AREA SAMPLING FRAME CONSTRUCTION FOR AN

AGRICULTURE INFORMATION SYSTEM WITH LANDSAT-II DATA

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16. Abstract

Included in this report is a list of Landsat images of Nicaragua, and an evaluation of each. We don't have complete coverage, but it is enough to start. An analysis plan is specified that will make use of CCT's. This procedure will improve an existing area frame.

To use LANDSAT data only to develop an area frame would require imagery with resolution to find field boundaries and small roads. This will be difficult in most areas for LANDSAT I or II imagery.

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IMAGERY

Clouds are still a problem over Nicaragua. To date, no LANDSAT imagery has been obtained of the Atlantic coast and only partial frames are cloud free on the Pacific coast. For this reason we are still looking for another country to work in.

Other Countries

We are trying to organize a project with AID in another country. Two possibilities exist - Bolivia and Indonesia.

Bolivia has an active Remote Sensing program and AID has a project there through our office to help build an Area Sampling frame. We will be contacting Bolivian authorities the week of September 20, 1976.

Indonesia has not responded to initial inquiries, so I am not sure that they are interested.

LANDSAT I IMAGERY OF NICARAGUA

Number	Scene ID	Date	Clouds	70mm Center Coordinates		
1	1154-15385	Dec. 24, 1972	20%	N12-27	W86-54	1/2 image good,clouds & water
2	1154-15391	Dec. 24, 1972	10%	N11-30	W87-15	1/8 image good,water
3	1190-15391	Jan 29, 1973	5%	N11-40	W87-12	1/16 image good,water, clouds
4	1243-15335	Mar. 23, 1973	15%	N11-38	W85-59	5/8 image good water, clouds
5	1514-15354	Dec. 19, 1973	5%	N13-01	W86-59	Good image
6	1514-15361	Dec. 19, 1973	0%	N11-35	W87-19	1/16 image good,water
7	1585-15283	Feb. 28, 1974	15%	N11-41	W85-40	4/8 image good,water
8	1585-15290	Feb 28, 1974	5%	N10-15	W86-06	2/8 image good, water
9	1586-15335	Mar. 1, 1974	15%	N13-06	W86-51	3/4 image good, clouds
10	1586-15341	Mar. 1, 1974	0%	N11-41	W87-11	1/8 image good, clouds
11	1602-15284	Mar. 18, 1974	50%	N10-18	W84-44	1/2 image good, clouds
12	1603-15284	Mar. 18, 1974	20%	N10-17	W86-07	1/4 image good, water, clouds

LANDSAT II IMAGERY OF NICARAGUA

Number	Scene ID	Date	Clouds	Center Coordinates		
1	2023-15215	Feb. 14, 1975	60%	N11-32	W85-41	not useful
2	2024-15271	Feb. 15, 1975	20%	N12-58-	W86-48	1/4 useful, clouds
3	2040-15160	Mar. 3, 1975	50%	N11-36	W84-14	not useful, clouds
4	2058-15150	Mar. 21, 1975	50%	N14-26	W83-29	not useful, clouds
5	2?<0-15263	Mar. 21, 1975	20%	?-24	W86-26	1/2 image good, cloud puffs
6	?00-15270	Mar. 21, 1975	30%	?-57	W86-44	1/2 image good, haze

LANDSAT II IMAGERY OF NICARAGUA

Scene ID	Date	Clouds	Center Coordinates		Comments
2022-15163	Feb. 13, 1975	50%	N13-09	W84-36	Parts useful, water, clouds
2023-15215	Feb. 14, 1975	95%	N11-32	W85-41	Not useful
2024-15271	Feb. 15, 1975	50%	N12-58	W86-48	Parts useful
2040-15145	Mar. 3, 1975	40%	N15-56	W86-	Not useful, water and clouds
2040-15151	Mar. 3, 1975	90%	N14-30	W83-32	Not useful
2040-15154	Mar. 3, 1975	2%	N11-29	W87-06	Not useful, hase (water 80%)
2040-15160	Mar. 3, 1975	80%	N11-36	W84-14	Not useful, cotton puffs (clouds)
2040-15163	Mar. 3, 1975	40%	N10-09	W84-34	Parts useful
2041-15212	Mar. 4, 1975	30%	N11-36	W85-23	Not useful, clouds
2041-15215	Mar 4, 1975	90%	N13-02	W85-20	Not useful, cotton puffs (clouds)
2043-15325	Mar. 6, 1975	0%	N12-56	W88-13	Parts useful, mostly water
2058-15144	Mar. 21, 1975	30%	N12-57	W86-44	Not useful, water, clouds
2058-15150	Mar. 21, 1975	90%	N14-26	W83-29	Not useful, cotton puffs (clouds)
2058-15153	Mar. 21, 1975	90%	N12-58	W83-50	Not useful
2058-15162	Mar. 21, 1975	35%	N10-05	W84-31	Parts useful, some clouds
2060-15263	Mar. 23, 1975	40%	N14-24	W86-23	Parts useful
2060-15270	Mar. 23, 1975	30%	N12-57	W86-44	Useful, some haze and clouds
2060-15272	Mar. 23, 1975	2%	N11-29	W87-06	Not useful, Haze (water 80%)
2061-15324	Mar. 24, 1975	90%	N12-58	W88-12	Not useful, open water and clouds
15211	April 9, 1975	85%	N12-58	5-23	Not useful, clouds

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2077-15214	April 9, 1975	30%	N11-32	W85-44	Useful in parts
2078-15263	April 10, 1975	50%	N14-20	W86-30	Not useful
2078-15270	April 10, 1975	20%	N12-54	W86-51	Useful (good frame)
2078-15272	April 10, 1975	30%	N11-29	W87-11	Not useful, open water and clouds

ANALYSIS

In addition to the analysis discussed in the last progress report, we have specific procedures planned.

One initial objective of the study is to obtain land use maps of the total land area. Then, we will break the total land area into small homo-geneous blocks of land. The small blocks of land are then grouped together into strata. The blocks that are most alike are put into the same strata and land blocks that are different are put into separate strata.

LANDSAT will be used to group blocks together that are similar in land use. Both gray-scaled color enhanced images and classified LANDSAT data made into an image will be evaluated for this purpose. The differences will need to be great between these two materials since the classified images will be considerably more expensive.

Since good boundaries are not visible in LANDSAT, maps will need to be used to break the total land area up into small pieces. The two pieces of information will need to be the same scale so that they can be overlayed or a zoom transfer scope can be used.

SOFTWARE

In-house software programs and documentations are available so that areas on a map can be digitized and registered to latitude and longitude. Also, LANDSAT data can be registered with in-house software to longitude and latitude. This means that digitized boundaries of fields can be changed to ID coordinates to be used as training data.

This entire process is also available on the ARPA Network through the Center for Advanced Computation (CAC) and University of Illinois, Champaign-Urbana. Total documentation is available for that also.

STATEMENT OF ACCOUNT

As of August 31, 1976, $988.00 are left in the account at Salt Lake City Utah to be used to purchase imagery.