

E-learning in land Record Information System

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KEYWORDS: AgriKiosks, GPS, Computerised Land Record Information, Cadastral maps, Community

Summary: As land administration has always remained a challenging task both for planners and managers therefore development of accurate and easy to use software particularly for farmers is chosen as main focus of theme. Transferring and updating of records from traditional cloth map (cadastral maps) data base is one of the task taken up by various state governments in India.

An accurate mapping with the help of GPS at micro-level by volunteers and students will be demonstrated here for a village in Kumaon Himalayan belt. Officials at tehsil level maintain computerized land ownership record and villagers can see a reference copy of the same at internet under Devbhoomi project. Agrikiosks have also been setup in various states where farmers can get information on prices, seeds and all other information related to crops just by touch of screen in various languages. Now, the task is to link up this project on a real-time monitoring basis with the availability of high resolution CARTOSAT satellite images and integrate it with plot-wise GIS system. However, rural community will get benefit only when it is easily available through EDUSAT or Land kiosks in regional languages. Neighbourhood GPS based mapping by school children in rural areas has already generated interest in selected areas. International cooperation along with professional development scope is sought in this field of e-learning in land administration and surveying.

INTRODUCTION

In present day land record systems, a number of records are being maintained in India at the village, tehsil and district levels as in statement of land holdings, land revenue, rental cropped areas and land use pattern. There are more than 20 registers that are being maintained by Revenue Department. The number of registers varies from State to State though.

Principal records being maintained are

- (1) Village map (Cadastral map): A pictorial form showing the village and field boundaries;
- (2) Field book or 'khasra' which is an index to the map, in which changes in the field boundaries, their area, particulars of tenure-holders, methods of Irrigation, cropped area, other uses of land etc. are recorded.
- (3) Records of Right, also known as 'khatauni', which records the names and classes of tenure of all occupants of land.

In 1985 it was resolved in Conference of Revenue Ministers to computerize Land Records on pilot basis. The Ministry of Rural Development (MRD), Government of India, took the initiative to identify the deficiencies in the present systems of revenue administration and Land records. It provides funds to States for utilizing IT as a remedial tool to build Land Information System. The 100% Centrally Sponsored Scheme on Computerisation of Land Records (CLR) was started in 1988-89 with the intention to remove the problems inherent in the manual system of maintenance and updating of Land Records to meet the requirements of various group of users. It began as a pilot project in eight Districts/ States viz; Rangareddy (A.P.), Sonitpur (Assam), Singhbhum (Bihar), Gandhinagar (Gujarat), Morena (M.P.), Wardha (Maharashtra), Mayurbhanj (Orissa), and Dungarpur (Rajasthan). It was decided that efforts should be made to computerise core data contained in land records, so as to assist development planning and to make records accessible to people/ planners / administrators. Further, the scheme was extended to other districts as well. When the scheme was reviewed in 1993-94 it was observed that States were finding it difficult to sustain the project due to non-availability of skilled manpower, hardware maintenance etc. So, it was decided to use National Informatics Centre's (NIC) infrastructure and network. NIC upgraded its district centres with latest hardware and software and States were requested to allocate one room near NIC district centre to start data entry.

The Computerisation of Land Records (CLR) could safely claim to be the first initiative of E-Governance in India, at the Grass-root level. Subsequently the Central & State units developed a new system comprising ROR, Mutation and customised Query module and several utilities for data porting, validation and verification on Windows platform. NIC is extending technological support towards operationalisation at Taluk level. Implementation of such a large system in terms of number of sites and related non-technical issues, could be no less than solving a puzzle. Notwithstanding these issues, NIC state units realised distribution of computerized record of rights to common public in quite a few states. As of now CLR project is being implemented in 569 districts out of about 599 districts in the country. The Govt. of India has provided Rs. 3.80 lacs per Tehsil/Taluk for installation of hardware and software in 2426 Tehsils/ Talukas out of about 6000 in the country. Since inception MRD has released financial assistance of about Rs. 215 crore for computerization of Land records to the states/ UTs. (DLR, 2000).

Another e-learning based successful experience in agriculture is that of ITC Ltd. Company in India. Its Agri Business Division, one of India's largest exporters of agricultural commodities, has conceived *e-Choupal* as a more efficient supply chain aimed at delivering value to its customers around the world on a sustainable basis. The e-Choupal model has been specifically designed to tackle the challenges posed by the unique features of Indian agriculture, characterised by fragmented farms, weak infrastructure and the involvement of numerous intermediaries, among others (ITC web portal).

However, gaps at implementation stage can be identified by real usage at field level. Therefore, an attempt was undertaken in this demonstration to see the effectiveness of IT and e-learning at grass root level.

STUDY AREA

In order to study the real usage and level of awareness of e-learning about land resources among farmers, students and locals, a field visit was undertaken to villages and city in Kumaon Himalayan region. The area falling under Hilly state of Uttarakhand in India, is bordered on northern and eastern side by glaciers of Himalayan region along Nepal border, terai belt in south and continuation of Indian Garhwal Himalayan belt on western side. The representative areas of study – Bhimagar and Kundeshwari village are covered by Kashipur tehsil of Udham Singh Nagar district and Nainital city in Nainital district respectively. Thus a comparison of different aspects of land resource mapping in foothill plains of Terai belt and Hill station of Nainital was attempted.

METHODOLOGY

The study is primarily based on primary data collected during field survey with the help of simple hand held Garmin e-trex vista GPS, Google earth images, questions and interaction with villagers. The information was also gathered from tehsil office to see the real implementation of land record information project vis-à-vis conventional land records. Office records about land and farmers therein were surveyed. It was compared with web based and real records. A sample field plot was prepared with the help of GPS whereby 145 waypoints were recorded along different routes of agricultural fields, lakes and hills. Then, data was transferred to computer in MAP SOURCE software and with help of GPS converter KML file was imported into Google earth image to overlay routes. A contour map was generated to plot 3-D picture of Hilly track in SURFER.

RESULTS AND DISCUSSIONS

Web based information on DevBhoomi project in Uttarakhand showed a quite satisfactory interactive query based results in both English and Hindi. First, a district has to be selected- Udham Singh Nagar in the present case (Fig.1) followed by tehsil Kashipur (Fig. 2). Then a window for owner-wise information on various individual records can be displayed (Fig. 3). A visit at Kashipur tehsil office confirmed that the farmers and locals are at ease now about getting real copy of their land record rights just by paying Rs. 10/- at tehsil office (Fig.4). Demand for these copies is high as was observed by long queues. However, representative format as shown below helps them to understand and get it rectified in case of updates or disputes about land records in an effective transparent manner.

Further, village total and codes also be known for mapping and totaling of land records as shown here in case of Kundeshwari village (Fig. 5 to 7). All these web based queries could be easily by students themselves after explanation by farmers and officials. Now, this land record information system can be linked with any GIS software for plot-based spatial query which will all the more useful to villagers.

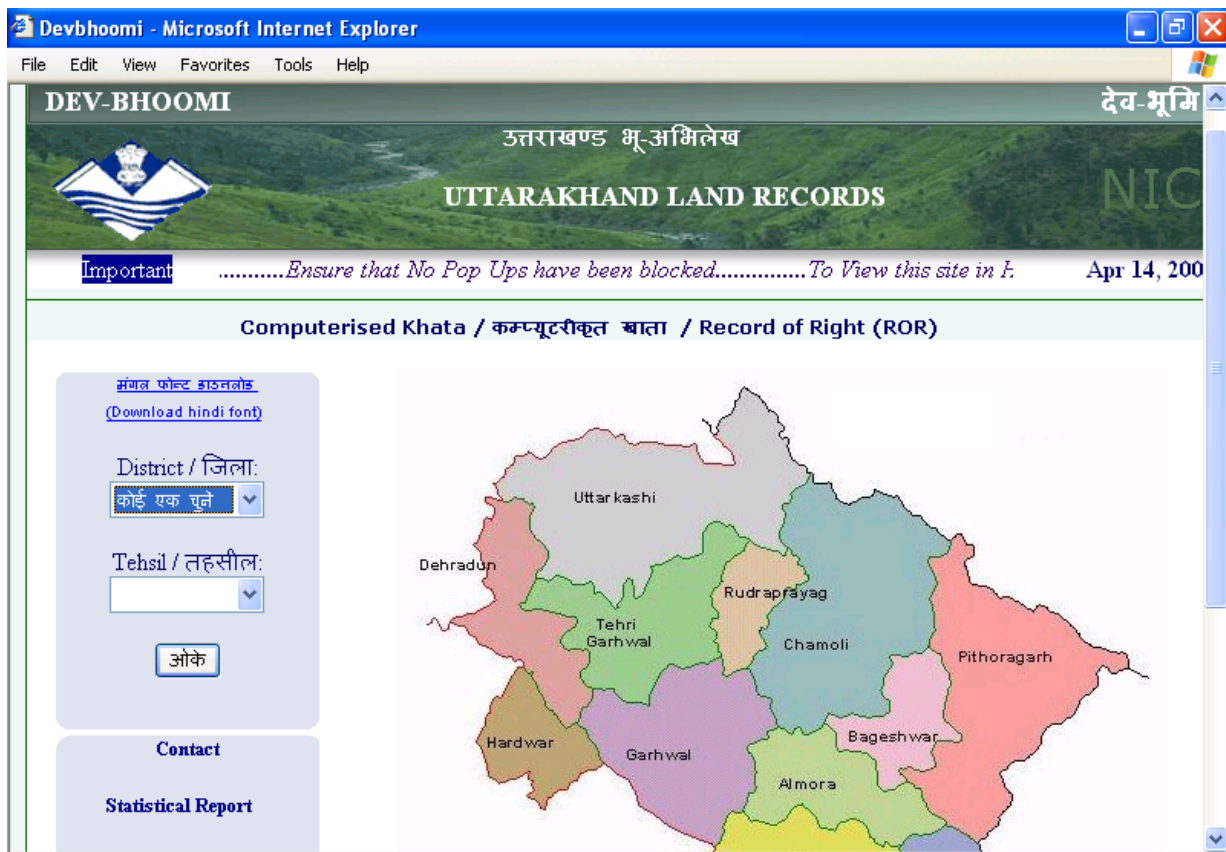


Fig 1. Land Record Right Query (District)- First Web Window

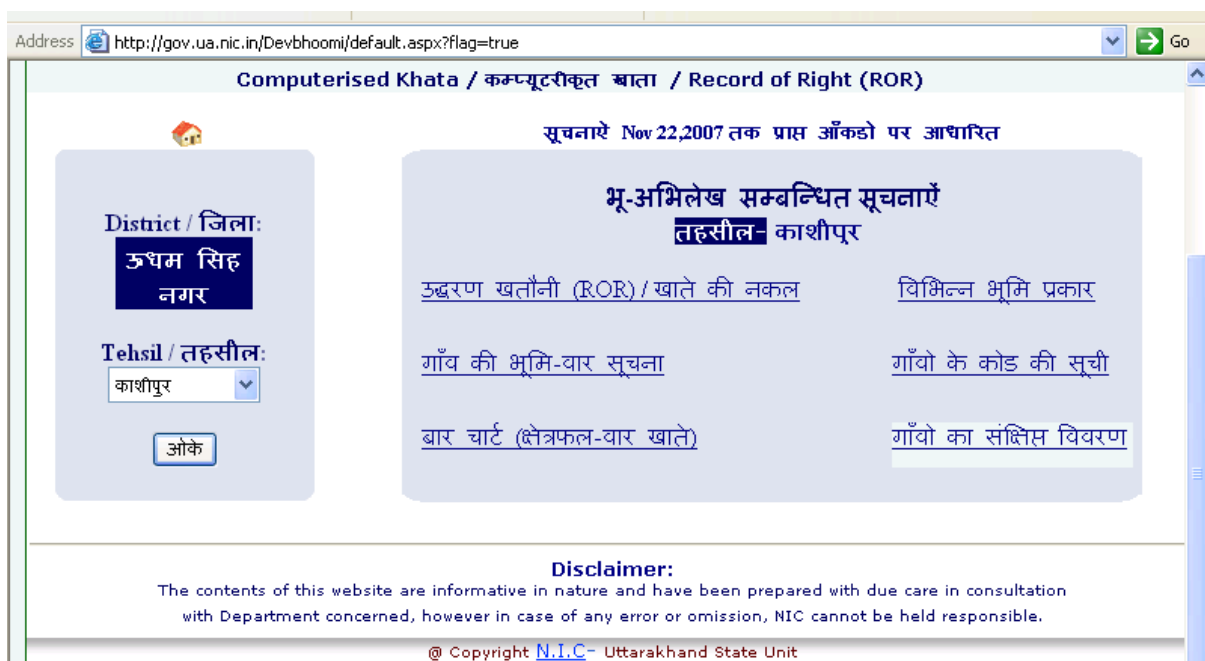


Fig 2. Land Record Right Query (Tehsil)- Second Web Window

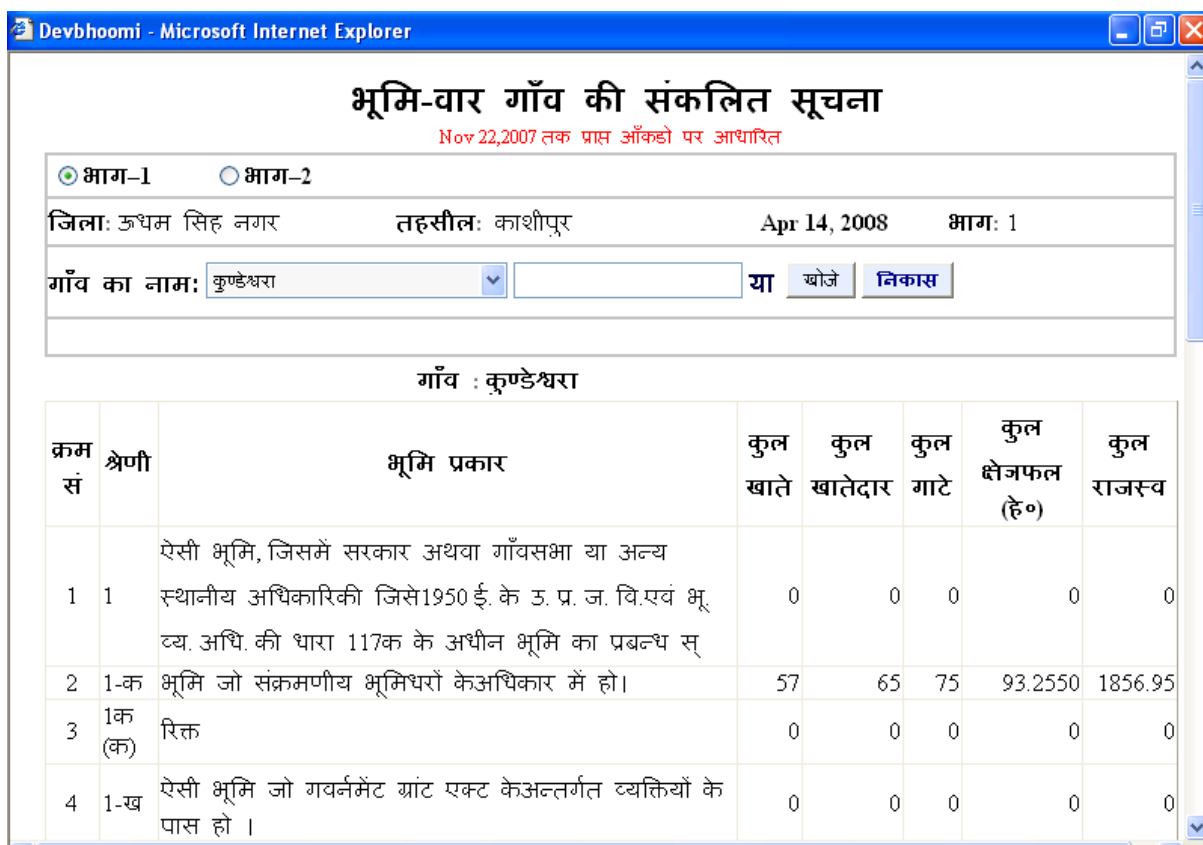


Fig 5. Land Use Query by All Records (Village)- Fifth Web Window

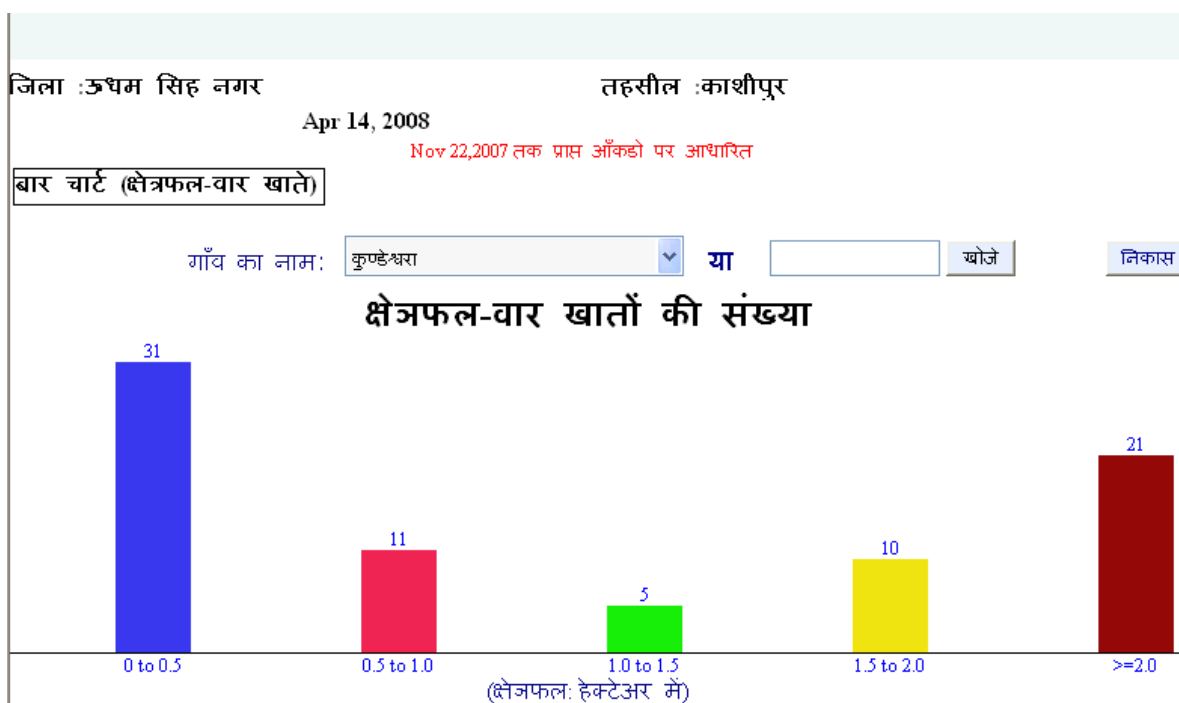


Fig 6. All Land Records by Area (Village)- Sixth Web Window

Devbhoomi - Microsoft Internet Explorer

तहसील के कम्प्यूटरीकृत गाँवों का सक्षिप्त विवरण

Nov 22, 2007 तक प्राप्त आँकड़ों पर आधारित

भाग-1 भाग-2

जिला: ऊधम सिंह नगर तहसील: काशीपुर Apr 14, 2008 भाग: 1

क्रम सं.	गाँव का कोड	गाँव का नाम	फसली वर्ष	कुल खाते	कुल खातेदार	कुल क्षे.(हे०)	कुल राजस्व
1	80030104007	मिस्सरवाला	1415-1420	274	377	337.8540	4761.35
2	80030104008	सरवर खेडा	1411-1416	1026	1385	1132.7910	12587.05
3	80030105001	रजपुरा रानी	1412-1417	186	248	362.5700	7369.08
4	80030105002	बरखेड़ी	1412-1417	182	326	287.2860	5536.61
5	80030105003	बरखेडा राजपूत	1415-1420	88	140	335.1240	5319.05
6	80030105004	दोहरी परसा	1413-1418	59	66	230.8840	949.40
7	80030105005	दभोरा मुस्तहकम	1414-1419	412	673	663.5230	12675.00
8	80030105006	दभोरा ऐहतमाली	1410-1415	811	1117	943.4470	17030.25
9	80030105007	सांड खेडा	1411-1416	72	124	193.7080	3888.20
10	80030105008	सीतारामपुर	1413-1418	171	241	240.6150	4815.50
11	80030105009	रामनगर काशीपुर	1411-1416	79	86	156.2550	1238.80
12	80030105010	कुण्डेश्वरा	1412-1417	78	89	114.2850	2015.35
13	80030105011	नंदरामपुर	1410-1415	40	56	64.5990	1160.85
14	80030105012	जैतपुरघोसी	1412-1417	197	246	557.3040	9636.00
15	80030105013	खरमासा	1409-1414	277	329	422.7100	8251.40
16	80030105014	प्रतापपुर	1415-1420	190	235	232.1580	4447.10
17	80030105015	पट्टी भज्जर	1413-1418	71	97	103.0310	1985.45
18	80030105016	पट्टी हक	1409-1414	105	125	201.7370	1787.90

Fig 7. Village-Wise List of Computerized Land Records (Tehsil)- Seventh Web Window

Another exercise of land resource mapping was undertaken at various locations in Kashipur tehsil. A GPS based route map when plotted on Google earth satellite image for a linear path among agricultural fields in Bhimnagar village wherein all waypoints were denoted as LF1... and RF1... on left and right side respectively (Fig.8). Similar plotting was done for lakes- Dronsagar and Girital at Kshipur tehsil to map their polygon of almost rectangular tracts. Waypoints were denoted by different codes enroute for various turns (Fig. 9 and 10). However, there was error in first plot in case of Dronsagar.

It generated enough interest among school kids especially who with little training can plot their neighbourhood in an accurate manner. Nowadays various agrikiosks have been set up for farmers wherein these maps can used as supplement or a separate land kiosk may be opened for these records to be made available. It can help village community in making informed decisions while making demands and implementation of project. At present wide disparities were found in two villages of Kundeshwari and Bhimnagar. The latter lagged mainly on account of accessibility and frequency of transport service. A GPS based accurate mapping when integrated with high resolution CARTOSAT Indian Satellite image and GIS platform can help in proper spatial integration based route planning.



Fig. 8: A GPS Plot of Agricultural Fields at Bhimnagar Village



Fig.9: A GPS Plot of Girital at Kashipur



Fig. 10: A GPS Plot of DronSagar at Kashipur

A GPS based curvilinear path in case of hilly terrain of Nainital turned out to be most treacherous but was quite meaningful as altitude variations were reflected. 42 waypoints stating with N code for various turns of highest Naina peak (Fig. 11) and 28 waypoints stating with T code for Tiffin Top were saved (Fig. 12). Naini Lake could be easily seen from Tops but the route undertaken in both the cases turned out to be longest. The results of navigation without local guidance and detailed maps showed real field level experience of difficulty in taking readings for forested tract especially at Lands End point in case of Tiffin Top and rains while climbing Naina Peak. Then, entire track logs could not be appropriately saved due to usage of so many batteries of GPS. However, when this mapped route is revisited then improvements would be easy next time.

These GPS readings when converted into ASCII files can be used to generate contour maps (Fig.13) and digital elevation models for scientific purpose also. A 3-D plot of one way track of Tiffin Top clearly shows the sudden decline of slope towards western side (Fig.14). That point is called Lands End wherein land appears to finish suddenly.

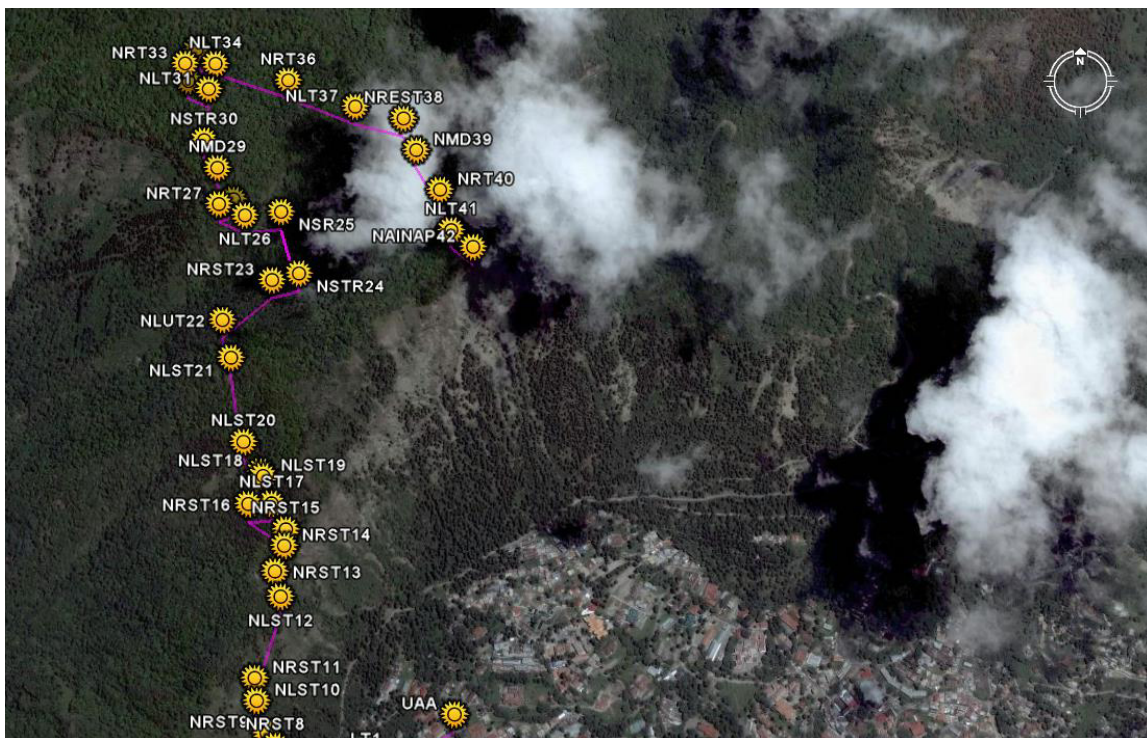


Fig. 11: A GPS Plot of Naina Peak at Nainital

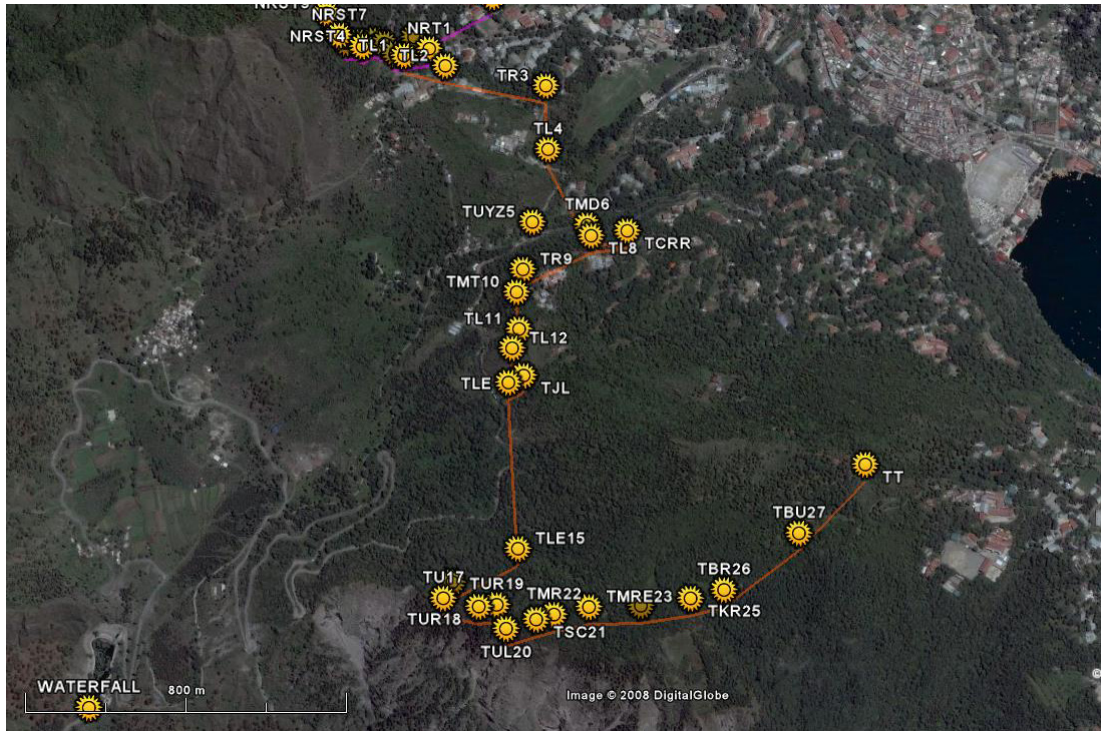


Fig. 12: A GPS Plot of Tiffin Top at Nainital

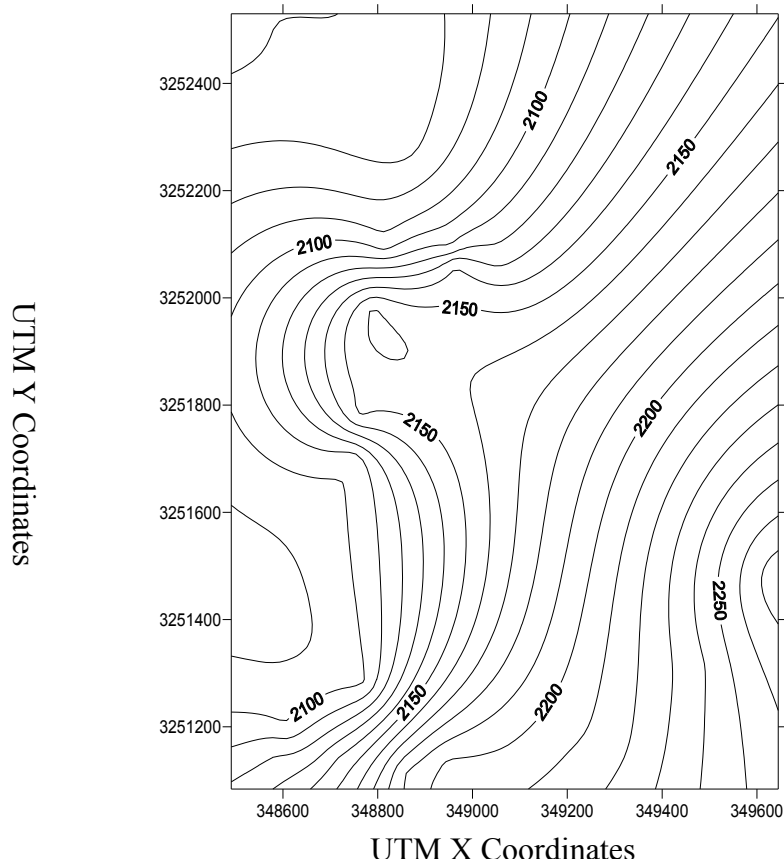


Fig. 13: Contour Plot of Tiffin Top (Western Side) from GPS Readings

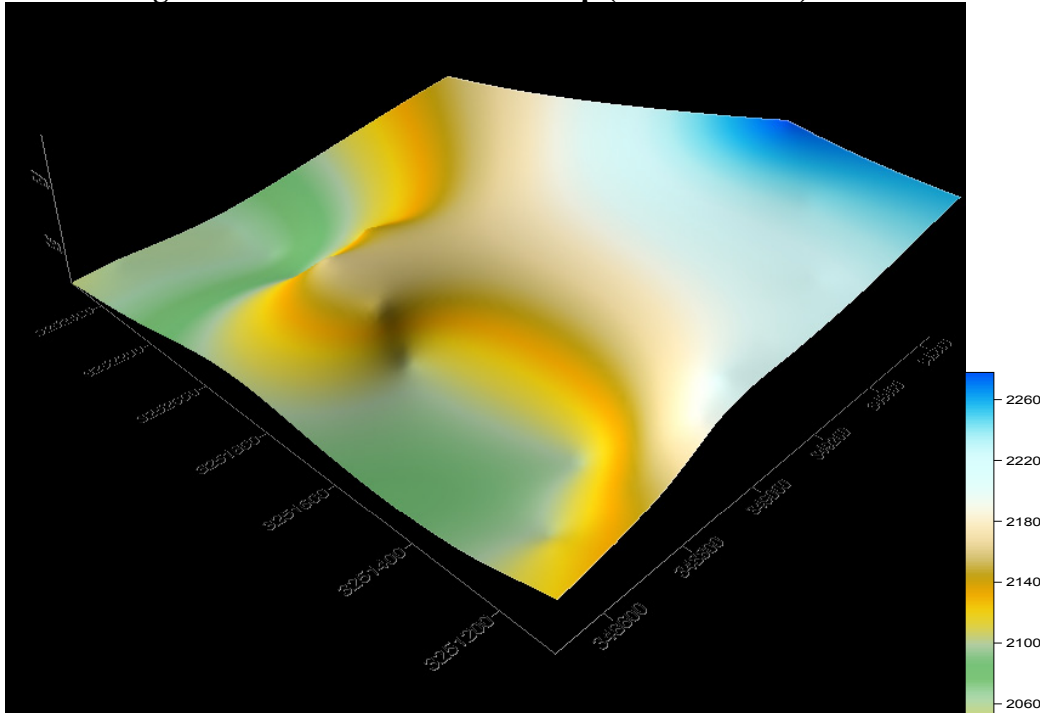


Fig. 14: Three-Dimensional Plot of Tiffin Top (Western Side) from GPS Readings

CONCLUSION

The experience of e-learning in land record information system is yet to gain momentum. But it has already made inroads in villages. Plot-wise integration of land record into GIS based farm level query has been on pilot basis in few cases due to cost and manpower constraints. Once the entire data set is put on computer, the updation can be easily carried out by volunteers and group of school children with little training. The hardware and software would be of immense use only when they are used for empowerment and implementation. Therefore, e-learning has a major role to play not only in the actual utility of land survey and collection of information but also for making informed decisions.

ACKNOWLEDGEMENTS:

My sincere acknowledgements are due to officials at Kashipur tehsil, all villagers of Kundeshwari and Bhimnagar who cooperated at the time of field survey. I am grateful to all my enthusiastic undergraduate students who joined the GPS survey team amidst hot sun in September.

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