev't. • Biofuels Feedstock Plantation Dev't.	• Watershed Mgmt. • Community-Based Forest Management • Industrial Forestry • Protected Areas Mgmt. • Mineral Resource Dev't.

ACCESS TO LAND

BASIC SOCIAL SERVICES

RESEARCH & DEVELOPMENT

SOCIAL CAPITAL FORMATION / COMMUNITY DEVELOPMENT / INSTITUTION BUILDING

GENDER – BASED PROGRAMS

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DA BIOFUELS FEEDSTOCK PROGRAM

Food Crops and Biofuels Feedstock Production Complementation Scheme

- Intercropping

  o Jatropha can be intercropped with coconut and high value crops like, rubber cassava, peanuts, pineapple, papaya, turmeric and white potatoes.

- Crop Rotation

  o Sweet Sorghum can be planted in corn areas, lowland and upland rice areas after the wet season. It can also be planted after the cropping cycle/season of leguminous crops.

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DA BIOFUELS FEEDSTOCK PROGRAM

Highlights of Accreditation Procedures for Biofuel Feedstock Producers

The following criteria shall guide biofuel and biofuel feedstock producer relative to the identification of feedstock and the utilization of lands for feedstock production:

- Cereals that can be used both for food and for biofuel production such as but not limited to corn, and wheat shall not be used for feedstock as biofuel;
- The land to be used shall be consistent with the natural expansion of the municipality or locality, as contained in the approved physical framework and land use plan;
- The area that will be used is not the only remaining food production area of the community;

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DA BIOFUELS FEEDSTOCK PROGRAM

Highlights of Accreditation Procedures for Biofuel Feedstock Producers

All agricultural areas classified hereunder shall not be utilized for biofuel production:

- All areas covered by government-funded irrigation facilities, either national agency or LGU, designed to support rice and other crop production, and all irrigated lands where water is not available for rice and other crop production but are within areas programmed for irrigation facility rehabilitation by DA and NIA;
- All irrigable lands already covered by irrigation projects with firm funding commitments as certified by NIA at the time of the application for land use conversion;
- All privately irrigated alluvial plain lands utilized for rice and corn production; and
- All agricultural lands that are ecologically fragile, the utilization of which will result in serious environmental degradation

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DA BIOFUELS FEEDSTOCK PROGRAM

Highlights of Accreditation Procedures for Biofuel Feedstock Producers

Certification may be issued, except for areas identified previously, under the following conditions:

- Compliance with the SRA and PCA policy guidelines, as approved by DA, for the utilization of sugarcane and coconut areas;
- The areas are evaluated by DA to be underutilized and marginal; and
- The proposed project is supportive to agro-industrial development, and will generate additional and alternative livelihood opportunities for the affected community.

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DA BIOFUELS FEEDSTOCK PROGRAM

Highlights of Accreditation Procedures for Biofuel Feedstock Producers

WHO SHALL APPLY FOR ACCREDITATION

- **Biofuel Producers:**

All biofuel producers shall declare their target source of feedstock and will be subjected to an evaluation of DA if the target production area is compliant with the prescribed criteria.

- As used in the guidelines, an Independent Biofuel Feedstock Producer shall refer to a Biofuel Feedstock Producer who has no marketing or supply agreement with a Biofuel Producer.

a. Only an Independent Biofuel Feedstock Producer with an effective area exceeding twenty five (25) hectares, either contiguous or fragmented, shall be required to obtain a DA Certification.

b. An Independent Biofuel Feedstock Producer whose effective area is twenty five (25) hectares or less is exempted from securing the DA Certification.

c. A Biofuel Feedstock Producer who has a marketing or supply agreement with a Biofuel Producer shall not be required to secure a DA Certification; *Provided,* that the Biofuel Producer shall secure the DA Certification as provided in Chapter III, Section 2.4 of this Guidelines.

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DA BIOFUELS FEEDSTOCK PROGRAM

Highlights of Accreditation Procedures for Biofuel Feedstock Producers

REQUIREMENTS FOR DA CERTIFICATION

The following documents and information are required to be submitted by the Applicant:

a. Feasibility Study;

b. List of Biofuel Feedstock supplier(s); and

c. One (1) copy each of geo-referenced or GIS map, vicinity map and lot plan showing the feedstock production areas duly certified by the MPDC of the concerned LGU.

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DA BIOFUELS FEEDSTOCK PROGRAM

STEPS IN ACCREDITING BIOFUELS PRODUCERS

Application with the NBB

- Applicant shall submit all requirements for accreditation including payment of necessary fees.
- NBB endorses the application to DA for evaluation

Evaluation of DA based on the criteria

- For sugarcane and coconut areas, SRA and PCA, respectively shall provide the necessary evaluation before DA can issue a certification.
- DA shall create an evaluation team either based on the central office, regional office, or a combination of both.
- Timelines and other parameters for evaluation in support to the criteria and should be identified/prescribed by the DA.

Issuance of certification and endorsement to DOE

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DA BIOFUELS FEEDSTOCK PROGRAM

BIOFUELS CONSUMPTION IN 2008

Biodiesel (1 % Blend - Mandatory)

Sales Volume of CME Producers:

- **Chemrez – 34,420,300 liters**
- **Senbel - 10,628,380 liters**
- **Freyvonne - 147,037 liters**
- **Golden Asian - 627,702 liters**
- **Pure Essence - 11,684,000 liters**
- **Mt. Holly - 2,870,000 liters**
- **Rasza Agro - 346 liters**
- **Bioenergy 8 - 4,105,000 liters**

Total CME Biodiesel Consumption
= 64,482,765 liters

Bioethanol (E10 – Voluntary)

- **Imports - 12,318,000 liters**
- **Sales Volume of Leyte Agri Corporation – 415,067 liters**

Total Bioethanol Consumption:
= 12,733,067 liters

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DA BIOFUELS FEEDSTOCK PROGRAM

Monitoring: Biofuel Projects 2007-2009

Physical Performance				
Biofuels	**Interest**	**Targeted***	**Matched**	**Planted**
Biodiesel				
Coconut	200,000	200,000	15,000	350
Jatropha	678,100	200,000	152,000	14,478
Bioethanol				
Sugarcane	57,000	15,000	12,560	2,000
Sweet Sorghum	11,000	11,000	6,000	80
Cassava	101,700	50,000	2,000	700
TOTAL	1,047,800	476,000	187,560	17,608

Note: * With Agreements
TOTAL AREA REQUIRED TO MEET THE MANDATED BIOFUELS BLEND: 660,000 has

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Price estimation of Phil. Diesel @ different CME blend requirements

DA BIOFUELS FEEDSTOCK PROGRAM

Economic Impact

Coconut Farming Communities

- Social amelioration for coconut farm workers.
- Increase in income of coconut farmers through the production of Crude Coconut Oil for refining.
- Opening of new areas for corporate farming of coconut for biodiesel production.

Jatropha (R&D Stage)

- Can provide additional income to farmer through intercropping
- Opening of new agribusinesslands

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Price estimation of Phil. Diesel @ different CME blend requirements

DA BIOFUELS FEEDSTOCK PROGRAM

Economic Impact

Sugarcane Farming Communities

- Social amelioration for sugarcane biofuels farm workers.

Cassava (R&D Stage)

- Alternative to feeds products
- Opening of expansion areas for biofuel feedstock production

Sweet Sorghum (R&D Stage)

- Complement rice and corn
- Opening of expansion areas for bioethanol feedstock production

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DA BIOFUELS FEEDSTOCK PROGRAM

Biodiesel Accounts as of August 15, 2009

LEGEND:
By Region

- 1
- 10
- 11
- 12
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- ARMM
- CAR
- CARAGA
- NCR

BENLINC
Coconut for CME production
Magsinggal, Sto. Domingo, Kabugao (Ilocos Sur)
100,000 has

PNOC-AFC/LGU ZAMBALES
Jatropha for Biodiesel
Botolan and Iba, Zambales
32,000 has

Bioenergy Farms
Jatropha for Biodiesel
Zambales
10,000 has

ECO GLOBAL BIO OIL
Jatropha for Biodiesel
Provinces of Region 12
100,000 has

CURCAS ENERGY AUSTRALIA
Jatropha for Biodiesel
Palawan
100,000 has

Herminio Teves Group
Jatropha for Biodiesel
Negros Oriental
10,000 has

PNOC-AFC
Jatropha for Biodiesel
Bohol and Cebu
15,000 has

Highlands Dev't Coop
Jatropha for Biodiesel
Ifugao Province
20,000 has

KIBIO 2007
Jatropha for Biodiesel
Samar
10,000 has

DK Biofuels
Jatropha for Biodiesel
Tarlac Province
30,000 has

PNOC-AFC
Jatropha for Biodiesel
Bukidnon and Misamis Oriental
10,000 has

GMC
Oil Palm for Biodiesel Production
Laak, Compostela Valley to San Isidro and Asuncion, Davao
30,000 has

ABUNDANT BIOFUELS CORPORATION
Jatropha for Biodiesel
Cagayan de Oro
100,000 has

PNOC-AFC
Jatropha for Biodiesel
General Santos City
30,000 has

Note: Dark shaded box are the matched areas

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DA BIOFUELS FEEDSTOCK PROGRAM

Bioethanol Accounts as of August 15, 2009

L E G E N D:
By Region

- 1
- 10
- 11
- 12
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- ARMM
- CAR
- CARAGA
- NCR

GFI
San Mariano, Isabela
Sugarcane for ethanol production
6,300 has

Cavite Biofuel Producers Inc
Magallanes, Cavite
Sugarcane and molasses for bioethanol

FUELS Inc.
Sugarcane for Bioethanol
Negros Occidental

Roxol Bioenergy Corp
Molasses for Bioethanol
Negros Occidental

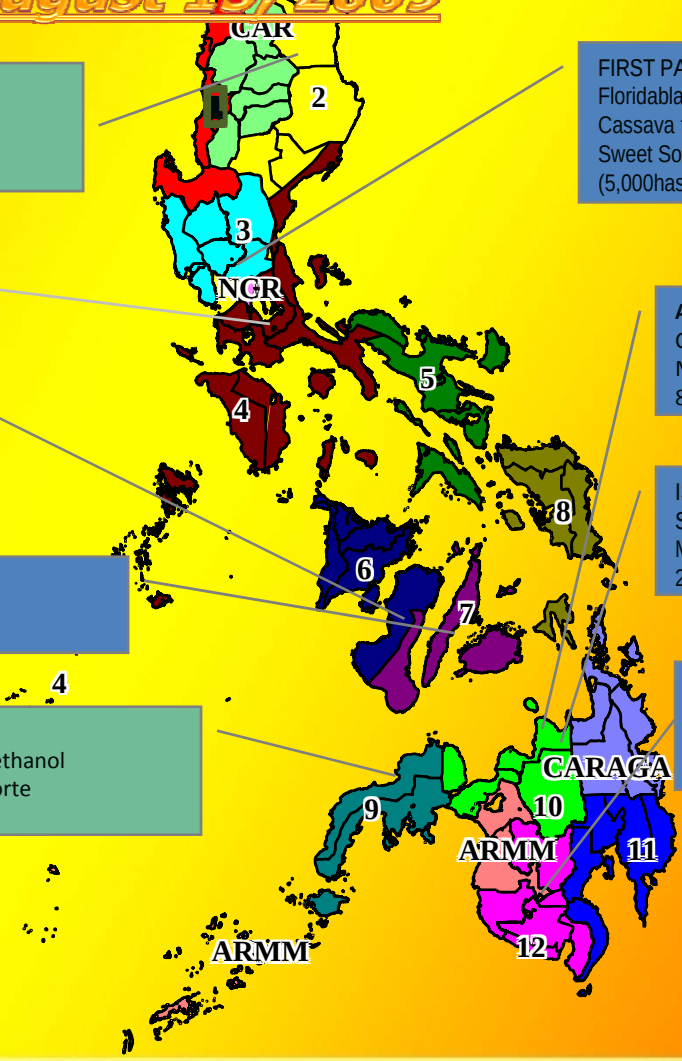
BASIC ENERGY
Sugarcane for bioethanol
Zamboanga del Norte
10,000 has

FIRST PAMPANGA BIOFUELS CORP.
Floridablanca, Pampanga
Cassava for ethanol production (8,400has)
Sweet Sorghum for ethanol production
(5,000has)

ALSONS POWER
Cassava for bioethanol
Misamis Oriental
8,000 has

ISABELA ALCOGAS CORP.
Sugarcane for bioethanol
Misamis Oriental
20,000 has

Southern Bukidnon Bioenergy
Sugarcane for bioethanol
Bukidnon
2,000 has



Note: Dark shaded box are the matched areas

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DA BIOFUELS FEEDSTOCK PROGRAM

THANK YOU

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