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LOSS OF LOCAL BIODIVERSITY OF HEDGE PLANTS AROUND AGRICULTURAL FIELD DUE TO MODERNIZATION OF AGRICULTURE BORDER

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Abstract: Saoli region is basically an agriculture zone where majority of people survive on rice farming. In this area agricultural field is surrounded by the barbed wire fencing instead of natural fencing by hedge plants. There are several hedge plants which includes medicinal, ecological and wild fruit and vegetable plants. The present investigation focuses on the current status of hedge plants due to habitat destruction by modern agricultural techniques. The outcome of this research will open the debate on classical farming versus modern farming and also make awareness among the people about importance of hedge plants in nature.

Keywords: Saoli, Habitat, Hedge plants, Modernization, Barbed Wire Fencing

Introduction:

Habitat destruction occurs when a natural habitat, such as a forest or wetland, is altered so dramati- cally that it no longer supports the species it originally sustained. Plant and animal populations are destroyed or displaced, leading to a loss of biodiversity. Habitat destruction is considered the most important driver of species extinction worldwide (Pimmand Raven 2000). Humankind has dramatically transformed much of the Earth's surface and its natural ecosystems. This process is not new it has been ongoing for millennia but it has accelerated sharply over the last two centuries. Today, the loss and degradation of natural habitats can be likened to a war of erosion. Few habitats are destroyed entirely. Very often, habitats are reduced in extent and simultaneously fragmented, leaving small pieces of original habitat. In concert with habitat loss, habitat fragmentation is a grave threat to species survival (Laurance et al. 2002; Sekercioglu et al. 2002; Chapter 5). Globally, agriculture is the biggest cause of habitat destruction. Other human activities, such as mining, clear cut logging, trawling, and urbanization also destroy or severely degrade habitats. In developing nations, where most habitat loss is now occurring, the drivers of environmental change have shifted fundamentally in recent decades. Instead of being caused mostly by small-scale farmers and rural residents, habitat loss, especially in the tropics, is now substantially driven by globalization promoting intensive agriculture and other industrial activities. Destruction and fragmentation of natural habitats are the 2 most important factors in the current species extinction event (Groombridge

1992). Loss and fragmentation of habitat result in reduced population sizes, which increases the probability of extinction by demographic and/or environment (Burk1ey 1995).

A "hedge" is a living wall composed of plants around farm, garden and home lawns. A **hedge** is a line of closely spaced shrubs, climbers and sometimes trees, planted and trained to form a barrier or to mark the boundary of an area. The development of hedges over the centuries is preserved in their structure. The first hedges enclosed land for cereal crops during the Neolithic Age (4000–6000 years ago).Hedge is work as a decorative as well as security purpose. Hedge plants can give a higher level of security if farmers select shrubs or small trees that have thorns such as ***Acacia sp***., ***Caesalpinia sp***., ***Bombax ceiba*** etc. Hedges used to separate a road from adjoining fields or one field from another. Hedges also serve as windbreaks to improve conditions for the adjacent crops. Hedge plants around farm has several plant species. It is a hotspot for local biodiversity.

In India farmers were primarily planted natural hedge plants around the agriculture farm for security reason.as time goes on hedge plants uses increased from security to different purposes. Hedge plants are used by farmers as vegetables for instance several species of Fabaceae and Cucurbitaceae (***Lablab sp***., ***Memordica sp***.), for medicinal purpose - e.g. Abrus, Acacia, Caesalpinea etc., hedge plants is use as a fruit in villages for example ***Zizyphus sp***.,as a timber plant e.g. ***Acacia nilotica***,, as fuel wood and uses goes on.

Hedges acts as a wind breaks. Possibly the most salient point for many people, they work as an effective wind break but, unlike a fence, they allow some wind to pass through their foliage. When an 80mph wind blows. It bangs into a solid fence panel the pressure on the wood is immense. A hedge will allow that wind to pass through its foliage and slow it down which in turn protect the crops. Hedging is very vital for our wildlife, especially insects who need to travel from garden to garden. Fences stop these lovely creatures from getting to food, shelter and breeding sites but hedges allows it. Birds will take shelter in hedges and bees will collect pollen and nectar from flowering varieties. Indirectly it increases the biodiversity of nature.

Now a days due to modernization of agriculture, hedge plants around the farm is replaced by barbed wire fencing for higher security reason.it directly destruct the habitat of hedge plants. The goal of this study was to assess the habitat loss on population of hedge plant and extinction from Saoli town and nearby villages.

Materials and Methods:

Study Area:

Saoli is a tahsil in chandrapur district of Maharashtra state. Location of Sawali is $20^0$06’41”N, $79^0$47’21”E.Sawali is come under the rice cultivation belt of Maharshtra. People of this village basically depend upon the rice farming. The main occupation is rice farming. Saoli is surrounded by large agricultural fields. The farming in this area is still not that much developed though the fencing of agriculture fields are barbed wire fence.It indirectly impact the habitat of hedge plants. The selected agricultural fields for study are from Saoli town, Malpiranji Village, Khedi Village, Sindola village, and Chakpiranji village.Figure 1 shows the location of the study area.

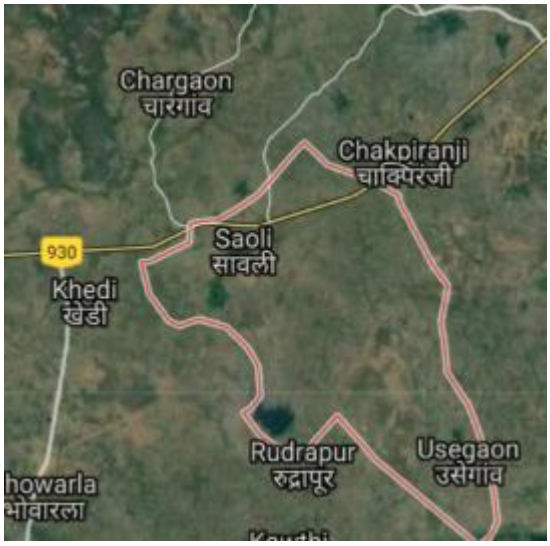

Fig 1: Location of study area

There are different methodologies proposed by ecologists for sampling of angiosperms. The most important and widely used method for a general assessment is belt transect method. The random sampling method in the selected area. The transect method was followed, and accordingly, transects or straight lines were marked starting from the base of the study area to the end of the Agricultural fields in each selected site. The length of a transect was 500 m to 1 km in each of the selected habitat. This is the standard scientific method followed by various workers in respect of phytosociological studies (Cottam and Curtis 1956; Ralhan et al. 1982; Saxena and Singh 1982; Nayak et al. 2000; Lu et al. 2004; Nautiyal 2008)

Observation: The main focus of this study is to assess the habitat of hedge plant is destroyed or not after doing transect method following observation has done:

Observation Table:

Sr.No.	Agriculture Site	GPS Location	Number of agriculture field surveyed in each site(500mt each)	Number of Hedge plant fencing present
01	Saoli	$20^0$06’41”N $79^0$47’21”E	10	-
02	Chakpiranji	$20^0$04’46”N $79^0$47’49”E	08	++
03	Khedi	$20^0$04’31”N $79^0$46’40”E	07	++
04	Malpiranji	$20^0$05’16”N $79^0$47’33”E	07	++
05	Shindola	$20^0$04’19”N $79^0$48’57”E	08	-
Total	05		40	06

Note: +, - sign indicates the presence and absence of hedge plant fencing, number of + indicate

The number of site where hedges present

Data Collection: The experimental site are selected randomly from each direction keeping in Saoli as center. Malpiranji is in north , Sandola is in south, Khedi is in west and Chakpiranji is in east with respect to Saoli as a center spot. Within each site agricultural field is surveyed. Number of field is depend upon the area of village. Total forty fields has been surveyed. Out of forty only six field has hedge plant fencing. The economical background of farmers also collected. Out of total maximum farmers has more than 5 acre of lands and those have a hedge plant fencing have less than 2 acre land.

Result and Discussion: The data indicates that loss of habitat of hedge plants is huge. Only six field out of forty has a natural hedge fencing it shows that marginalized farmers are still have natural hedge plant fence as they cannot afford barbed wire fencing. As the income of farmers raised this trend of natural hedge will decrease. The trend of use of modern equipment for agriculture is found in those villages which is nearer to city. The modernization of agriculture is causing more threat to habitat of hedge plants. This study shows the status of hedge plants near Saoli region.

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