

CHAPTER 6: LAND USE AND AGRICULTURE



Land use refers to the functional division of land for different human purposes or economic activities. This data assists policy makers in understanding the impact of human activities on the environment and enables them to respond to changes in environmental conditions in a timely and efficient manner.

A number of human activities such as agriculture mainly through the use of pesticides and insecticides; mining, industry, infrastructure development and urbanization often result in abrupt and unplanned changes in the use of the land which can lead to a decline in both the quality and quantity of water available to ensure the continued sustainability of ecosystems and living organisms. Economic activities also use significant volumes of water which can put a strain on water resources threatening the livelihood of marine life, and reducing the amount of water available for irrigation and agricultural purposes.

The challenges to collection of data in this area remain the need for training in the classification and categorization of land use types as used internationally. The absence of comprehensive land-use and development/management plans, coupled with unclear legislation and the non-implementation of a legal framework all contribute to the lack of capacity in being able to implement zoning of areas as well as to accurately collect and compile data in this area. Further the technological capacity and the IT infrastructure needs to be developed so as to better facilitate the sharing of geo-spatial data and information amongst national and regional agencies.

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Table 6.1 - Land Use : 2005 - 2009

Unit=km²

Country	Year	Agricultural land					Total
		Arable land	Land under permanent crops	Land under permanent meadows and pastures	All other agricultural land, n. e. s.	Fallow and other agricultural land	
JM	2005	...	...	...	...	...	...
	2006	...	...	...	...	...	...
	2007	...	1,551	498	380	829	...
	2008	1,740	...	...	...	...	5,130
	2009	...	...	...	...	...	...
LC	2007	6,017	17,005	7,525	...	...	24,530

Table 6.1 cont'd - Land Use : 2005 - 2009

Unit = km²

Country	Year	Forest and other wooded land	Built-up and related land	Wet open land	Dry open land with special vegetation cover	Open land without, or with insignificant, vegetation cover	Other Lands	Total land area	Waters	Total area of the country
JM	2005	...	...	...	...	...	...	10,831	160	10,991
	2006	...	...	...	...	...	...	10,831	160	10,991
	2007	3,382	10,831	160	10,991
	2008	3,382	10,831	160	10,991
	2009	10,831	160	10,991
LC	2007	3,713	1,961

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Table 6.2: Use of fertilizers by type and year: 2005-2009

Unit: Tonne

Country	Year	Nitrogenous fertilizers	Phosphate fertilizers	Potash fertilizers	NPK MIX	TOTAL
BS	2005	12	1	2		15
	2006	26	1	2		30
	2007	17	4	2		23
	2008	12	6	2		20
	2009	27	4	2		34
BB	2005	2,337	32	171		4,343
	2006	2,876	2	50		5,840
	2007	2,639	21	207		4,850
	2008	2,494	1	172		5,706
	2009	3,282	0	11		5,649
DM	2005	23	0	0	1,341	1,364
	2006	43	0	1	1,556	1,600
GD	2005					601
	2006					747
	2007					819
	2008					571
	2009					442
GY	2007					49,365
	2008					82,929
	2009					25,441
JM	2005	...	...	...		35,829
	2006	...	7	...		31,092
	2007	...	4	...		21,047
	2008	...	0	...		29,513
	2009	...	...	...		26,498
VC	2005					3,180
	2006					2,629
	2007					2,941
	2008					2,578
	2009					2,903
SR	2005	10,377	61	1,308	1,724	13,470
	2006	14,704	345	1,433	2,755	19,237
	2007	10,991	125	766	3,903	15,785
	2008	49,258	DPP	77	3,903	53,239
	2009	15,172	51	125	4,436	19,884
BM(\$)	2005	132,782	44,930	24,615		660,213
	2006	191,699	55,507	198		880,584
	2007	112,974	49,206	7,716		709,368
	2008	140,439	75,870	40,551		987,507

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Table 6.3: Use of Pesticides by type and year: 2005-2009

		Unit: Tonne						
Country	Year	Insecticides	Herbicides	Fungicides, bactericides and seed treatments	Plant growth regulators	Rodenticides	Others (including mineral oils)	TOTAL
BS	2005	663	28	76	54	32	28	880
	2006	575	22	56	65	29	231	979
	2007	686	46	27	39	77	1,257	2,133
	2008	393	44	15		60	2,467	2,979
	2009	182	18	8		14	652	873
BB	2005	433	510	34	38	43	762	1,820
	2006	315	492	2	22	33	884	1,749
	2007	454	466	13	14	50	812	1,808
	2008	1,010	539	12	19	40	1,039	2,659
	2009	414	497	12	24	32	764	1,743
DM	2005	99	3	74		11		
	2006	75	9	186		10		
GD	2005							19
	2006							19
	2007							15
	2008							15
	2009							14
JM	2005	234	763	354	...	64	150	1,566
	2006	161	923	435	...	69	-	1,588
	2007	142	840	349	...	-	-	1,331
	2008	260	708	214	...	37	78	1,296
	2009	135	826	460	...	-	-	1,421
LC	2005	413	203	21	2	41	11	690
	2006	212	53	21	2	26	6	319
	2007	153	5	6	4	17	6	191
	2008	153	9	18	6	18	8	213
	2009	209	12	26	4	24	11	285
VC	2006	187	82	126	32	11	985	1,424
	2007	146	156	112	0	9	68	490
	2008	227	126	91	1	12	63	520
	2009	224	99	45	0	3	90	462
SR	2005	1,065	575	317	...	...	...	1,957
	2006	882	821	359	...	...	...	2,062
	2007	1,019	767	316	...	...	...	2,102
	2008	2,648	3,397	642	...	...	...	6,687
	2009	733	609	418	...	...	...	1,760
BM (\$)	2005	648,651	220,616	84,534	...	...	77,159	1,030,960
	2006	981,467	268,170	78,953	...	...	68,762	1,397,352
	2007	463,856	117,438	64,969	690,529	1,336,792
	2008	250,914	150,772	62,677	999,235	1,463,598

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Concepts and Definitions

Land use refers to the functional division of land for different human purposes or economic activities. *(Please refer to the OECD's Glossary of Statistical Terms website at <http://stats.oecd.org/glossary/>)*

Land Types

Agricultural land includes land under scattered farm buildings, yards and their annexes and permanently uncultivated land, such as uncultivated patches, banks, footpaths, ditches, headlands and shoulders.

Arable land refers to all land generally under rotation whether for temporary crops or meadows or left fallow.

Land under permanent crops signifies land used for crops occupying it for a long period of time and which do not have to be planted for several years after each harvest. Land under trees and shrubs producing flowers, such as roses and jasmine, is so classified, as are nurseries (except those for forest trees); permanent meadows and pastures are excluded.

Fallow and other agricultural land is arable land not under rotation that is set at rest for a period of time ranging from one to five years before it is cultivated again. It includes land usually under permanent crops, meadows or pastures, which is not being used for that purpose for a period of at least one year. Arable land which is normally used for the cultivation of temporary crops but which is temporarily used for grazing is included. Also included are scattered farm buildings, that is, isolated buildings not belonging to closed villages or similar rural localities.

Land under permanent meadows and pastures means land used permanently (that is, for five years and more) for herbaceous forage crops. Permanent meadows and pastures on which trees and shrubs are grown are included in this category only if the growing of forage crop is the most important use of the area.

Forest and other wooded land includes forest nurseries and seed orchards that constitute an integral part of the forest; forest roads, cleared tracts, firebreaks and other small open areas within the forest; forest in national parks, nature reserves and other protected areas such as those of special environmental, scientific, historical, cultural or spiritual interest; and windbreaks and shelterbelts of trees with an area of more than half a hectare and a width of more than twenty metres. Rubberwood plantations and cork oak stands are included but land predominantly used for agricultural practices are excluded.

Land under forest refers to land under natural or planted stands of trees, whether productive or not. This category includes land from which forests have been cleared but that will be reforested in the foreseeable future, but it excludes woodland or forest used only for recreation purposes.

Other wooded land refers to land either with a tree crown cover of five to ten per cent of trees able to reach a height of five metres at maturity; or a crown cover of more than ten per cent of trees not able to reach a height of five metres at maturity and shrub or bush cover.

Built-up and related land refers to land under houses, roads, mines and quarries, and other facilities, including
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their auxiliary spaces, deliberately installed for the pursuit of human activities. Land under closed villages or similar rural localities and open land closely related to these activities, such as waste tips, derelict land in built-up areas, junk yards, city parks and gardens, etc, are included in this category. Land occupied by scattered farm buildings, yards and their annexes are excluded.

Wet open land refers to non-wooded sites either partially, temporarily or permanently water-logged, the water of which may be fresh, brackish or saline, on blanket or raised peatlands. The water may be either stagnant or running, and is usually shallow, especially if it is saline.

Dry open land with special vegetation cover refers to non-wooded land that is covered by low (less than two metres high) vegetation.

Open land without, or with insignificant, vegetation cover refers to non-built-up land whose surface is either not covered at all by vegetation or scarcely covered by some vegetation.

Waters relate to the part of the national territory to be reported which is covered by surface waters. The national territory to be reported is defined as the surface enclosed by all inland borders and, if applicable, the normal base-line on the seaward side.

Total area is the total area of the country, including area under inland and tidal water bodies but excluding uninhabited islands. **Total land area** is the total area excluding area under inland water bodies (major rivers, lakes, etc).

Fertilizers are compounds given to plants to promote growth. They are usually applied either via the soil, for uptake by plant roots, or by foliar feeding, for uptake through leaves. Fertilizers can be organic (composed of organic matter), or inorganic (made of simple, inorganic chemicals or minerals). They can be naturally occurring compounds such as peat or mineral deposits, or manufactured through natural processes (such as composting) or chemical processes (such as the Haber process).

Types of Fertilizers

Nitrogenous fertilizers refer to the nitrogen content of commercial inorganic fertilizers.

Phosphate fertilizers refer to commercial phosphoric acid (P_2O_5) and cover the P_2O_5 of super-phosphates, ammonium phosphate and basic slag.

Potash fertilizers refer to the potassium oxide (K_2O) content of commercial potash, muriate, nitrate and sulphate of potash, manure salts, kainite and nitrate of soda potash.

NPK Mix: NPK is an acronym for nitrogen, phosphorus and potassium: the three nutrients that compose a complete fertilizer. They are also the three nutrients plants extract from soil in the greatest quantity and are available in synthetic, organic, and mineral forms.

Please refer to The CARICOM Environment in Figures 2002, Caribbean Community Secretariat, United Nations (2003)

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A *pesticide* is any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs, or substances which may be administered to animals for the control of insects, arachnids or other pests in or on their bodies. The term pesticide also includes substances intended for use as a plant growth regulator, defoliant, desiccant (agent for thinning fruit or preventing the premature fall of fruit), and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport.

Types of Pesticides

Insecticides are agents of chemical or biological origin that control insects. Control may result from killing the insect or otherwise preventing it from engaging in behaviours deemed destructive. Insecticides may be natural or manmade and include chlorinated hydrocarbons, organo-phosphates, carbonates-insecticides, pyrethroids, and botanical and biological products. Examples include Chlordane and DDT.

Herbicides are used to kill unwanted plants. Selective herbicides kill specific targets while leaving the desired crop relatively unharmed. Some selective herbicides act by interfering with the growth of the weed and are often based on plant hormones. Nonselective herbicides, on the other hand, kill all plant material with which they come into contact. Herbicides include phenoxy hormone products, triazines, amides, carbonates-herbicides, dinitroanilines, urea derivatives, sulfonyl urea, bipiridils

and uracil.

Fungicides are chemical compounds used to prevent the spread of fungi or plants in gardens and crops, which can cause serious damage resulting in loss of yield and thus profit. Fungicides can either be contact or systemic. A contact fungicide kills fungi when sprayed on its surface; a systemic fungicide has to be absorbed by the plant.

Bactericides destroy, suppress or prevent the spread of bacteria. Examples are swimming pool chemicals containing chlorine, and products used to control black spot (bacterial blight) on garden plants or in orchards. Disinfectants for household and industrial use are excluded and are not considered pesticides

Seed treatments are chemical or biological substances or physical processes applied to seeds or seedlings. They help to protect the seeds and assure optimum emergence of the plant or crop. Application of a chemical to seeds is a very well-targeted method of reducing pest and disease attacks on the growing plant.

Plant growth regulators are substances or mixture of substances intended, through physiological action, to accelerate or retard the rate of growth or maturation, or otherwise alter the behavior of plants or their produce. Additionally, plant regulators are characterized by their low rates of application (high application rates of the same compounds often are considered herbicidal).

Rodenticides are pesticides used specifically for controlling rodents, such as mice and rats, and include anti-coagulants.

Other refers to pesticides not so far mentioned.

Source: FAO

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1.6.1 (a): Sources of data for Table 6.1 Land Use: 2005-2009

Country	Notes
JAMAICA	The Statistical Institute of Jamaica
SAINT LUCIA	Government Statistics Department

1.6.1 (b): Notes for Table 6.1 Land Use: 2005-2009

Country	Notes
JAMAICA	<p>2000 data refers to National Forest Management and Conservation Plan 2000 and Census of Agriculture 1996.</p> <p>2000 data for forest and other wooded land includes disturbed forests and fields. Data for other years is for forested land only.</p> <p>2007 data derived from agricultural census.</p> <p>2008 data estimated by the World Bank.</p> <p>In 2007 and 2008, figures for 'Forest and other wooded land' refer to forest only.</p>

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1.6.2 (a): Sources of Data for Table 6.2 - Use of Fertilizers by Type and Year: 2005-2009

Country	Data Source
THE BAHAMAS	Department of Statistics-Trade Section
BARBADOS	Barbados Statistical Service
DOMINICA	Central Statistical Office
GRENADA	Trade Section, Central Statistical Office
GUYANA	Guyana Bureau of Statistics
JAMAICA	Statistical Institute of Jamaica
ST VINCENT AND THE GRENADINES	The Statistical Office
SURINAME	General Bureau of Statistics, Trade Statistics Section
BERMUDA	Department of Statistics

1.6.2 (a): Notes for Table 6.2 - Use of Fertilizers by Type and Year: 2005-2009

Country	Data Source
BARBADOS	<p>Other Fertilizers include</p> <ul style="list-style-type: none"> • other fertilizers in packets 10 kg & under • fertilizers with nitrogen phosphorous and potassium • monoammonium and diammonium phosphate • other fertilizers containing nitrogen and phosphorus • fertilizers with phosphorous/ potassium • other fertilizers
JAMAICA	Imports of fertilizers are used as a proxy for the use of fertilizers. However, the trade classification is quite different, giving terms such as ammonium nitrate, ammonium sulphate, potassium chloride and combinations of nitrogen, phosphorus and potassium.
SURINAME	a) Other are mixed fertilizers. b) The data presented are imports
BERMUDA	Values in Bermuda dollars

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1.6.3(a): Sources of Data for Table 6.3 - Use of Pesticides by Type and Year: 2005-2009

Country	Data Source
THE BAHAMAS	Department of Statistics-Trade Section
BARBADOS	Barbados Statistical Service
DOMINICA	Central Statistical Office
GRENADA	Trade Section, Central Statistical Office
JAMAICA	Statistical Institute of Jamaica
SAINT LUCIA	Government Statistics Department
SURINAME	General Bureau of Statistics, Trade Statistics Section
BERMUDA	Department of Statistics

1.6.3 (a): Notes for Table 6.3 - Use of Pesticides by Type and Year: 2005-2009

Country	Data Source
THE BAHAMAS	Herbicides includes Plant Growth Regulators for 2008 Herbicides includes Plant Growth Regulators for 2009 Plant growth regulators for 2008 & 2009 See Herbicides
JAMAICA	Preliminary data for 2005 to 2008. Plant growth regulators included in Other.
BERMUDA	Values in Bermuda dollars