

# Land Use Classification

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# Outline

- Land cover vs. land use
- Major global LU datasets
- Structure and features of the proposed LU classification
- Some discussions

# Land Cover vs. Land Use

- LC is the observed (bio)-physical cover of the earth's surface. Such an observation can be made by the human eye, aerial photographs, satellite sensors, or simply existing maps.
- LU reflects the degree of human activities directly related to land and making use of its resources or having an impact (i.e. to produce products and benefits). LU requires field and ground information such as surveys and censuses.

# Major Global LU Datasets

- Agricultural LU database in FAOSTAT since 1961.
  - “Land” under “Resources”
  - “Area Harvested” under “Production”
- Decennial World Programme for the Census of Agriculture (WCA) since 1945.
- Global Forest Resources Assessment Programme (FRA) since 1946.
- “Global spatial database of sub-national agricultural land-use statistics” AGRO-MAPS

# Major Global LU Datasets (Cont'd)

- FAO has collected number of units and areas of aquaculture facilities by
  - Type of grow-out structures: ponds and tanks, enclosures and pens, cages, raceways and silos, etc
  - Water types: freshwater, brackish water, and marine water *and*
  - Type of products: fishes, crustaceans, and molluscs
- Classification used is based on the agreement at CWP, the coordinating mechanism established in 1959 to agree on standard concepts, definitions, classifications and methodologies for fishery statistics.

# Structure and features of the proposed LU classification

- Reflects the close relationship and integrative nature of the work on LU databases/datasets by various Departments and Divisions at FAO as discussed in the previous section.
- Provides a great flexibility in terms of application through its hierarchical structure.
- Establishes a linkage between itself with other major international classifications such as ISIC and CPC through the ICC.
- Integrates aquaculture and fishery land use including water bodies by applying consistent concept as agricultural and forest land use.



# Some Discussions

- On one hand, it should adhere to the commonly agreed principles resulting from previous theoretical and empirical researches in this field; and on the other hand, it has to be rooted in the existing LU global statistical databases.
- The function of such a LU classification just like many currently used at the global level is mainly to serve as a correlation system through which land use classes from existing national systems could be correlated and global LU databases can be continuously maintained and developed.

# Some Discussions (Cont'd)

- Irrigation is not included in the proposed LU classification due to two difficulties: One is conceptual and the other is practical one.
  - Irrigation is one of many “land use attributes” used to describe one feature or property of land use on a plot. Other attributes relevant to agriculture, for example, are land tenure, cropping systems, use of fertilizers, mechanization, soil conservation practices, commercial or subsistence orientation (Young 1994). Any of them can be added into the LU classification just as irrigation. Apparently, however, it is not feasible for a classification to accommodate all these attributes
  - at the same time Other difficulties concern the data available of the related information. At present, there is no summary data for the world total area of agricultural land use with the breakdown of irrigation in FAOSTAT.



# Some Discussions (Cont'd)

- *Indicative Crop Classification (ICC)*



# Proposed LU Classification

1	<u>L1</u>	<u>L2</u>	<u>L3</u>	<u>L4</u>	<u>L5</u>	<u>L6</u>	<u>Proposed LU Classification</u>
2							<i>Country area</i>
3	100000						Land area
4		110000					Agricultural area
5			111000				Arable land and Permanent crops
6				111100			Arable land
7					111110		<b>Land under temporary crops</b>
8						111111	Cereals
9						111112	Vegetables and melons
10						111113	Temporary oilseed crops
11						111114	Root/tuber crops with high starch or inulin content

# LU Classification (Cont'd)

1	<u>L1</u>	<u>L2</u>	<u>L3</u>	<u>L4</u>	<u>L5</u>	<u>L6</u>	<u>Proposed LU Classification</u>
12						111115	Temporary spice crops
13						111116	Leguminous crops
14						111117	Sugar crops
15						111119	Other temporary crops
16					111120		<b>Land under temporary meadows and pastures</b>
17						111121	Temporary grasses and other fodder crops
18					111130		<b>Land temporarily fallow</b>

# LU Classification (Cont'd)

1	<u>L1</u>	<u>L2</u>	<u>L3</u>	<u>L4</u>	<u>L5</u>	<u>L6</u>	<u>Proposed LU Classification</u>
19				111200	111210		<b>Land under permanent crops</b>
20						111211	Fruit and nuts
21						111212	Permanent oilseed crops
22						111213	Beverage and permanent spice crops
23						111219	Other permanent crops
24			112000	112100	112110		<b>Permanent meadows and pastures</b>
25						112111	Permanent grasses and other fodder crops

# LU Classification (Cont'd)

1	<u>L1</u>	<u>L2</u>	<u>L3</u>	<u>L4</u>	<u>L5</u>	<u>L6</u>	<u>Proposed LU Classification</u>
26		120000					Forest and other wooded land
27			121000				Forest
28				121100			Naturally regenerated forest
29					121110		Primary forest
30					121120		Other naturally regenerated forest
31				121200			Planted forest
32			122000				Other wooded land

# LU Classification (Cont'd)

1	<u>L1</u>	<u>L2</u>	<u>L3</u>	<u>L4</u>	<u>L5</u>	<u>L6</u>	<u>Proposed LU Classification</u>
33		130000	131000				<b>Land with aquaculture facilities</b>
34					131110		Hatcheries
35					131120		Managed grow-out sites
36						131121	Fish
37						131122	Crustaceans
38						131123	Molluscs
39						131124	Others
40		140000					<b>Other land</b>



# LU Classification (Cont'd)

1	<u>L1</u>	<u>L2</u>	<u>L3</u>	<u>L4</u>	<u>L5</u>	<u>L6</u>	<u>Proposed LU Classification</u>
41	200000						Inland water
42			211000				Areas with aquaculture or holding facilities
43						211121	Fish
44						211122	Crustaceans
45						211123	Molluscs
46						211124	Others
47			212000				Other inland water areas
48					212100		Enhanced areas
49					212200		Open access waters without enhancement

# LU Classification (Cont'd)

1	<u>L1</u>	<u>L2</u>	<u>L3</u>	<u>L4</u>	<u>L5</u>	<u>L6</u>	<u>Proposed LU Classification</u>
50	300000						Marine water
51			311000				Areas with aquaculture or holding facilities
52						311121	Fish
53						311122	Crustaceans
54						311123	Molluscs
55						311124	Others
56			312000				Other marine water
					312100		Enhanced areas
57					312200		Open access waters without enhancement

# Example: Data from an Academic Database

	<u>Asia</u>	<u>Africa</u>	<u>N. and C. America</u>	<u>S. America</u>	<u>Europe</u>	<u>Oceania</u>
<b>Major Land Use (1992)</b>						
<b>Cropland</b>	22%	6%	15%	8%	20%	4%
<b>Forest</b>	21%	17%	51%	53%	61%	8%
<b>Savannah/Grassland</b>	17%	36%	10%	26%	7%	36%
<b>Shrub land</b>	16%	9%	10%	9%	1%	51%
<b>Other land</b>	24%	33%	14%	5%	10%	0%
<b>million hectares</b>	3,074	2,976	2,149	1,761	2,246	842

Source: Center for Sustainability and the Global Environment <http://www.sage.wisc.edu/>

# Summary and Conclusion

- LU classification is important.
- The Proposed LU classification is a joint effort of three Departments at in charge of three areas of statistics: Agriculture, fisheries, and forestry.
- It is based on the existing major LU databases and experience of FAO.
- The Proposed LU classification is a common classification for the above three fields at the global level.