ACTION PLAN FOR OPTIMUM LANDUSE

Introduction

Optimal landuse planning for sustainable development of an area requires reliable and timely information on natural resources. Among natural resources soils, landuse pattern and water resources are important. Remote sensing technique has proved as a powerful tool to generate spatial information of natural resources in economic terms with reliability. IRS satellite data are found to be very useful in preparing inventory of these resources (Rao et al., 1996). Satellite data, by virtue of its synoptic viewing, multispectral and multitemporal capability provides vital information of soils, land and landuse/land cover in conjunction with ground based survey. These maps were integrated to arrive at composite unit to generate an optimal landuse plan for development of district on a sustainable basis. In addition to these resource maps, institutional infrastructure and socio-economic conditions were also taken into account to make landuse plan more viable.

Recommended Optimal Land Use and Farming System (ROLUFS) of Karimnagar district

Soils and Climate are the two major factors that determine the cropping pattern in any area the study area falls in semi-arid and semi-humid region. In this area, mostly cultivation is rainfed and dependent on southwest monsoon. Owing to good occurrence of monsoon, crop production enterprise is not risky proposition and productivity is average because of climatic conditions, they have low productivity in lands with loamy, clayey soils, and well drainage, the occurrence of floods further deteriorates the condition. Added to high yielding variety crops suited to this region are to be cultivated.
<table>
<thead>
<tr>
<th>RECOMMENDED WORKS</th>
<th>LAND FORM</th>
<th>SLOPE</th>
<th>LANDUSE/ LAND COVER</th>
<th>SOIL TAXONOMY</th>
<th>WATER RESOURCES</th>
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</thead>
<tbody>
<tr>
<td>Intensive Agriculture</td>
<td>Valley Fill</td>
<td>1 &amp; 2</td>
<td>Double Crop</td>
<td>Aquic Haplustepts Chromic Haplusterts Entic Haplusterts Lithic Haplusterts Rhodic Paleustalfs Typic Haplustalfs Typic Paleustalfs Typic Rhodustalfs Typic Ustorthents Ustic Haplocalcids Vertic Haplustepts</td>
<td>Very Good</td>
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<td>Agro Horticulture</td>
<td>Pediplain, Pediment</td>
<td>2, 3, 4</td>
<td>Agricultural land, Kharif crop, Plantations and Scrub land</td>
<td>Aquic Haplustepts Chromic Haplusterts Entic Haplusterts Lithic Haplusterts Rhodic Paleustalfs Typic Haplustalfs Typic Paleustalfs Typic Rhodustalfs Typic Ustorthents Ustic Haplocalcids Vertic Haplustepts</td>
<td>Good to Poor</td>
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<td>Agro forestry</td>
<td>Pediplain, Pediment</td>
<td>2,3,4, 6</td>
<td>Agricultural land Kharif crop, Land with Scrub, Forest</td>
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<td>Moderate to Poor</td>
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<td>Fodder &amp; Fuel wood development or Grazing land with economic tress and grasses</td>
<td>Pediment, Residual Hill and Denudational Hill, Structural Hill</td>
<td>2,3,4, 6, 7</td>
<td>Agricultural land Kharif crop, Land with Scrub, Barren rocky</td>
<td>Aquic Haplustepts Chromic Haplusterts Entic Haplusterts Lithic Haplusterts Typic Haplustalfs Typic Paleustalfs Typic Rhodustalfs Typic Ustorthents Ustic Haplocalcids Vertic Haplustepts</td>
<td>Poor to Negligible</td>
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Based on the thematic information and field data, Basic integrated land and water resources units are arrived. Based on BILWRU’s, Made an extensive and quick visit to the watershed. Spot observations including types of land forms, soil, slope, ground water potentials and quality, land use etc., were made. The existing cropping pattern and irrigation practice was noted. Based on the observations and BILWRU’s keeping in view the sustainable production and quality of ecosystem, alternate cropping patterns referred as “Recommended Optimal Land Use and Farming System (ROLUFS)”, grouped into four classes were suggested for the entire district on 2,50,000 scale shown in table no. 7.1.

Further while making alternate recommendations for land use practice, futuristic consideration such as exploitation of groundwater, if presently not exploited, and possibility of adapting more efficient system of irrigation and water management and other site improvements through soil and water conservation are also kept in view. Thus, with these considerations finally an alternate land use practice is recommended for the site suitable for its recorded parameters. The area statistics for various action plan items should be computed for the entire study area.

**Intensive agriculture**

In Karimnagar district, 2260 Sq.km area is suitable for intensive agriculture. For these lands, suitable crops are suggested based on the water resources and land use. The double cropped areas are there where the ground water and surface water resources are good. In these areas, the cropping pattern suggested is to cultivate crops such as paddy, vegetables, horse gram, black gram, green gram, groundnut, sunflower, chilies, jowar etc. the areas of Metpally, Korutla, Maidipally, Jagithial, Pegadapally and Choppadandi receives water resources by SRSP canal. It is suggested
that in these areas that agriculture can be intensified by means of adopting mixed
cropping, planting trees along the field bunds, crop rotation etc., on the scientific
lines.

**Agro horticulture:**

Agro horticulture is a type of farming system in which the farmer can raise
normal agricultural crops utilising the space available in between two adjacent rows
of horticultural plants in the same farm. 6668 Sq.km area is suitable for agro
horticulture, because of the water resources occurred in moderate to poor, suggested
crops area horticulture crops are orchards with hardy plants like mango, sweet orange,
Sapota and inter cropping with floriculture etc.

Agro horticulture system plays an important role in rain fed areas, especially
in semi-arid regions where production of annual crops is not only inefficient but also
highly unstable. Fruit trees if suitably integrated in rain fed farming system could
add significantly to overall agricultural production including food, fuel and fodder,
conservation of soil and water and stability in production and income. Thus dryland
horticulture as a component assumes high importance. Hence in drought areas when
annual crops usually fail or their production is highly depressed, fruit tree species
yield considerable food, fodder and fuel and greatly prevent the sufferings from
general shortages.

Varying fruit-based cropping patterns such as mono culture of a fruit species
and inter cropping of fruits with vegetables, fruits with staple food crops including
cereals, legumes and roots and tubers are followed. In early stages of orchard
plantations inter cropping of vegetables and other annual crops are more common.
Agro Forestry:

In Karimnagar district, 1283 Sq.km area is suitable for agro forestry and these areas are mainly distributed in the reserved forest areas, with poor water resources, so that suggested development of afforestation, plantations. The forest department may take up forest and economic plant nurseries in these areas particularly teak etc. Agro forestry activity includes growing of crops as well as rising of some hardy species of trees. It is often conceived and formulated as an intervention into the existing land use. The approach is predominantly that of improvement rather than transformation of land use. Based on the diagnosis of the present land use system and the constraints under which the farmers are operating, trees and crops are combined. It can open up new opportunities for raising income levels of small farmers without in any way putting agriculture in jeopardy.

It puts much emphasis on the sustainability aspects an important factor under rain fed agriculture which is characteristically unstable. Trees and shrubs apart from directly providing useful and basic products (wood, Fodder, Fruits etc.,) protect the soil against erosion, provide organic matter to maintain soil fertility, bring up nutrients from deeper soil layers, prevent building up of pests, weeds and diseases and create a more favorable micro climatic conditions. Multipurpose, Nitrogen fixing tree species are often thought to critical components of sustainable agro forestry systems.

Fodder, fuel wood development or grazing land with economic trees:

In Karimnagar district, 1585 Sq.km area is suitable for fodder, fuel wood development or grazing land with economic trees, water resources occurred in these areas are negligible and land use is scrub land, waste lands and barren rock areas.
Fodder and fuel wood plantation includes tree species which give fodder and fuel wood requirements. Hardy species can be included which can give fodder or fuel wood. Conceptually this is a forest plantation but normally undertaken outside the notified forest areas under the social forestry and similar other programmes.

These are suggested in the marginal lands with poor groundwater potential areas because these lands are not suitable for Cultivation. So, the marginal lands are converted into grazing lands by over seeding grasses and fuel wood species are recommended to meet the demand of local people requirement. Fodder grass like cenchurs, Rhode grass. Silvipasture species like Sababul, Sesbania, Peepal, Pithcalobium saman are suggested with soil and water conservation measures. Fuel wood species like Sababul, Sesbania, and Acacia arabica are suggested.