Inducers and Elicitors of Defense Response in Plants – an Overview

Rita Som Paul

Associate Professor

Botany Department,
Ananda Chandra College, Jalpaiguri, India.

Abstract : Inducer is any compound that elicits defense response in plants. This is a very promising modern area of research. People are highly aware of the problems related to overdoze of fungicides and pesticides leading to bioaccumulation and biomagnifications. Genetically modified crops are also highly controversial. Therefore, the best possible solution is to immunise plants against the pathogens and pests. The present paper gives an overview touching the aspects of elicitos of defense response and their different types with the detais of the most promising ones and the current trends.

IndexTerms – **inducer, elicitor, defense, chitin, cell wall, hydrogen peroxide, nitric oxide, benzothiadiazide.**

I. INTRODUCTION

Plant resistance is integral to the successful management of disease in plantation crops. Host recognition of the exogenous signal-molecule initiates a cascade of reactions that culminate in the hypersensitive response (HR). The oxidative burst, phytoalexins and the various defense enzymes variously involved in the HR curtail further invasion by the pathogen. The resistance expressed in this way is the more durable qualitative resistance (Pennypacker, 2000).. A better understanding of the mechanisms of plant defense against pathogens might lead to improved strategies for enhancement of disease resistance in economically important plant species (Odjakova and Hadjiivanova, 2001). Systemic Acquired Resistance (SAR) acts non-specifically throughout the plant body and reduces the severity of disease caused by all classes of pathogens. The resistance can be induced in the field by prior inoculation with avirulent pathogen. However, the definition of the quantity of the pathogen may affect the application of the results in the field and also there is always a fear of outbreak of disease under optimum conditions (Shetty, 2002). Thus, non-toxic abiotic elicitors that can induce the SAR response are the call of the day.

Elicitors have thus been initially defined as signal molecules which elicit the defense mechanism in host plants (Vidyasekharan, 1997). Elicitors of both pathogen and host origin are involved in the induction of defense genes and synergistic action of these elicitors has also been reported (Tepper and Anderson, 1990. These elicitors are derived from complex polymers by the action of enzymes like cellulases (Chang *et al*, 1995), xylanases (Lotan and Fluhr, 1990), β-1,3- glucanases (Ham *et al*, 1991) and chitinases (Boller *et al*, 1983), which are induced during interaction between pathogen and the host as reviewed earlier; and these enzymes may be of pathogen or host origin, or both. Rapid increase on these elicitor-releasing enzymes may release more amounts of these elicitors, which in turn may induce synthesis of more defense chemicals which will confer disease resistance (Ham et al, 1991).

The use of abiotic inducers or elicitors of defence response instead of the harmful fungicides and pesticides that contribute to biomagnification and bioaccumulation is being popularized due to their broad range of protection. Most plant protection methods currently applied use toxic chemicals noxious to the environment. Induced resistance exploiting natural defense machinery of plants could be proposed as an alternative, non-conventional and ecologically friendly approach for plant protection. Induced resistance can be defined as an increased expression of natural defense mechanisms of plants against different pathogens provoked by external factors of various types and manifested upon subsequent inoculation. Hence, low specificity is an inherent character of induced resistance (Edreva, 2004).

II. CELL WALL AND ITS DERIVATIVES AS ELICITORS

The involvement of cell wall glycoproteins as elicitors has been followed since 1975 (Albersheim and Anderson-Prouty, 1975; Callow, 1977; Keen and Legrand, 1980). The fungal elicitor used by Lawton and Lamb (1987) was the high-molecular weight fraction released by heat treatment of isolated mycelial cell walls. Treatment of suspension-cultured bean (*Phaseolus vulgaris* L.) cells by this elicitor caused marked transient stimulation of transcription of genes encoding apoproteins of cell wall hydroxyproline-rich glycoproteins (HRGP) and the phenylpropanoid biosynthetic enzymes PAL (phenyl alanine ammonia lyase) and CHS (chalcone synthase) concomitant with the onset of rapid accumulation of the respective mRNAs. Induction and transcription of PAL, CHS and HRGP genes was also observed in wounded hypocotyls and infected hypocotyls during race-cultivar-specific interaction, with the fungus *Colletotrichum lindemuthianum*, the causal agent of anthracnose. Transcriptional activation occured not only in directly infected tissues but also in distant, hitherlo uninfected tissue, indicating intercellular transmission of an endogenous signal for defense gene activation. It is concluded that transcriptional activation of defense genes characteristically underlies induction of the corresponding defense responses and expression of disease resistance.

The potential of chitosan, a non-toxic and biodegradable polymer of β-1,4-glucosamine, for controlling fusarium crown and root rot of greenhouse-grown tomato caused by *Fusarium oxysporum f.sp. radicis-lycopersici* (FORL) was investigated by Lafontaine (1996). The amendment of plant growth substratum with chitosan at concentrations of 12.5 or 37.5 mg l-1 significantly reduced plant mortality, root rot symptoms and yield loss attributed to FORL. Maximum disease control was

Artificial Intelligence in Agriculture: A Literature Survey

Article · May 2018

CITATIONS
54

READS
46,581

4 authors, including:

Indrajit Ghosh
Ananda Chandra College, India
19 PUBLICATIONS **187** CITATIONS
SEE PROFILE

Gouravmoy Banerjee
Ananda Chandra College
9 PUBLICATIONS **81** CITATIONS
SEE PROFILE

Uditendu Sarkar
National Informatics Centre
8 PUBLICATIONS **70** CITATIONS
SEE PROFILE

ISSN 2319 – 1953
International Journal of Scientific Research in Computer Science Applications and Management Studies

Artificial Intelligence in Agriculture: A Literature Survey

Gouravmoy Bannerjee[#1], Uditendu Sarkar[*2], Swarup Das[@3], Indrajit Ghosh[$4]

[#1,$4] *Department of Computer Science, Ananda Chandra College, Jalpaiguri-735101, West Bengal, India*
[*2] *National Informatics Centre, Ministry of Elect. & Information Tech., Govt. of India, Jalpaiguri-73510, West Bengal, India*
[@3] *Department of Computer Science and Application, University of North Bengal, Darjeeling-734013, West Bengal, India*
[$4] ighosh2002@gmail.com (Corresponding author)

***Abstract*— This paper presents a comprehensive literature survey on the applications of artificial intelligence techniques in agriculture. The domain of agriculture faces many challenges such as disease and pest infestation, improper soil treatment, inadequate drainage and irrigation, and many more. These leads to severe crop loss along with environmental hazards due to excessive use of chemicals. Several researches have been conducted to address these issues. The field of artificial intelligence with its rigorous learning capabilities have become a key technique for solving different agriculture related problems. Systems are being developed to assist the agricultural experts for better solutions throughout the world. This literature survey covers 100 important contributions where artificial intelligent techniques were employed to encounter the challenges related to agriculture. This paper addresses the application of artificial intelligent techniques in the major subdomain of agriculture so that the readers are able to capture the multidimensional development of agro-intelligent systems during last 34 years, from 1983 to 2017.**

***Keywords*— Artificial Intelligence; Agriculture; Literature Survey; Fuzzy logic; Artificial Neural Networks**

I. INTRODUCTION

Artificial Intelligence (AI) is one of the key areas of research in computer science. With its rapid technological advancement and vast area of application, AI is becoming pervasive very rapidly because of its robust applicability in the problems particularly that cannot be solved well by humans as well as traditional computing structures [1]. Such an area of extreme importance is agriculture where about 30.7% of the world population is directly engaged on 2781 million hectares of agricultural land. Such a venture is not so smooth running, it faces several challenges from sowing to harvest. The major issues are pest and disease infestation, inadequate application of chemicals, improper drainage and irrigation, weed control, yield prediction, etc.

The application of computers in agriculture was first reported in 1983 [2]. Different approaches have been suggested to solve the existing problems in the agriculture starting from the database [3] to decision support systems [4]. Out of these solutions, systems that apply AI have been found to be the most excellent performers as far as the accuracy and robustness are concerned. Agriculture is a dynamic domain where situations cannot be generalized to suggest a common solution. AI techniques have enabled us to capture the intricate details of each situation and provide a solution that is best fit for that particular problem. Gradually very complex problems are being solved with the development of various AI techniques.

This literature survey covers 100 important contributions where AI techniques were employed to encounter the challenges in agriculture. Three major AI techniques; Expert Systems, Artificial Neural Networks and Fuzzy systems are considered as the focused areas. This paper addresses the application of AI techniques in the major subdomain of agriculture so that the readers are able to capture the gradual development of agro-intelligent systems during last 34 years, from 1983 to 2017.

II. GENERAL CROP MANAGEMENT

In general, crop management systems provide an interface for overall management of crops covering each aspect of farming. The idea of using AI technique in crop management was first proposed in 1985 by McKinion and Lemmon in their paper "Expert Systems for Agriculture" [5]. Another corn crop protection expert system was proposed by Boulanger in his doctoral Thesis [6]. In 1987, Roach et al. proposed an expert system POMME for management of apple plantation [7]. Stone and Toman came up with an expert system for cotton crop management COTFLEX [8]. Another rule base expert system COMAX was formulated by Lemmon for cotton crop management [9].

A multi-layered feed forward artificial neural network based system was formulated by Robinson and Mort to protect citrus crops from frost damage in Sicily island of Italy [10]. The input and the output parameter(s) were coded in binary form to train and test the network. The authors used different configurations of inputs to get a model with the highest accuracy. The best model so found had an accuracy of 94% with two output classes and six inputs. An image based AI technique was proposed by Li, S. K. et al., for wheat crop [11], by using pixel labelling algorithm followed by Laplace transformation to strengthen the image information. The best network obtained had five hidden layers trained up to 300000 iterations and had an accuracy of 85.9% on average. A fuzzy

ISSN 2319 – 1953
International Journal of Scientific Research in Computer Science Applications and Management Studies

Qualitative Literacy Using Fuzzy Logic: A New Approach

Indrajit Ghosh

Department of Computer Science,
Ananda Chandra College, Jalpaiguri-735101, India
ighosh2002@gmail.com

***Abstract*— Literacy rate is an important indicator for measurement of human development. The overall literacy level of an area is an important issue beyond the literacy rate, calculated in terms of per cent. But the mere literacy rate is not good enough to capture the qualitative dimension of literacy. The overall educational level can be thought of as an outcome of the literacy levels of individuals. But there is no well-defined algorithm and mathematical model available to detect the overall literacy level of an area. A heuristic approach based on accumulated experience of experts is effective one. It is evident that fuzzy logic offers a natural and convenient framework in modelling various concepts in social science domain. This work suggests the implementation of fuzzy logic to develop a mathematical model for detection of literacy level of an area in terms of Literacy Index. The contribution of the study is two folds: conceptualization of "Literacy Profile" and proposing a new mathematical model to measure literacy level in terms of "Literacy Index".**

***Keywords*— I Qualitative literacy, Literacy profile, Literacy Index, Fuzzy logic.**

I. INTRODUCTION

The UNDP in its HRD Report, 1990, pointed out that literacy is a person's first step in learning and knowledge building and thereof, literacy indicator was essential for measurement of human development [1]. Based on literacy, a number of attempts to measure educational attainment (across countries) have been made. The earlier empirical studies used literacy rate or school enrolment ratio. But literacy is a partial proxy for education and focuses on a particular aspect of the education and to that extent, captures only a limited and quantitative dimension of educational attainments.

Traditionally, the society's literacy is measured in terms of literacy rate which is the mere per cent of the adult population that is literate. But the adult literacy rate may measure only a superficial capacity to read and write one's name or a simple sentence and hence, may not be a good indicator in itself for capturing educational status of a society, particularly when it is a result of mass adult literacy program and not an outcome of a formal education system. So mere literacy rate may not be a good indicator if one is looking at the qualitative dimension to an individual's or a society's educational status [1].

Though some important works on literacy have been reported [2-10], but they are mainly concerned with the intra-household, isolated and proximate illiteracy arising from the traditional literacy concept based on classical mathematics. But none of them focuses on the qualitative dimension of educational level or status.

A lot of works have been published on cross-nationally comparable measurement of educational attainment which includes [11-16], including an absolute one [17]. In comparable research, two schemes have been proposed. One is Comparative Analysis of Social Mobility in Industrial Nations (CASMIN) [18] and the other is International Standard Classification of Education 1997 (ISCED-97) [19, 20]. But both the schemes use the categories with sharp boundaries. Still, the problem with using CASMIN for comparative research is that it has only been applied to a limited number of countries and there is no formal guidelines for its implementation in other countries [21]. So a well-developed conceptual model to measure educational status is needed to be proposed.

The notion of fuzzy logic was conceptualized by Lotfi Zadeh in 1965 [22]. It offers researches an interpretive algebra, a language that is half-verbal-conceptual and half-mathematical-analytical [23]. As a humanistic science, economics should thus have been one of the early prime targets for utilizing fuzzy logic. Claude Ponsard was the pioneer to initiate the formulation of economic theory by taking advantage of fuzzy set theory [24, 25]. Some important contributions of some eminent economists are overviewed in a special issue of Fuzzy Sets and Systems [26]. A paper by Chen, Lee and Yu [27] is a readable overview of some issues of fuzzy economics. The principal source of information regarding the current states of the use of fuzzy logic in economics is a book by A. Billot [28]. Other relevant works regarding the application of fuzzy set theory in economics include Cerioli and Zani [29], and Martinetti [30]. But none of them are concerned to find out the indicators for measuring educational status.

Instead of mere literacy rate, the educational status can be thought of as an outcome of the 'Literacy Profile' (percentages of population having different literacy level of individuals). But there are still no well-defined mathematical models and methodologies available to measure the educational status of an area or country, based on the literacy profile. This encourages for an extensive study and promotes

Environment and its Importance in Association to Health and Education among Adolescents School Children

Dr. Gour Sundar Ghosh
Assistant Professor
Department of Education, Ananda Chandra College,
Jalpaiguri, W.B., India.

Abstract: This paper highlights on symbolic relationship between environment, education, and health. The relationship between them is somewhat related but this paper highlights only some possible issues which if taken into consideration can help to achieve a healthy environment that would increase the achievement of goals among the growing children and the transition adolescents. It reveals that the socio-demographic parameters should be taken into consideration where school authorities can develop the process of counselling the students to dissipate the importance of health and the environment.

Keywords: Environment, Education, Health, Adolescents.

Introduction

The place where a population lives depends on the surrounding environment and the availability of essential components for survival. 'Man, and health' is the area of broad terms where the everlasting relationship is always noticed among them, such a similar term is 'Man and environment' which considers the diversified effects of the environment on the health of man, in terms of both positive and negative effects. Man, health and environment together are the main areas of education where different environmental conditions with various causes and consequences give rise to various social developing features among the growing adolescents and school children. School children and the adolescence are the very groups who attend their school for approximately eight hours during a day, thus a peaceful mind and environment shall help them to attend their attention span which would, in turn, help them to develop the intellectual skills. The children and the adolescents are the transforming groups where various underlying factors determine their health as well as their educational grasping capabilities. Adolescents lie between childhood and adulthood which is known as the transient group (Debnath et al. 2017; Bose et al. 2016). According to WHO 1995, adolescents are the very group who belongs to the age of 10-19 years, thus the age where rapid growth occurs in close association to both social as well as environmental factors (Sagbo et al. 2017; Min et al. 2017). The hormonal, as well as the biological changes, frequently occur among adolescents which further demands highly nutritious foods more than the average of an adult. The phase of adolescents is a very important phase of an individual as at this very phase they are influenced by their peers to the fullest. Adolescents health remains a prime concern issue as due to various issues insufficiency of proper nutrition misbalances the balanced diet which gives rise to malnutrition, where deficiencies cause under nutrition whereas an excess of nutrients in the body with high calories and fats causes overweight and obesity, giving rise to various non-communicable diseases such as pre-diabetes, cardiovascular diseases, hypertension and several types of cancers (Regma et al. 2015; Debnath et al. 2017; Bose et al. 2016). Further, the intake of junk foods and canned items contribute to the consequences of malnutrition. India being a developing country is always under the boon of malnutrition where during the last few years a successive decrease in under nutrition has been recorded but on the other hand the emerging increase in overweight and obesity continues (Debnath et al. 2017). Thus, health being a criterion that directly depends on the environment as environmental influences such as social, political, cultural, demographic, and economic factors contributes to the health of a growing individual. Health, as it is influenced by environmental causes similarly education, is directly related to health. Education can only be achieved when the body mind and soul remain in a state where positivity can be solely attained in terms of learning skills. The teaching-learning process constitutes different processes and methods to achieve the goal of development but if the health condition does not meet the appropriateness then different methods are used but the outcome of understanding remains zero. The level of education dealing with the understanding and reflective level directly depends on the intake capacity of the adolescents.

Environmental Factors Affecting the Children and Adolescents

The society serves as an underlying factor that determines the surrounding environment. The components that reside around the adolescents and the children are the important criteria of the environment (Roy et al. 2016; Tigga et al. 2017). The biosphere which includes the atmosphere, hydrosphere, and the lithosphere through makes the whole ecosphere but the living, as well as the non-living things that an individual is surrounded with, serve the crucial factors in shaping the modality of the growing phase of the individual. The factors vary according to the place, society, and the culture to which one belongs. Thus, at school, the school teachers play a role model in shaping the morality of the students. The infrastructures of the school further determine the environmental conditions were classroom with enough open spaces and light helps students to increase the attention span and also makes one more active to perform the school-related task with fewer difficulties. Home is the very first place where morality begins so the family becomes more important where the culture, behaviour determine the environmental effect on the growing children and adolescents. The parents and the siblings are the components that help the transitional group to uncultured their thinking capabilities and built their attitude

REVIEW OF RESEARCH
IMPACT FACTOR : 5.7631(UIF) UGC APPROVED JOURNAL NO. 48514 ISSN: 2249-894X
VOLUME - 8 | ISSUE - 2 | NOVEMBER - 2018

ORAON IN DOOARS: HUNTER GATHERERS TO PLANTATION WORKERS

Dr. Bipul Chandra Sarkar
Assistant Professor, Department of Geography, Ananda Chandra College, Jalpaiguri, WB.

ABSTRACT

Oraon, is a tribal group of people inhabited in various states across in India as well as in Bangladesh. They have a rich and vast range of folk songs, dances, tales as well as traditional musical instruments. In 1871, the British Government declared the Dooars as non-regulated area, for that purpose tea estates were introduced. Tribal people were borrowed from Chhotonagpur region where poor people namely Santals and Oraons lived without fixed and settled economy and were dependent on jungles but the new forest policy of the British Government whereby felling of trees in reserved forests were prohibited and declared punishable by law, deprived them of their traditional ways of living in the forest enclaves. It was for that reasons, thousands of laborers emigrated from Chhotonagpur to the tea gardens of Dooars. Now in Dooars they are basically tea garden labors and agricultural laborers. After entering in plantation economy their ethical values, cultures, age old traditional values have been squeezed. Present paper is concerned with a study of impact of changes of their livelihood in Dooars region, problems and probable solutions.

KEYWORDS: *Aborigine, hunting, plantation economy, traditional values.*

INTRODUCTION:

Oraon, differently known as Uraon, Oran or Oram, is an aborigine inhabits in various states across in India as well as in Bangladesh. Majority of them living in Chhotonagpur region of Jharkhand are known as Kurukh. Earlier they used to live at Rohta plateau but dislodged by other people and accordingly migrated to Chhotonagpurwhere they settled in the vicinity of Munda-speaking tribes. Historians indicate this may have occurred around 100 BC.After introduction of tea plantation in Dooars region of Bengal and Assam in second half of nineteenth century they were hired with all other tribal communities in this region. They were basically hunters and peasants in the Chhotonagpur plateau region and Central India. But their dislodgment changes their occupation and age old traditional cultures.

In broader sense, the study area is Dooars which is a natural physiographic unit hence difficult to delineate. So, Mal subdivision also known as Malbazarof Jalpaiguri district in the state of West Bengal is considered as study area. Presently Mal subdivision has three community development blocks namely, Mal, Matiali and Nagrakata consisting of 22 gram panchayats and Mal municipality. The subdivision is situated between 26°36' and 27° 0' North latitudes, and 88°14' and 88°40' East longitudes. The total geographical area of Mal subdivision is 1150.84 Sq. Km.

The paper was presented in '40th Indian Geography Congress' organized by National Associ Geographers, India (NAGI) in association with Department of Geography, Rajiv Gandhi University, Arunachal Pradesh, 29th to 31th October, 2018).

International Journal of Advance and Innovative Research
Volume 5, Issue 4 (X): October - December, 2018
ISSN 2394 - 7780

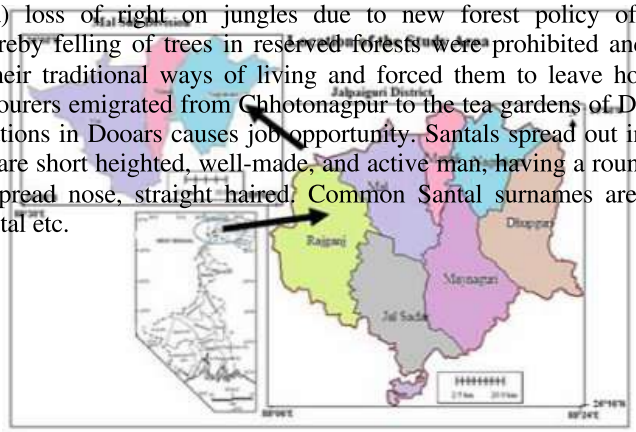
SANTALS IN MAL SUBDIVISION OF DOOARS: A WAY OF TRANSITION

Dr. Bipul Chandra Sarkar
Assistant Professor, Department of Geography, Ananda Chandra College, Jalpaiguri, West Bengal

ABSTRACT
The Santals are one of the largest ethnic group of people living in India. They occupy primarily the Chotanagpur plateau and the Santal Parganas district is considered to be the heart of the Santals area. Prior to the nineteenth century, the basic subsistence pattern of occupation of Santals were hunting and gathering. But with an ever-increasing population and the rapidly decreasing game supply, the Santals have since turned to agriculture and industrial labourers. They used to love music and their age old traditional dances. With the changes of their occupation and impact of modernization and mainstream Indian culture their value based cultures are gradually decreasing. In Dooars of Jalpaiguri district Santals were borrowed as tea garden labourers, as a result their culture has been changing rapidly and they are in way of transition. Present paper focuses the pattern of changes of their livelihood.

Keywords: Culture, Santal, Socio-economic conditions, Transition, Traditional value.

INTRODUCTION
The Santals are a nomad race, mostly inhabited in Santal Parganas of Jharkhand. The Santals are absolutely the best specimen of the wild tribes in India. Grierson (1990) opined that the word is derived from '*Kherwar'*. Two major incidents cause migration of Santals and other tribal people from Chhotonagpur region to Dooars region during British period: a) loss of right on jungles due to new forest policy of British Government in Chhotonagpur areas whereby felling of trees in reserved forests were prohibited and declared punishable by law, deprived them of their traditional ways of living and forced them to leave homeland. It was for that reasons, thousands of labourers emigrated from Chhotonagpur to the tea gardens of Dooars (Sunders, 1895). b) Introduction of tea plantations in Dooars causes job opportunity. Santals spread out in all the districts of West Bengal from there. They are short heighted, well-made, and active man, having a round face, and the thick lips, high cheek-bones, and spread nose, straight haired. Common Santal surnames are Murmu, Tudu, Hansda, Hembrom, Soren and Santal etc.



Present study focuses the Santals living in Mal subdivision of Dooars. It is a subdivision of Jalpaiguri district consisting with three community development blocks, namely Mal, Matiali and Nagrakata, where altogether 22 gram panchayats are there. The region is a foothill of the Himalayas consisting with tea gardens and agricultural land.

MATERIALS & METHODS
To find out the changes of livelihood of Santals in present context comparing with their traditional culture qualitative and quantitative information both are important. Qualitative information gathered from different literatures dealt with tribal in general and Santal in particular. Quantitative information have been gathered from primary data collected from sample villages. Random samples have been incorporated taking samples from every Gram panchayat areas of the subdivision. To give the study a geographic view, census data have been incorporated to find out the spatial distribution of tribal people in each of the Gram panchayat. On the basis of

EXCEL International Journal of Multidisciplinary Management Studies
Year : 2018, Volume : 8, Issue : 3
First page : **(54)** Last page : **(58)**
Online ISSN : 2249-8834.

Achievements of higher education in the post independence Era: Issues, challenges & emerging trends in regional perspective

Chakraborty Kakuli, Jyoti R, Raychaudhury Bikramjit*
Department of Physiology, Ananda Chandra College, Jalpaiguri

***Corresponding Autho.**

Online published on 5 December, 2018.

Abstract

The Post Higher Secondary Education is known as Higher Education in India. In the long past the institution of higher educati given an important position in the Indian society. The importance of education as an instrument of social transformation and r the individual is widely acknowledged. India's higher education system, originally designed to serve the elite, will now have to people.

Quality and relevance of higher education has always been at the focus of every civilization and even today it is the only effec of social reconstruction for sustainable economic development. It is well known that in India education suffers from exclusion discrimination against the underprivileged. The question of access to education at all levels has been one of the deficiencies education system.

Keywords

Higher Education, UGC, Economic growth, West Bengal.

ISSN:2348-800X
VOL:V, ISSUE:I
December 2018

একবিংশ

EKABINSHA

EDITOR-IN-CHIEF
SUJIT KUMAR PAL

INTERNATIONAL PEER-REVIEWED (REFEREED)
JOURNAL ON BENGALI LANGUAGE & LITERATURE

বিষয়সূচি

জুই দেবনাথ

নতুন প্রজন্মের বাংলা কথা সাহিত্যিকদের মধ্যে স্বপ্নময় চক্রবর্তী একজন বিশিষ্ট ব্যক্তিত্ব। জন্ম ১৯৫২, উত্তর কলকাতায়। গত সত্তর দশকের মাঝামাঝি থেকে লেখালেখি শুরু করেন। সমাজের নানা ক্ষেত্রের নানা সময়ের পটভূমিতে বিভিন্ন আঙ্গিকে লেখা তাঁর উপন্যাস, ছোটগল্পগুলি পাঠকচিত্তকে আলোড়িত করেছে। তাঁর সাড়া জাগানো 'হলদে গোলাপ' উপন্যাসটি ২০১৫ সালে 'আনন্দ পুরস্কারে' সম্মানিত হয়। লেখকের কর্মজীবন বড় বিচিত্র। দেশলাইয়ের সেলস্‌ম্যান থেকে মেডিকেল রিপ্রেজেনটেটিভ, ল্যান্ড রিফর্ম অফিসার, আবহাওয়া দপ্তরের রাডার চালক, দূরদর্শনের ফ্লোর ম্যানেজার, বর্তমানে বেতার প্রযোজক। তিনি ভূমিরাজস্ব দপ্তরে চাকরির প্রত্যক্ষ অভিজ্ঞতায় বেশ কিছু ছোটগল্প ও প্রবন্ধ লিখেছিলেন। মাটির সঙ্গে জড়ানো কৃষিমজুর, বর্গাচাষি, ভূমি সংস্কার করতে আসা সরকারী কর্মচারী, জোতদার প্রভৃতি মানুষেরা তাঁর কলমে সামিল। 'স্বত্যয়ন', 'ভূমির নিত্যতা সূত্র', 'ঢোড়া উপাখ্যান'- এই তিনটি ছোটগল্পে 'ভূমি সংস্কারকে' তুলে ধরেছেন। ভূমি সংস্কার বলতে প্রধানত দুটি বিষয়কে বোঝানো হয়। প্রথমত - ভূমি সংস্কার হল জমির মালিকানা সত্যের সংস্কার অর্থাৎ জমির পুনর্বন্টন, দ্বিতীয়ত- ভূমি সংস্কার হল প্রজাস্বত্বের সংস্কার অর্থাৎ প্রজারা যে ইজারা নেওয়া জমিতে চাষ করে সেই ইজারার শর্তাদির সংস্কার করা। এককথায়, ভূমি সংস্কার বলতে কৃষি উন্নয়নের পথে প্রতিষ্ঠানগত বাধাগুলোর অপসারণ করা। জমির মালিকানা স্বত্বের সংস্কারের ক্ষেত্রে জমির সর্বোচ্চ বা সর্বনিম্ন সীমা নির্ধারন করে সেই অনুযায়ী জমির পুনর্বন্টন করা। অন্যদিকে প্রজাস্বত্বের সংস্কার বলতে রাষ্ট্র ও প্রকৃত চাষীদের মধ্যে মধ্যস্বত্বভোগীদের অপসারণ, খাজনার হার নিয়ন্ত্রণ, জমিতে প্রজাদের স্থায়ী স্বত্ব প্রদান প্রভৃতি। বিভিন্ন কারণে ভূমি সংস্কার প্রচলন করা প্রয়োজন।

পরাধীন ভারতে ভূমিস্বত্ব ব্যবস্থা ছিল সামন্ততান্ত্রিক। এরূপ ভূমি ব্যবস্থায় প্রকৃত চাষী জমির মালিক ছিল না। জমির মালিকরা অধিকাংশ ক্ষেত্রেই নিজে জমি চাষ না করে প্রজাদের দিয়ে জমি চাষ করাতেন। এর ফলে জমির উৎপাদনশীলতা ছিল খুব কম। তাছাড়া প্রকৃত চাষী এবং জমির প্রকৃত মালিকদের মধ্যে কিছু মধ্যস্বত্বভোগী শ্রেণি ছিল যারা সম্পূর্ণ অনুৎপাদক। এরা প্রজাদের কাছ থেকে যে খাজনা আদায় করত তার একটা অংশ নিজেরা ভোগ করত এবং বাকি অংশ জমির মালিকদের কাছে পৌঁছে দিত। এর ফলে প্রজাদের শোষণের মাত্রা বৃদ্ধি পেত।

স্বাধীনতার পর ভারতে অর্থনৈতিক পরিকল্পনা গ্রহণ করা হয়েছে। অর্থনৈতিক পরিকল্পনার একটি বড় উদ্দেশ্য হল কৃষির উন্নয়ন ঘটানো। কৃষির উন্নয়ন ঘটানোর জন্য অর্থাৎ কৃষির উৎপাদনশীলতা বৃদ্ধি করতে গেলে ভূমি সংস্কার একান্তভাবে প্রয়োজন। প্রথমত ভূমি সংস্কারের মাধ্যমে প্রকৃত চাষীকে জমির মালিকানা দিলে প্রকৃত চাষী জমির উৎপাদনশীলতা বৃদ্ধির ব্যাপারে উৎসাহী হবে। জমির মালিকানা স্বত্ব লাভ করতে চাষী অধিক পরিশ্রম, অধিক বিনিয়োগ করতে চাইবে। ফলে কৃষির উৎপাদনশীলতা, কৃষকের আয় এবং কৃষিতে পুনর্বিনিয়োগের সম্ভাবনা বৃদ্ধি পাবে। দ্বিতীয়ত সামাজিক ন্যায় বিচার প্রতিষ্ঠার ক্ষেত্রেও ভূমি সংস্কার গুরুত্বপূর্ণ। পরাধীন ভারতে জমির বণ্টন বৈষম্য ছিল। মুষ্টিমেয় কিছু লোকই ছিল বেশিরভাগ জমির মালিক। অন্যদিকে গ্রামাঞ্চলে বেশিরভাগ জনসাধারণই ছিল ভূমিহীন চাষী অথবা স্বল্পজমির মালিক। তাই ভূমি বণ্টন ব্যবস্থার বৈষম্য দূর করে সামাজিক ন্যায়বিচার প্রতিষ্ঠা করার জন্য জমির মালিকানার উর্দ্ধসীমা নির্ধারণ করা দরকার

International Journal of Research in Social Sciences
Vol. 8 Issue 11, November 2018,
ISSN: 2249-2496 Impact Factor: 7.081
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage as well as in Cabell's Directories of Publishing Opportunities, U.S.A

ENVIRONMENT PROTECTION THROUGH ETHNIC TABOO: A CASE STUDY OF RAJBANSHI COMMUNITY IN NORTH BENGAL

Dr. Ranjit Barman*

Abstract

Taboo was one of the cultural beliefs and practices among the Rajbanshi community to control human behaviour in order to save environment. Rajbanshi culture, religion and their environmental philosophy showed a strong harmony with nature. But recently western or modern approach ignored this indigenous relationship between nature and human beings to maximize the human satisfaction which in turn led to serious environmental damage. The environmental degradation was caused due to the displacement of indigenous culture, habits and practices. Rapid growth of modernization, industrialization and urbanization were gradually diminishing their environmental taboos and so on. As a result a massive climatic change and natural calamities had been noticed in their region.

The Rajbanshi community believed that since there was no cultural control of environment protection, there was no ecological balance between social environment and natural environment. They believed that social environment was made up of in accordance with natural settings and not vice versa, otherwise natural calamities were inevitable. However the Rajbanshi community followed protective taboos in order to carry out the blessings of nature and the following paper intended to explore how the taboos were practiced as environmental safeguard.

Keywords: Environment protection; Ethnic; Rajbanshi community; Taboo.

***Assistant Professor, Department of Sociology, Ananda Chandra College, Post. & Dist. – Jalpaiguri (WB), Pin- 735101, India**