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Conservation of Biodiversity & the Agriculture Sector

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The delicate balance between ecology and biodiversity is maintained by Nature. Any disruption to this equilibrium might have devastating impacts on the environment, including plants, animals, and people. As a result, conservation efforts are necessary to keep the diversity of life on earth healthy. New issues for agriculture have evolved as a result of the current era of global warming and climate change. One of the most serious issues facing Pakistani farmers is preserving the country's natural resources and biodiversity. It is imperative to take preventive measures now to prevent further biodiversity losses. Study participants were asked about their level of awareness of biodiversity conservation. Generally, farmers were aware of species diversity, but many were not aware of modern methods for preserving crop and species diversity. Farmers have limited awareness of biodiversity and only a few tried-and-true ways for preserving it. Two-way statistical analysis found a weakly significant link between variables responsible for biodiversity loss and two categories of biodiversity, concluding that not all causes are equally responsible for biodiversity loss in both types. According to the findings, agricultural development relies heavily on biodiversity conservation. Conserving biodiversity can increase agricultural output. Using Exploratory Factor Analysis, it was discovered that retaining three factors increased the explained variation to 54%.

Keywords; Nature, Conservation, Biodiversity, Ecology.

Introduction

This delicate balance between living and non-living elements in the environment is referred to as "ecosystem" and "biodiversity" by Nature. Biodiversity imbalance can have disastrous environmental implications, including effects on plant, animal, and human life. There has been a long history of natural resource extraction. The ecology has been severely altered because of the indiscriminate exploitation of natural resources.

Pakistan is home to a wide range of flora and fauna. There has already been a devastating impact on Pakistan's ecosystems and biodiversity due to deforestation, biodiversity loss, soil erosion, salinity, water pollution, and other factors. Agriculture and the environment can only thrive if there is a high amount of biodiversity. A wide range of species, genes, ecosystems, and organizational roles and responsibilities have been discovered during the past few decades as a result of biological diversity [1][2].

Around the world, the rate of decline in biological diversity is accelerating. Conservation of biological diversity is harmed due to agricultural practices having many interrelated ecological footprints around the world [3][4][5]. Only a quarter of the world's biodiverse lands are occupied by agricultural communities, according to estimates from the World Resources Institute (WRI). As a result, agriculture and biodiversity conservation need to work together more closely. Biodiversity is essential to human health and survival, and the distribution of biological resources must be based on their broader advantages[6][7], [8].

Extension services are the sole means by which different players in the agricultural system can be made aware of the customary conservation of biodiversity. Changes in extension theory and models as well as a greater understanding of biodiversity assets and climate change are necessary for biological conservation applications. Rural communities have a wide range of resources for promoting biodiversity because of their biological diversity [7].[9] As researchers (2007)[5] point out, farmers must take significant steps to protect biodiversity in states where smallholders make up half of the rural population. Success in biodiversity conservation can be achieved by controlling production, natural resources, and other aspects of conservation [10][11]. A critical component of sustainable agriculture, according to [8][12], is an effective network for disseminating information. It's also essential that tensions over biodiversity conservation be resolved among various farming groups to secure a long-term supply of food [13][14].

These conditions do not change the fact that land usage is good for biodiversity. "Sustainable agriculture" has been recognized by extension services for a long time, however, producers participating in practices that promote biodiversity loss are not being adequately guided by extension services. A lack of attention to biodiversity conservation and protection of other natural resources in developing countries like Pakistan is due to farmers' belief in low-cost, low-quality, unregistered chemical use that is illegal in many countries because of its harmful effects on human health and the environment. This technique appears to be a major impediment when it comes to bridging the gap between agricultural policy and applications[15][16].

As the threat of global warming and climate change grows, rural communities and the environment face new challenges, making the protection of the natural environment and biodiversity a top priority. In order to prevent further biodiversity loss, it is important to establish aggressive and result-oriented conservation strategies. This study recommends that the agricultural extension sector might reclaim its role and boost farmer awareness by teaching and training programs on biodiversity protection for sustainable agricultural expansion. This plan will protect the environment while also boosting the yields of crops and vegetables. As a result, more food will be available to feed the growing population. Training and information help farmers improve their abilities [17][18], [19]. Refocus on crop production while protecting the natural environment and biodiversity at the same time. There are additional challenges for

agricultural extension practitioners because of the present worldwide concerns about natural ecosystem management[20][21]. In the end, a model that incorporates biodiversity conservation aims with farmers' understanding of natural resource protection was developed. This study also lays the framework for a future assessment of agricultural extension's involvement in conserving biological diversity, which comes as a result of the findings. As a first step in evaluating the role of extension services in Pakistan's biodiversity preservation and environmental issues, this research is viewed as a significant milestone[22].

Methodology

A questionnaire was scheduled used to gauge farmers' awareness of biodiversity conservation. A 3-point scale was used to capture the responses. The validity of the instrument's face and content were evaluated on a small sample of respondents before it was used for the final data collection.

A team of researchers conducted face-to-face interviews with the participants in order to gather data. The instrument was provided to each respondent one at a time to ensure an objective and uninfluenced response. Descriptive statistics, such as the mean, standard deviation, frequency distribution, and percentages, were used to explain the data set in this case study in detail. Factor analysis and Chi-square were used to examine the relationship between categorical variables in order to extrapolate the data and draw appropriate judgments.

Findings

Factors affecting biodiversity, forms of biodiversity, sustainable agricultural development, and the function of Extension services in supporting biodiversity conservation were all examined in this study. Farmers' demographics and practices were also taken into consideration.

Biodiversity was brought up as an issue in agricultural growth. For sustainable agricultural development, biodiversity conservation plays a major role while "biodiversity conservation plays a role in biological activities "Agricultural production rises as a result of biodiversity protection, which the researchers concluded are critical for long-term agricultural development.

It's been determined that preserving the diversity of animal life is essential to agricultural development. On the one hand, the conservation of crop diversity has a significant impact on environmental sustainability. In contrast, the protection of wild plant diversity has a significant impact on food production. According to the data, crop and animal variety conservation plays a role in agricultural development.

Agricultural extension's role in promoting biodiversity preservation was also examined as part of the research. According to the data, the department is not fulfilling its responsibilities as a part of biodiversity conservation. In terms of sharing knowledge on biodiversity conservation, print media has a mean score of zero.

Farmers' views on biodiversity protection were a major factor in the study. Agricultural innovations can help conserve biodiversity but they must also be in line with biodiversity conservation goals. Respondents also agreed that preserving biodiversity is a top priority for environmentally conscious businesses today and that it should be promoted as a means of safeguarding the country's natural resources, including its fauna and flora.

Exploratory factor analysis was used in the end to better understand the role that various factors have in biodiversity promotion and conservation, as well. The first component alone explained about 26% of the variation, while the first two elements together explained 41% of the variation, and adding the third component increases the explained variation to 61%. Consequently, three parameters were included in the dataset to verify that the results were stable. "

The variables of interest were identified for the Varimax with the Kaiser Normalization factor rotation technique. Farmers' perceptions of crop and animal biodiversity

for sustainable agricultural development include three variables: biodiversity, sustainable agricultural development, crop and animal species variety, and farmers' perspectives and biodiversity. The second most important factor is called "farmers' demographics" because of the strong correlation between age and experience, with maximum loadings for age and for experience. The third component, "the importance of Agricultural Extension in nurturing and maintaining biodiversity," had a correlation coefficient. A component matrix that is rot 10) Varimax with Kaiser Normalization was used to rotate the data after Principal Component Analysis was used to extract it.

Conclusions and Recommendations

According to the study's findings, farmers' age, farming experience, and awareness all play an important part in biodiversity conservation and environmentally friendly agricultural methods. Farmers have long-held beliefs about the need of preserving biodiversity. For agriculture-based economies around the world, sustaining biodiversity conservation is a major concern as a result of climate change and an increasing global population. To help conserve agricultural biodiversity, research-based knowledge exchange and transmission to growers are advised. Extension services need to disseminate research-based knowledge to the end users and make them aware of the benefits and penalties for violating

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