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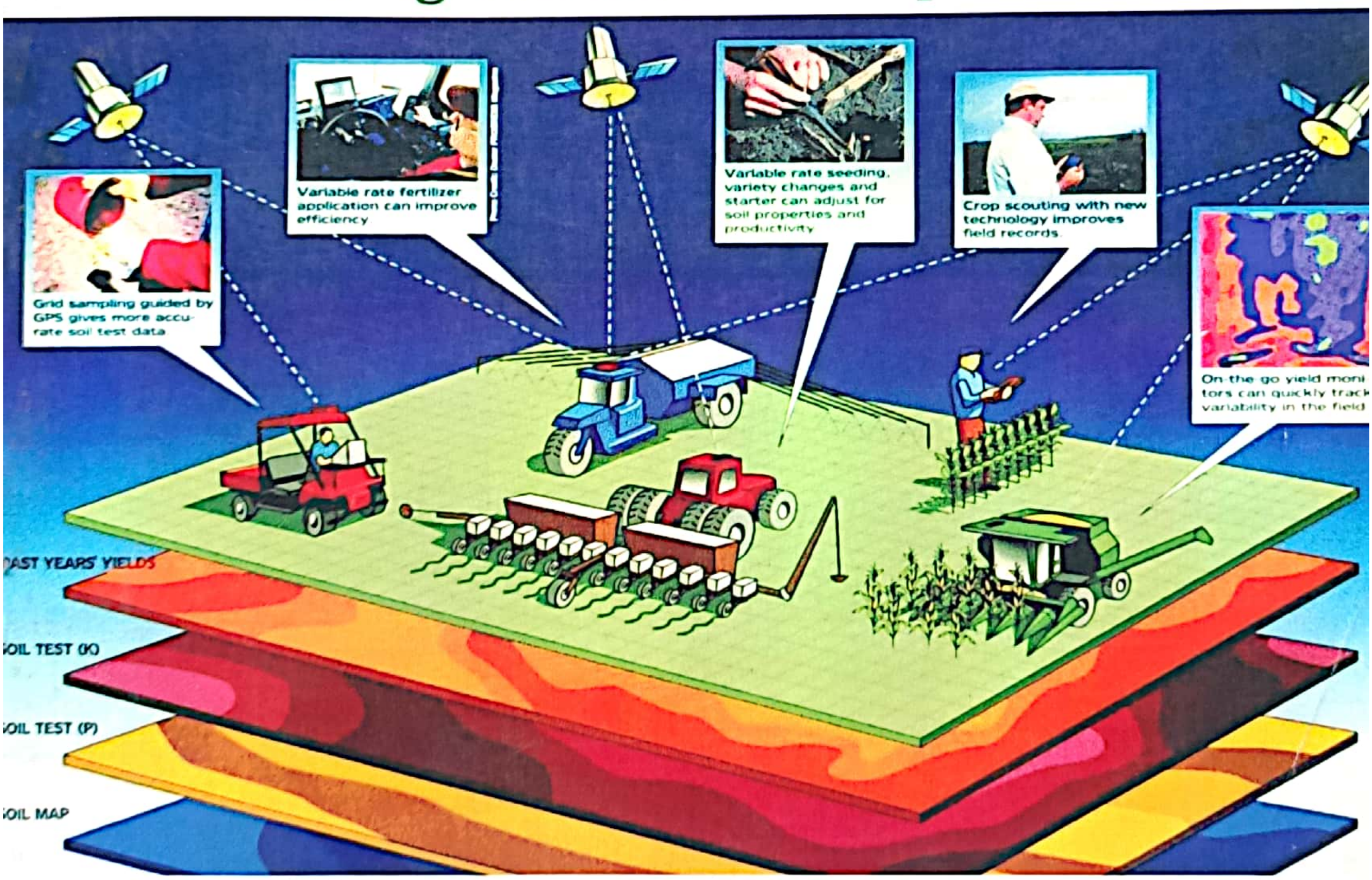

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Environment and Landslide Disaster on Toranmal Plateau

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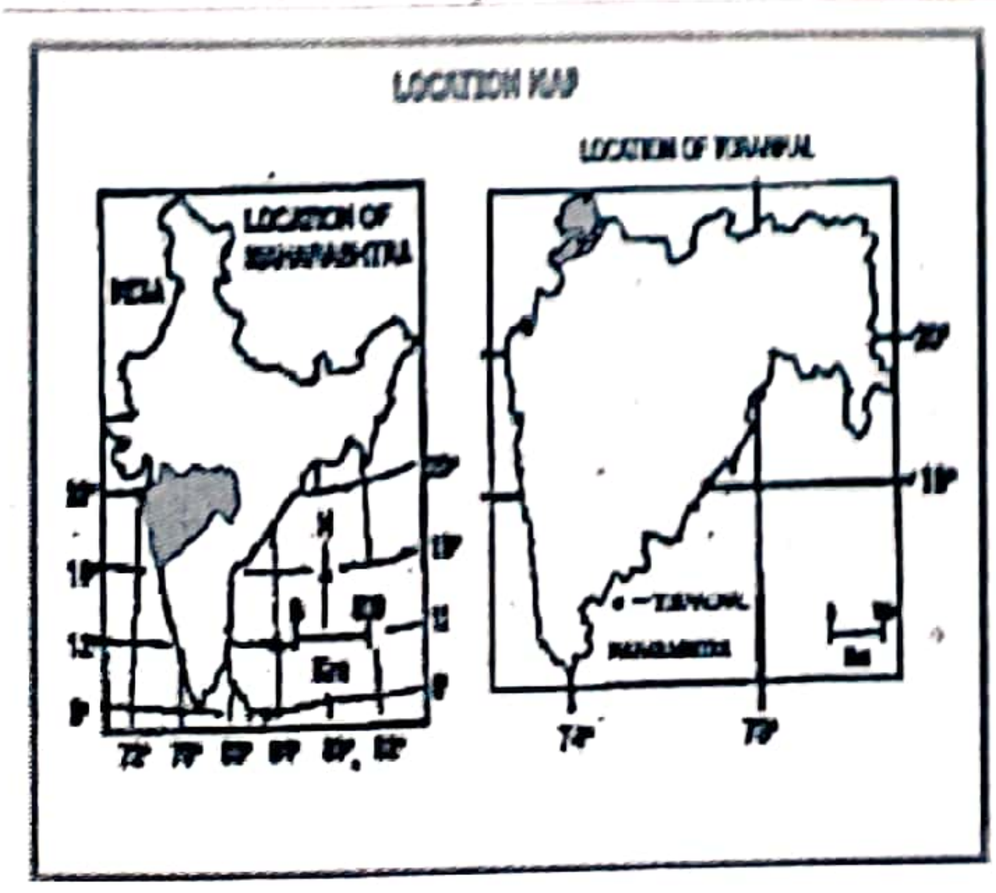
Abstract:-

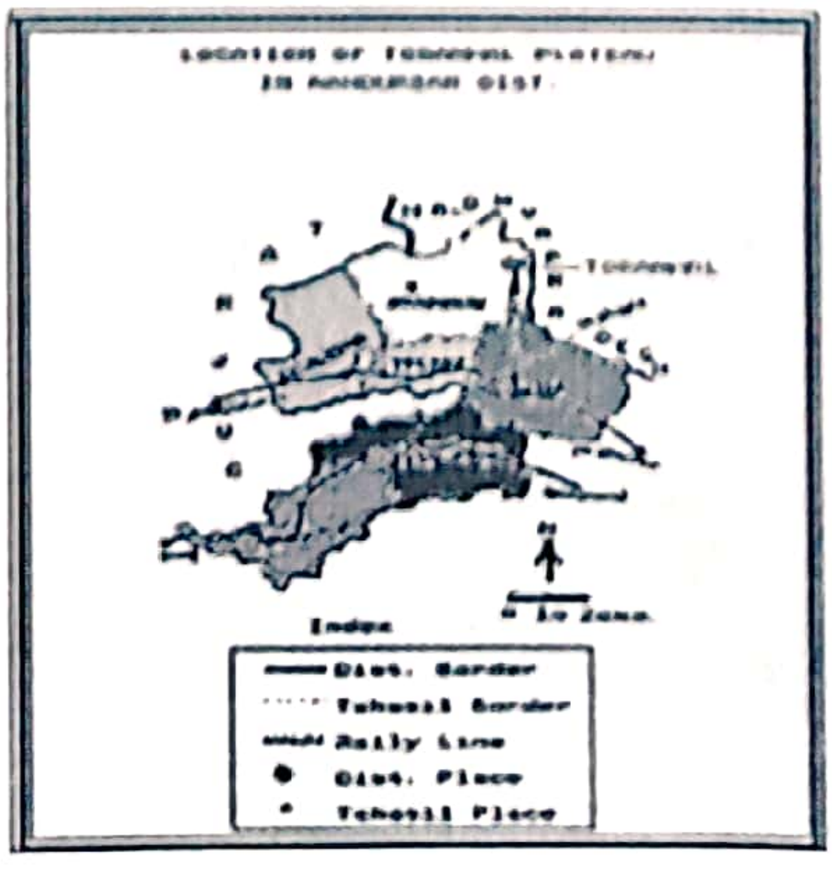
The most striking disastrous, ubiquitously occurring down slope process of mass movement including shear zone on escarpment hill slope of plateau edges is known as landslide. Toranmal plateau Environment is most susceptible to the land sliding .Every Year this area is suffered from hundreds of land sliding of different magnitude. This paper attempts the cause, effect and consequent remedies of land sliding on the basis of imperical field observation. The land sliding in this area is mostly confined to the wet weather reason .the plateau margins are relatively susceptible to formation of joints, cracks and crevices due to the release of overlaying burden, either under the denudational processes and the gradual upliftment of the plateau. Rain water sweeps deeply, chemical weathering loosens and dislocate the weathered debris from main stalk. Thus land slide occur.

A Toranmal plateau is quantum of Satpura Mountain between Tapi and Narmada graben, with its landscape of unusual beauty, high altitudinal salubrious, hydro climate and evergreen biosphere apron, Toranmal is a scenic asset of tourism significance in Dhadgaon Tahasil of Nandurbar District of Maharashtra. Toranmal Plateau extents between 21° 55' North latitude to 21° 55' North latitude and 74° 25' East longitudes to 74° 30' East longitudes and covers a 36 Sq.miles however Toranmal plateau Covers only 6.79 miles of an area.

Introduction:-

Toranmal plateau is a quantum part of the satpura horst block between Narmada and Tapi valley to its north and south respectively in the Dhadgaon Tahasil of Nandurbar District in NW Maharashtra.The Geo-environment of the plateau is strikingly unique amongst various such plateau in Satpura ranges like Pachmadhi plateau In M.P. Chikhaldara in Jalgaon district etc. Its distinctiveness is mainly due to the confinement of steep escarpments from all slides with presence of lake on plateau and east –west linear alignments of drainage and salubrius climate. Geologically the area is characterized by deccan trap formation and monsoonal decidious forest and tribal human life. The land sliding phenomena is intensified by both natural and anthropogenetic factors. Hence plateau is suffering from frequent disastrous landslide every year especially in wet weather season. The present paper provides an overview tendency of land sliding and its effect on surrounding tribal settlement and infrastructures. The study is field observation oriented.





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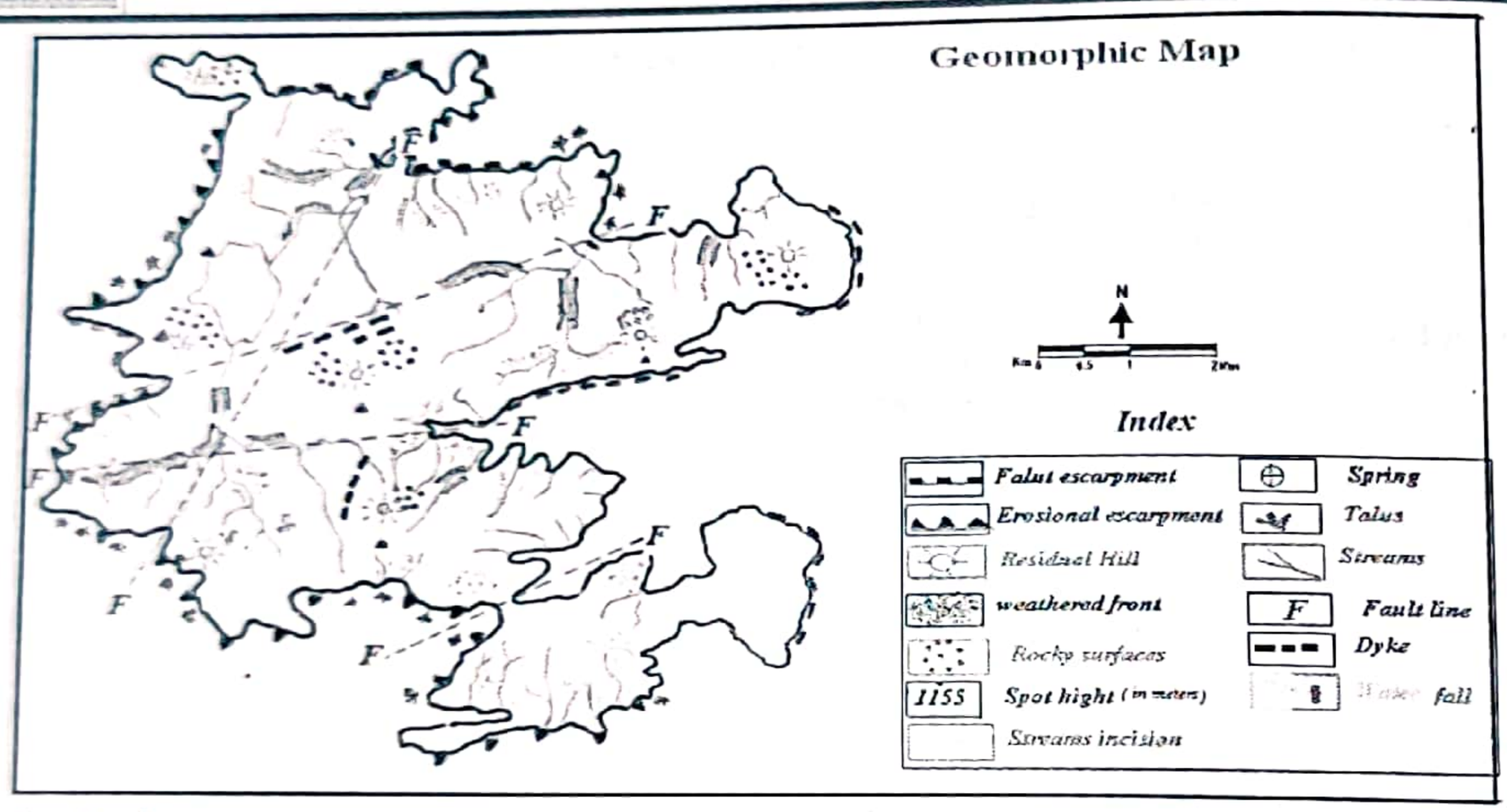
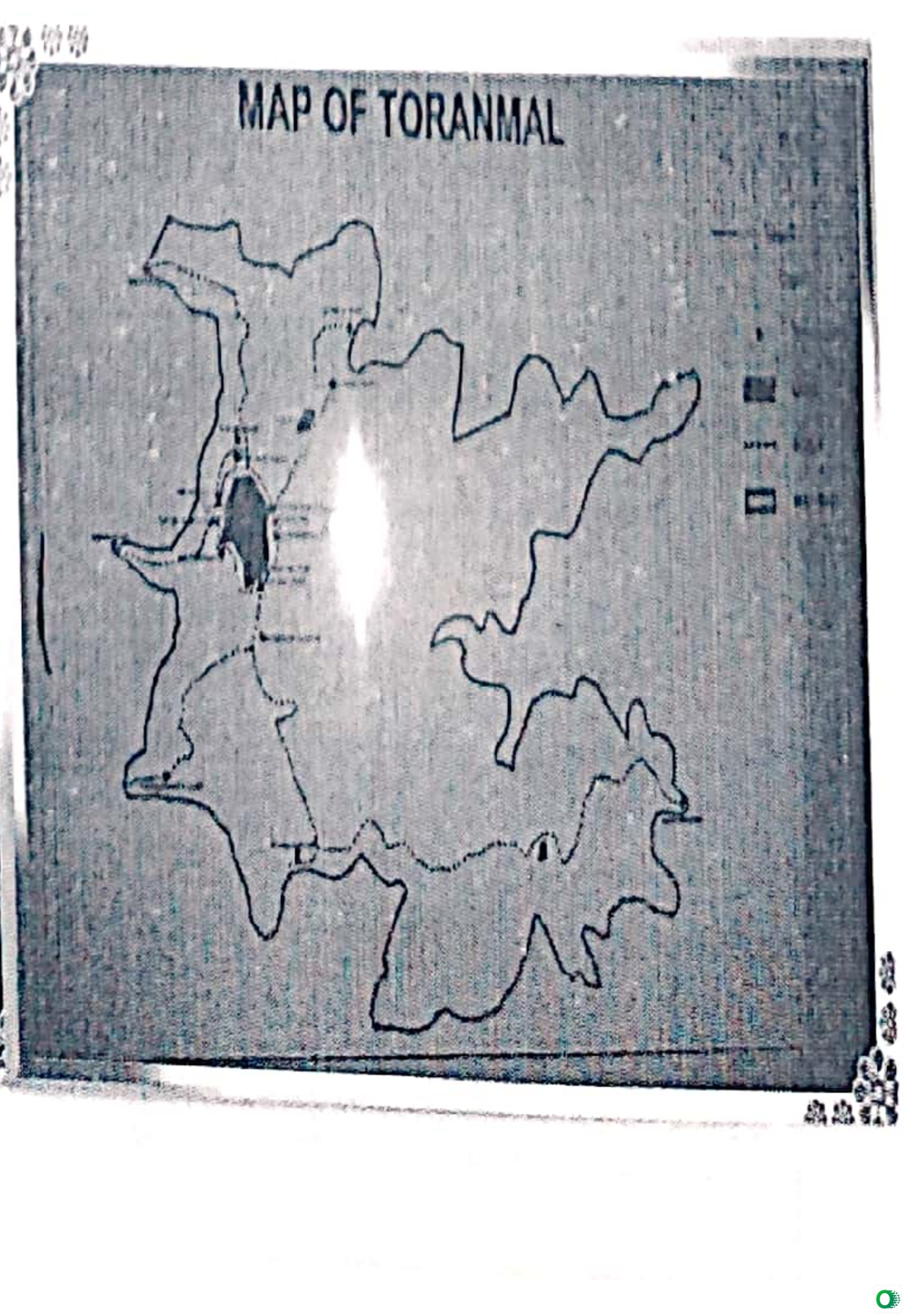


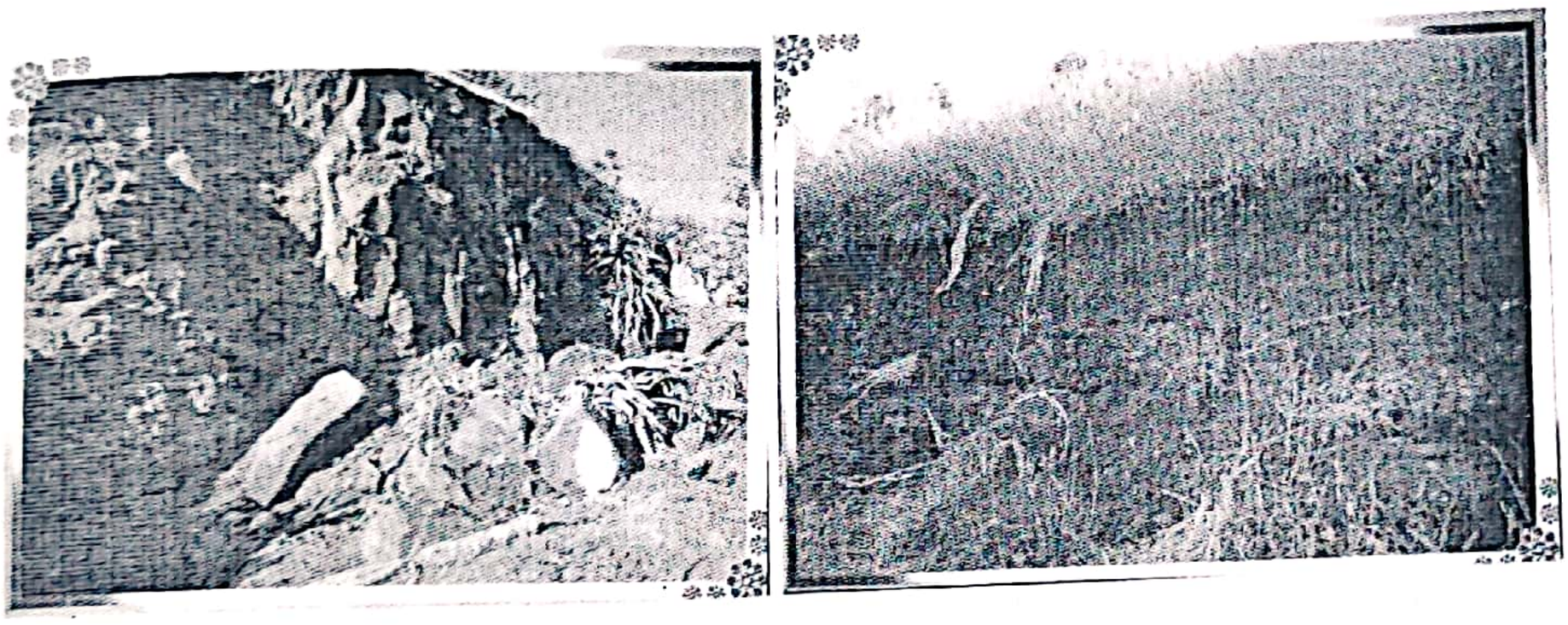
Study Area:-

Tornmal plateau is a distinct isolated geomorphic unit of middle Satpura In Dhadgaon Tahasil of Nandurbar in NW Maharashtra, Study Area extent between 21'55'North Latitude to 21' 55' North latitude and 74' 25' East Longitude to 74' 30' East longitude. It is confined by 400 meter contour line covers 20552 Hectors.

Database And Methodology :-

The Relief and slope data have been investigated from topographical map on scale 1:50000, where as landside data collected from the imperical field observation. Spatial analysis of slope and relief have been attempted and effective landslide area correlated with the slop. The causes of landslide also have been investigated from the interviews of the local tribal peoples during the field work. Nearly 12 major and 33 small landslides identified in the field work. Their magnitudes determined in terms of the size of dislodged material and destruction caused during January to December-2007.The landslid data during study period is given.





Discussion & Result :-

The area constitute a part of horizontally disposed Deccan basalt rocks and exhibit speroidal weathering block jointing and deeply chemically weathered and composed of saprolite. Above 1100 meter elevation steep escarpment from all sides of the plateau at heavy monsoon rainfall tectonic structure and anthropogenic changes are the conducive factors of landslide. The area covered by escarpment from all sides are susceptible to landslide. The northern and southern escarpment are more susceptible to landslides because of their tectonic origin .The eastern and western escarpments are erosional and hence comparatively less susceptible.

It is noteworthy to mention that maximum landslides occur in seven step escarpment on landslides of the plateau. The approach road of the plateau top passing through the seven steps. Every year over hundreds of landslide occur and the approach road blocked for three to four weeks in rainy season. The road is almost non motourable in rainy season.

The northern side of plateau is steepest in Sitakhai trench among all side escarpments. Here quick landslides of weathered and wet mantle occur. The forest cover, agricultural land and even streams diverted by the landslides debris.

The land sliding on the Toranmal plateau are mostly confined to the margins of the plateau and wet weather season. The plateau margins are relatively susceptible to the formation of joints, cracks and crevices due to the release of overlaying burden, either under denudational processes and or the gradual upliftment of the plateau. Rain water sweeps deeply and chemical weathering loosen the rocks into saprolite. The deeply weathered slope become perched as a result of removal of the cementing material. During the continuous raining it is saturated and weight of slope can be increased and dislodged.

The landslides exhibits the concavity on the up slopes and convexity in the foot slope. The structure of the plateau bears the signature of gradual upliftment since long past. Satpura itself is a horst block uplifted block between Narmada graben from its north and top to its south. The southern and top to its south. The southern and northern margins are of the plateaus exhibits tectonic setting under step faulting.

The anthropogenic activities like clearance of vegetation in this area is one of the most influential and sensitive element triggering the landslides.

Conclusion:-

The field observation suggest that mountain topography having steep plateau margins tectonic setting, personal setting, seasonal heavy rainfall, deep weathering and anthropogenic activities are the conducive factors of landsliding in the Toranmal environs.

Reference:-

1. Bhamare S.M and Suryawanshi U.P(2007) " Impact of Relief and slope on land use of Toranmal plateau" Research link.
2. Beane J.E.Turner C.A Hooper,Etel (1986) Stratigraphy,composition And Torrns of the deccan basalts,western ghat,India Bull Voccan (1986,48,61-83)
3.)D.H.Pawar (1997) unpublished Ph.D Thesis on Geomorphology of Toranmal Plateau.
4. S.N Karlekar and keskar Umesh (1995) Quantitative assessment of few landslides around Chiplun and Sangmeshwar,Geo Review Of India,Calcutta.
5. S.N.Karlekar (2002) slope failure and landslides on Vengurla Coast,Maharashtra,
6. Indian Journal of Geomorphology Vol-7, Number 1&2-2002.PP-135-140.
7. Thigale s.S and Bhavana Umarikar (2007) Disastrous landslides episodes of July-2005 in the konkan plain of Maharashtra,India With Special reference to tectonic control and Hydrothermal anomaly.current science,Vol.92,No.3,10 Feb.2007.