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1) Dr. Nayan Jyoti Khound

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ORIGINAL ARTICLE

Multivariate statistical evaluation of heavy metals in the surface water sources of Jia Bharali river basin, North Brahmaputra plain, India

Nayan J. Khound[1] · Krishna G. Bhattacharyya[2]

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Abstract The aim of this study was to assess the quality of surfacewater sources in the Jia Bharali river basin and adjoining areas of the Himalayan foothills with respect to heavy elements viz. (As, Cd, Cr, Cu, Fe, Mn, Ni, Pb and Zn) by hydrochemical and multivariate statistical techniques, such as cluster analysis (CA) and principal component analysis (PCA). This study presents the first ever systematic analysis on toxic elements of water samples collected from 35 different surface water sources in both the dry and wet seasons for a duration of 2 hydrological years (2009–2011). Varimax factors extracted by principal component analysis indicates anthropogenic (domestic and agricultural run-off) and geogenic influences on the trace elements. Hierarchical cluster analysis grouped 35 surfacewater sources into three statistically significant clusters based on the similarity of water quality characteristics. This study illustrates the usefulness of multivariate statistical techniques for analysis and interpretation of complex data sets, and in water quality assessment, identification of pollution sources/factors and understanding temporal/spatial variations in water quality for effective surfacewater quality management.

Keywords Heavy metals · Principal component · Hierarchical cluster · Brahmaputra plain · Surfacewater source · Jia Bharali river basin

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Introduction

Trace metals attributing as common pollutants are found to be widely distributed in the river catchments originating from natural sources and processes as chemical weathering, soil erosion, fallout of aerosols from marine, volcanic or arid soil sources. However, as a result of human inputs and activities (Merian 1991) the level of these metals in the environment has increased tremendously. Due to simplicity the univariate statistical analysis has been generally used to treat trace element data in groundwater (Helena et al. 2000). However, multivariate analysis such as principle component analysis (PCA) and cluster analysis is widely used to explain the correlation amongst a large number of variables in terms of a small number of underlying factors without losing much information (Meglen 1992; Ogwoeleka 2015; Pazand 2016; Qian et al. 2016). This method can also help in measuring natural associations between samples and/or variables (Wenning and Erickson 1994) and thus highlight the information which is not available at first glance.

For this study, lower Jia Bharali catchment and adjoining areas in central part of North Brahmaputra Plain (NBP) was selected which is characterized by more than 800 m thick older and younger Alluvium deposited by the west flowing Brahmaputra river and the south flowing trans Himalayan rivers (Khound Nayan et al. 2013). The river regime is highly dynamic with frequent channel changes and copious sand deposition. Average sediment load carried by these rivers are coarse, facilitating easy percolation and recharge of groundwater regime. Published reports (Chakrapani 2005; Singh et al. 2005; Jameel and Hussain 2007) reveal that most of the Indian rivers are carriers of untreated sewage, industrial effluent and runoff from agricultural and urban land to the surface water bodies present in their basins. Due to the absence of industrial

2) Dr. Pabitra Bharali

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DYNAMICS OF DIASPORIC IDENTITY IN THE FICTION OF MICHAEL ONDAATJE

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Abstract

[Michael Ondaatje's fictional works are primarily concerned with ambivalence and predicaments of displaced people. Traumatic experiences of displacement and dislocation, attempts of relocation in the new land/culture as well as reclamation of root through revisit, nostalgia and memorial reconstruction are delineated in his major characters. Ondaatje's 'divided' self (McCrum) is delineated not only in his fictional memoir 'Running in the Family' (1982), but also through the diasporic protagonists of his novels. As a diasporic writer, he is concerned with negotiation of identity of diasporas from across the world. Ondaatje shows that constructing identity is greatly problematic since everything in the postmodern world is in a flux. In the postmodern world, the diaspora undergoes constant transformations and experiences incessant 'masking' and 'unmasking of identity'. He/she progresses from the 'traumatic individual' to the 'translated' man and from the 'agent of developments' of the homeland to the hybrid-transnational-multicultural self. The present paper attempts to explore to what extent the fictional characters of Ondaatje subscribe to the various concepts of diaspora studies such as dislocation, nostalgic reclamation of the homeland, relocation/assimilation in the host land and construction of identity in the 'third space' through a close reading of Running in the Family and The Cat's Table. His protagonists are examined from the perspectives of diaspora typologies, especially the concepts of 'new diaspora' (Spivak), 'translated man' (Rushdie), 'victim' and 'de-territorialized' diasporas (Cohen) and 'hybrid' diaspora (Bhaba). The author's own sense of settlement in Canada in spite of his feeling of 'half my life' with Sri Lanka has been co-related with his protagonists who despite their sufferings of homelessness embrace multiple 'homes'. Finally Ondaatje's sense of spatial, racial and cultural mongrelization has been highlighted and his hybrid-transnational-trans-cultural diasporic status has been asserted.

Key Words: *diaspora, identity, diasporic consciousness, Michael Ondaatje, Running in the Family, The Cat's Table.*

3) Dr. Sangeeta Baruah Saikia

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IMPACT OF FLOOD ON HUMAN OCCUPANCE: A CASE STUDY IN BOGORIBARI VILLAGE, SADIYA SUBDIVISION, TINSUKIA DISTRICT, ASSAM

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Abstract:
Floods have now been one of the major national problems in India. The river basins of India are frequently visited by floods during every rainy season. In this way floods in Assam have been a recurring feature since early times, especially after the 1950 great earthquake. Bogoribari village of the Sadiya Sub Division being a part of the Brahmaputra valley in Assam bears almost the floods and this impact on land and people.

This study reveals that a large A large number of populations of Bogoribari village are depending upon cultivation for their livelihood. Continuation of primitive labour intensive form of agricultural system with low-level economic and technological development in the region makes it clearly distinguishable in social organization cultural attainments land ownership system. Above all the people of Bogoribari village have been facing various problems created by annual flood of by the river Brahmaputra.

In view of the above problems an in-depth research is therefore highly essential in order to arrive at a logical decision about socio-economic life of the Bogoribari village. For this both the primary and secondary data act as the input for understanding and analyzing the floods and their impact on land and people of the village.

Key Words: Economic, Flood, Intensive, Impact, Livelihood & Occupance

Introduction:

Though floods have some beneficial effects, such as fertile silt deposition on agricultural fields, recharge of soil moisture, washing effect on dirty environment, they cause substantial damages to standing crops, dwelling houses and developmental infrastructures. (Bhagabati, Bora and Kar, 2002). Floods in the plains acts as both the hazards and boon. They create erosional hazards on the agricultural lands and river banks. Floods and their associated problems also cause human migration, change of economic pursuits, etc (Gogoi, 2008). Floods have been observed in most parts of the riverine area of the Brahmaputra valley also. The village Bogoribari is a newly established village. Earlier the people of the village were resided in Amarpur village, which was located on the bank of the river Dibong. But twelve years back the village Amarpur was destroyed in a devastating flood brought by the river Dibong. So that, the government of Assam reestablished the flood affected people in Bogoribari region where they are presently residing.

Objectives:

The mains objectives of the present study are as follows:

1. To find out the impact of flood on socio-economic life of the people of the surveyed village.
2. Analyses of the natural extent and role of cultivation in this region.
3. To analysis various problem associated with the people during the flood and after flood.

The Study Area:

The Surveyed village Bogoribari is located at the north bank of the river Brahmaputra. It is situated in Sapakhowa development block of Sadiya sub-division of Tinsukia district of Assam. It is at 3 k.m. away from the Sadiya ghat of the Brahmaputra

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4) Dr. Pabitra Bharali

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Reclaiming Root and Reframing History: Diasporic Consciousness in Michael Ondaatje's *Running in the Family*

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Abstract: Reclamation of root in the original homeland and culture is integral to diasporic consciousness. Diasporas reclaim original identity through 'material' and 'cultural' links. On the one hand, they take up activities of 'maintenance and restoration' of the homeland as agents of development; on the other hand, psychically through memory, vision and myth and linguistically through historical research and literary production, they continue to have attachment to the homeland. The Sri Lankan-Canadian diasporic writer Michael Ondaatje holds a complex cultural position since he considers himself as a 'mongrel of place, race, culture and genres'. In his fictional memoir 'Running in the Family', his diasporic consciousness is depicted in the very act of reconstruction of family history. His memoir can be viewed as his attempt to come to terms with a past that is both personal and collective. He reframes his family 'history', and his historiography involves looking back at the three centuries old history and creative reworking of the changes over the times. This paper is an attempt to explore Ondaatje's diasporic consciousness as depicted in his reconstruction of family history in his memoir 'Running in the Family.

Keywords – *Diasporic consciousness, family history, reclamation, root, Running in the Family*

I. Introduction

Reclamation of root in the original homeland and culture is integral to diasporic consciousness. After the dislocation of the diasporic person from his/her land of origin, his/her identity is largely threatened in the host land. James Clifford assertively terms it as positive consciousness (311). By positive consciousness, Clifford tends to mean that the diaspora develops a strong sense of attachment to his/her native land and culture and that dislocation and experience of homelessness and rootlessness ignite an irresistible sense of nostalgia in the mind of the diaspora for the lost paradise. At the same time, diasporas reclaim original identity through 'material' and 'cultural' links. While the former signifies diaspora's revisits to the homeland and his/her contribution to its development, the latter stands for his/her mythic desire, memory and recollection, respect for and inculcation of native culture, language and literature even in the hostile foreign situations. In this context, Safran highlights the activities of 'maintenance and restoration' of the homeland by the diasporas (83). Similarly, while analyzing diasporas' contribution to developmental activities of the homeland, Cohen terms the diasporas as 'agents of development' (168). Revisits to homeland, homeland researches, reconstruction of homeland and involvement in homeland development activities are all that testify the diasporic reclamation of home in terms of material links. The cultural links of diasporas basically point to their psychic and linguistic connections. In fact, no diaspora can be free from their thoughts of homeland and native culture even though they may not continue to have any material links. In this connection William Safran observes that diasporic persons are characterized by their 'memory, vision and myth' about original homeland' (83) which justifies their cultural links. Avtar Brah's observation of homeland as a 'mythic place of desire' (192) vindicates the fact that diasporas, being unable to erase their memory of home, try to reclaim the 'root'. In much the same way, Rushdie's observation that 'the past is home'(9) points to diasporic attempt of reclamation and re-rooting. On the other hand, Clifford correlates diasporic identity with historical heritage (311).

Language is a significant way of reclaiming root. Acculturation of native language and use of homeland literary "modes" point to diasporas' attachment to the 'root'. Diasporas may revive native language and literature in an attempt to remain connected to the original 'home'. Use of indigenous ethnic names, special words of homeland language(s) and appropriation of native literary practices are various dynamics of linguistic reclamation of root. In this connection, Vijay Mishra considers the very act of writing about homeland as a signifier of diasporic attachment to home culture. In his analysis of the diasporic writer V. S. Naipaul, he explains Naipaul's reclamation of root through 'memorial reconstructions' (*familiar temporariness* 193) i.e. construction of texts. In the backdrop of this theorization, an attempt has been made here to explore Ondaatje's diasporic consciousness as depicted in his reconstruction of family history in his memoir *Running in the Family (1982).*

5) Dr. Pabitra Bharali

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Diasporic Re-rooting: Michael Ondaatje's Exploration of 'Home' in *Handwriting*

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Abstract: Diasporic persons are incessantly obsessed with memories of 'home' because of which they psychically remain one with the homeland / native culture. In an attempt to re-root in the original 'home', they often take intermittent visits to the homeland; contribute culturally and intellectually as well as financially to the development of the native country. Exploration of native history, geography and cultural beliefs and activities forms a vital part of diasporic re-rooting. Diasporic writers on the one hand, depict homeland issues including political turmoil, and on the other hand, describe cultural aspects and focus on the days they spent in the homeland. Socio-cultural developments of the native land receive key focus in the diasporic writings which are often structured in native mythic vision. The Sri-Lankan-Canadian diasporic writer Michael Ondaatje is sensitively concerned with both his personal-familial-cultural circumstances and experiences relating to his diasporic move as well as the national history and geography, myth and culture of the homeland. His poetry like his fiction is deeply tempered with diasporic sensibility. His poetry anthology '*Handwriting*' (1998) explores Sri Lankan history, geography, ceremonies and myths in his imaginative images. As an elegy, it brings out the writer's lost childhood and at the same time showcases the turmoil of Sri Lankan history. The objective of the present paper is to interpret Ondaatje's attempt of rerooting in the original 'home' through an in-depth analysis of the relevant poems in the anthology '*Handwriting*'.

Keywords: diaspora, home, re-rooting, Ondaatje, *Handwriting*.

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I. INTRODUCTION: THEORETICAL FRAMEWORK

Negotiation of affiliation to homeland and host land forms the core of diasporic sensibility and diasporic persons are obsessively concerned with their identity in relation to both the lands. Migrant authors cannot remain aloof from representing their problematic identity and ambivalent nature of existence of the diasporic people. Diasporas, in fact, as Joel Kuortti observes, are engagingly concerned with a 'matrix of diversity: of cultures, languages, peoples, place, times' (3). On the one hand, they take up homeland issues in an attempt to showcase their psychic affiliation to the native land and culture; and on the other hand, they do not, and cannot, dissociate themselves from the circumstances of the host land. Salman Rushdie calls this state of duality a situation of 'straddling two cultures' (17) while highlighting the creative possibilities of diasporic experience. Diaspora scholars like Robin Cohen, William Safran, Vijay Mishra, Avtar Brah et. al have thrown lights on the various ways the diasporic individuals attempt to re-root in the original homeland. While Cohen interprets 'material' and 'cultural' links of diasporas as 'agents of development' (168), Safran highlights the activities of 'maintenance' and 'restoration' of the homeland by the diasporas (83). In much the same way, Avtar Brah points to diasporas' sustained association with homeland when she calls homeland ' a mythic place of desire'(192). Vijay Mishra through his analysis of V.S. Naipaul's work, emphatically represents 'memorial reconstruction' (193) as a signifier of diasporic attachment to homeland / culture. On the other hand, James Clifford correlates diasporic identity with historical heritage (11). From such observations, it is evident that diasporic persons are incessantly concerned with negotiation of cultural root and heritage, race and language as well as national geography and socio-political issues connected with dispersion.

Diasporic re-rooting, i.e. reclamation of root in the original homeland and culture, that has been viewed as a 'positive diasporic consciousness' by Clifford (311) signifies the strong attachment of the diaspora to his/her native land as well as his/her irresistible sense of nostalgia for the lost paradise. It is for this strong sense of attachment and co-ethnic feeling that the diaspora not only takes intermittent visits to the homeland, but also makes financial, cultural and intellectual contributions to the homeland and native culture. Revisits to the homeland, homeland researches, reconstruction of homeland and involvement in homeland developmental activities are all that testify diasporic reclamation of root in terms of materials links. The cultural links basically

6) Dr. Pabitra Bharali

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Constructing Identity through Historiography: A Diasporic Reading of Ondaatje's *In The Skin of a Lion*

PABITRA BHARALI
BISHNU CHARAN DASH

Diasporic literatures are basically concerned with problematics of cultural identity of displaced people and the cultural experiences of their own as well as of other diasporic people for whom they feel the diasporic consciousness of 'co-ethnicity'. The Sri Lankan-Canadian diasporic writer Michael Ondaatje is deeply concerned with the burden of two cultures. He is concerned not only with his own diasporic identity but also the cultural position and identity of other postcolonial diasporas. Ondaatje being a migrant can be said to feel the sense of co-ethnicity with the marginalised, the historically 'otherised' group for which he takes up the task of revising the existing history from the perspective of the subordinate groups/subaltern in his historiographic metafiction In the Skin of a Lion (1987). He attempts to uncover the lives of those who have been denied a role in Canada's past: women, immigrants, and the working class. The present paper is an attempt to elucidate Ondaatje's diasporic consciousness of co-ethnic concern for other diasporas through a critique of In the Skin of a Lion.

Keywords: *Diaspora, identity, historiography, co-ethnicity, In the Skin of a Lion.*

Postcolonial migration study has developed a specialized discourse, now termed Diaspora study and diasporic literatures, the postcolonial literary productions by migrant writers, are basically concerned with problematics of cultural identity of displaced people. Diasporic writers are constantly concerned with the cultural experiences of their own as well as of other diasporic people for whom they feel the diasporic consciousness of 'co-ethnicity' (Cohen 17). The Sri Lankan-Canadian Michael Ondaatje is such a diasporic writer whose works are deeply concerned with the burden of two cultures and who is concerned not only

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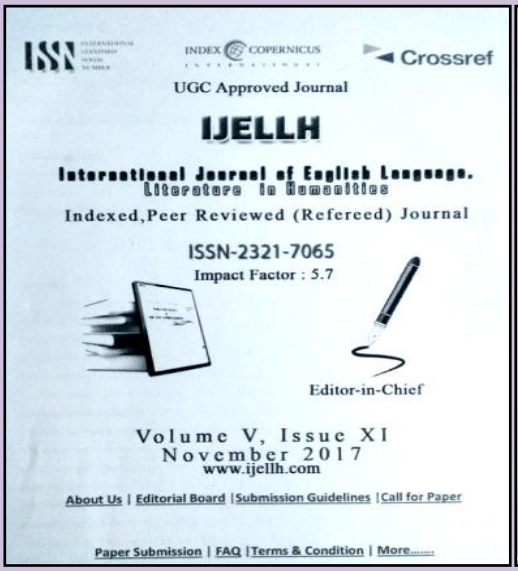

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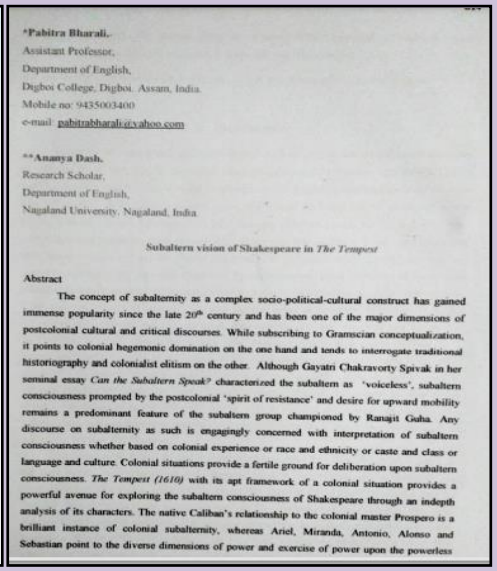

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Subaltern vision of Shakespeare in *The Tempest*

Abstract

The concept of subalternity as a complex socio-political-cultural construct has gained immense popularity since the late 20th century and has been one of the major dimensions of postcolonial cultural and critical discourses. While subscribing to Gramscian conceptualization, it points to colonial hegemonic domination on the one hand and tends to interrogate traditional historiography and colonialist elitism on the other. Although Gayatri Chakravorty Spivak in her seminal essay *Can the Subaltern Speak?* characterized the subaltern as 'voiceless', subaltern consciousness prompted by the postcolonial 'spirit of resistance' and desire for upward mobility remains a predominant feature of the subaltern group championed by Ranajit Guha. Any discourse on subalternity as such is engagingly concerned with interpretation of subaltern consciousness whether based on colonial experience or race and ethnicity or caste and class or language and culture. Colonial situations provide a fertile ground for deliberation upon subaltern consciousness. *The Tempest (1610)* with its apt framework of a colonial situation provides a powerful avenue for exploring the subaltern consciousness of Shakespeare through an indepth analysis of its characters. The native Caliban's relationship to the colonial master Prospero is a brilliant instance of colonial subalternity, whereas Ariel, Miranda, Antonio, Alonso and Sebastian point to the diverse dimensions of power and exercise of power upon the powerless

8) Dr. Pabitra Bharali

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DIASPORIC REBIRTH: HYBRIDITY, TRANSNATIONALITY AND MULTICULTURALISM IN MICHAEL ONDAATJE'S *THE CAT'S TABLE*

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ABSTRACT

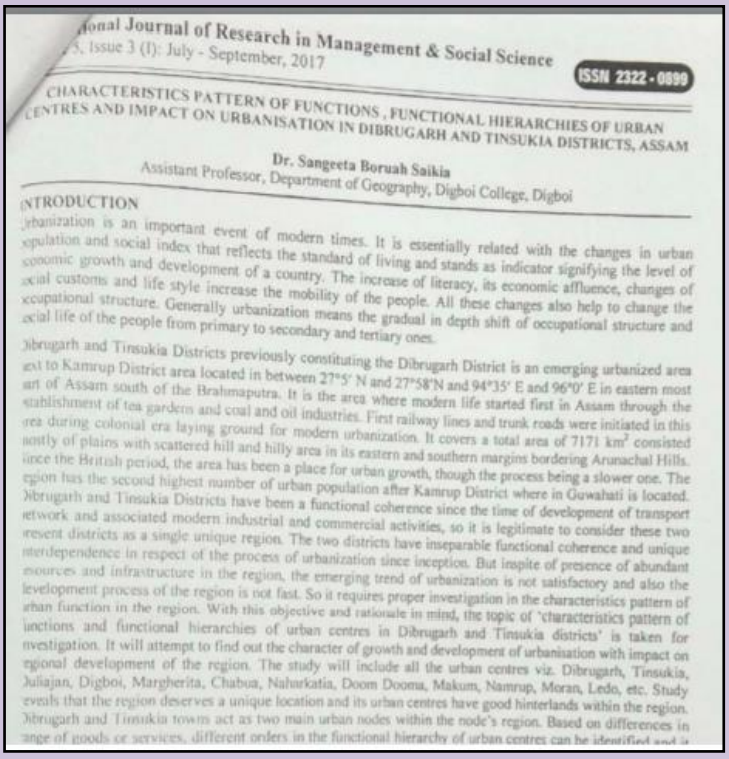
Diasporic literature is concerned with depiction of diverse experiences of the dispersed people starting with their displacement and dislocation to their translations and transformation in the unfamiliar situations. It is the translations and transgressions that are often addressed by the tern diasporic rebirth that signifies the experience of the diasporic self from 'unsettling' to 'resettlement'. It is perceived in the achievement of hybridization, development of multiculturalism and transnational sense of the diasporas. In fact, the journey of the culturally shocked diaspora from the state of dislocation to that of a transnational-multicultural-hybrid-resurrected self speaks volumes for diasporic success as against all odds of alienation and marginalization, fluidity and instability. Sri Lankan-Canadian diasporic author Michael Ondaatje is incessantly preoccupied with the depiction of diasporas' translation to hybrid, transnational and multicultural individuals. The present paper is an attempt to explore how Ondaatje highlights the issue of diasporic rebirth through a depiction of hybridity, transnationality and multiculturalism in his fictional work *The Cat's Table* (2011).

Key words: Diasporic rebirth, Hybridity, Transnationality, Multiculturalism, Michael Ondaatje, *The Cat's Table*

Introduction

Diasporic rebirth is basically associated with the new diasporas who voluntarily migrate to the prosperous western countries in the hope of fulfilling their dreams. While the old diasporas resigned their fate in the host land with stoic endurance, the new diasporas accept and undergo translation several times; in other words, they are reborn time and again. In this respect, all sorts of trials and tribulations, anxiety and suffering, trauma and culture shock turn up as blessings in disguise for the new diaspora. In fact, the experience of the diasporic self from 'unsettling' to 'resettlement' is a journey of diasporic rebirth that is perceived / showcased in the achievement of hybridization, development of multiculturalism and transnational sense of the diasporas. The terms as used in postcolonial discourse are highly relative since they signify 'trans-cultural forms', 'intercultural space' and the space of 'in-betweenness'. Hybridity is the fusion of the 'self' and the 'other' that reduces the sharp dualistic thinking by bridging up the colonizer and the colonized. In this connection, Bhaba aptly observes that "Hybridity is the sign of the productivity of colonial power" (159). Hybridity contests the colonial view of the native as 'subaltern'. In fact, the postcolonial subject with access to various material and academic developments of the globalised world achieves a hybrid identity and it is in this respect Diaspora as a

9) Dr. Sangeeta Baruah Saikia



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CHARACTERISTICS PATTERN OF FUNCTIONS , FUNCTIONAL HIERARCHIES OF URBAN CENTRES AND IMPACT ON URBANISATION IN DIBRUGARH AND TINSUKIA DISTRICTS, ASSAM

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NTRODUCTION

rbanization is an important event of modern times. It is essentially related with the changes in urban opulation and social index that reflects the standard of living and stands as indicator signifying the level of conomic growth and development of a country. The increase of literacy, its economic affluence, changes of ocial customs and life style increase the mobility of the people. All these changes also help to change the ccupational structure. Generally urbanization means the gradual in depth shift of occupational structure and ocial life of the people from primary to secondary and tertiary ones.

Dibrugarh and Tinsukia Districts previously constituting the Dibrugarh District is an emerging urbanized area ext to Kamrup District area located in between 27°5' N and 27°58'N and 94°35' E and 96°0' E in eastern most art of Assam south of the Brahmaputra. It is the area where modern life started first in Assam through the stablishment of tea gardens and coal and oil industries. First railway lines and trunk roads were initiated in this rea during colonial era laying ground for modern urbanization. It covers a total area of 7171 km^2 consisted ostly of plains with scattered hill and hilly area in its eastern and southern margins bordering Arunachal Hills. ince the British period, the area has been a place for urban growth, though the process being a slower one. The egion has the second highest number of urban population after Kamrup District where in Guwahati is located. Dibrugarh and Tinsukia Districts have been a functional coherence since the time of development of transport etwork and associated modern industrial and commercial activities, so it is legitimate to consider these two resent districts as a single unique region. The two districts have inseparable functional coherence and unique interdependence in respect of the process of urbanization since inception. But inspite of presence of abundant esources and infrastructure in the region, the emerging trend of urbanization is not satisfactory and also the levelopment process of the region is not fast. So it requires proper investigation in the characteristics pattern of rban function in the region. With this objective and rationale in mind, the topic of 'characteristics pattern of unctions and functional hierarchies of urban centres in Dibrugarh and Tinsukia districts' is taken for nvestigation. It will attempt to find out the character of growth and development of urbanisation with impact on egional development of the region. The study will include all the urban centres viz. Dibrugarh, Tinsukia, Duliajan, Digboi, Margherita, Chabua, Naharkatia, Doom Dooma, Makum, Namrup, Moran, Ledo, etc. Study eveals that the region deserves a unique location and its urban centres have good hinterlands within the region. Dibrugarh and Tinsukia towns act as two main urban nodes within the node's region. Based on differences in ange of goods or services, different orders in the functional hierarchy of urban centres can be identified and is

10) Dr. Deborshee Gogoi

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A STUDY ON IDENTIFYING THE DRIVERS OF GROWTH OF PHOTOGRAPHIC TOURISM IN THE DISTRICT OF TINSUKIA, ASSAM

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[2]Research Scholar & Assistant Professor, Department of Marketing, Digboi College, Digboi, Assam, India

ABSTRACT

Photographic Tourism is relatively a new addition to the existing Tourism industry. This tourism dimension is gaining popularity in recent years, especially due to the technological revolution that has made photography accessible to everyone. There is a dearth of research for which its role in the context of economic development has never been assessed. This paper tries to identify the drivers of growth of photographic tourism in the district of Tinsukia, Assam. Understanding the drivers of growth is very much important for effective policy making as well as developing photographic tourism products to suit the tastes and preferences of tourists visiting the district.

KEYWORDS: Photographic Tourism, Photographic Tourists, Drivers of Growth

INTRODUCTION

Tourism has grown and matured over the years and so has the tourists. Today, tourists' expectation is not just confined to leisure travel only. They expect more meaningful experiences that help them gain insights into new fields of knowledge. Tourism suppliers are also constantly innovating ways to differentiate their offerings from that of the competitors and stand out in the market. As a result of this, newer concepts like space tourism, wine tourism, sport tourism, hill tourism, etc. are becoming quite popular among tourists who expect something more than just a regular leisure travel. Photographic tourism is one such recent addition to the existing dimension of tourism. Photography is gaining huge popularity today. Credit goes to the technological revolution that has made photography accessible to almost everyone.

Every year, people make huge investments in procuring their photography gears and travelling to places only to take that particular photograph that makes them happy. This can be treated as a separate discipline, where tourists primarily involve themselves in travelling to places with the prime objective of taking photographs.

Photographic tourism can be defined as those forms of special interest tourism, in which tourist visits a particular place with the primary aim of photographing subjects that are unique to him. The scope of photography may range from landscapes, portraits, architectures, culture, food and wildlife to even macro subjects.

From the above definition, two important features of photographic tourism can be determined viz., 'motive behind visiting a particular place' and 'uniqueness of subjects'.

To make the statement more clear, it can be assumed that a tourist will not visit a place only to photograph subjects which is already available in his normal places of work and residence. Uniqueness in the subject like landscapes, wildlife, people and their culture, or food habits and dress codes of the travel destination is more important that would

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Ecotoxicology

Cypermethrin Formulation (Ustad-10 EC) Induces Genotoxicity via Apoptosis, Affects Nutritional Physiology, and Modulates Immune Response in Silkworm *Philosamia ricini* (Lepidoptera: Saturniidae)

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Abstract

Cypermethrin is a pyrethroid insecticide with high insecticidal activity, low mammalian toxicity, and biodegradability. The present study aimed to determine the acute toxicity and evaluate the secondary toxic effects of a commercial formulation of cypermethrin on silkworm *Philosamia ricini* Hutt of Northeast India. The potential genotoxicity of cypermethrin on silkworm hemocyte was examined by comet assay, caspase activation, and annexin V affinity assay. Alteration in nutritional physiology and histoarchitecture of the gut region was evaluated. Additionally, immunotoxicological effect of cypermethrin was studied by phenoloxidase (PO), lysozyme assay, and abundance of circulating hemocytes. The LC_{50} value at 24-, 48-, 72-, and 96-h exposure period was recorded as 185.96, 105.34, 72.42, and 58.41 µg/liter, respectively. Approximately sevenfold increase in mean comet tail length was observed at 24 h posttreatment with sublethal concentrations of cypermethrin. Cypermethrin also induced apoptosis and activated caspase reaction in silkworm hemocytes. Moreover, a significant decrease in digestive enzyme activity was observed at higher concentrations of cypermethrin. In cypermethrin-exposed groups, alteration in histoarchitecture was also observed in the form of ruptured microvilli and thin, deformed, fused mucous layer. The PO enzyme and lysozyme enzyme activity was also altered with sublethal concentration of cypermethrin. Total hemocyte count was reduced to 10587.10, 10052.30, 9234.30, and 8842.60 per mm^3 with 10, 20, 30, and 40 µg/liter, respectively. The results offer new insights into the negative consequences of very low concentrations of cypermethrin formulations on nonmulberry silkworm of Northeast India.

Key words: cypermethrin, silkworm, apoptosis, single-cell gel electrophoresis, nutritional physiology

Globally pesticides play a major role in the agricultural production by protecting crops from pest attack (Adhikari et al. 2004, Abhilash and Singh 2009). Now-a-days, pyrethroids come under the major insecticide category, accounting for >30% of the world market and used against Lepidoptera and other pests due to their broad-spectrum activity and cost-effectiveness (Pietrantonio et al. 2007). Pyrethroids are synthetic derivatives of pyrethrins and widely used in agriculture to control different pests due to high insecticidal activity, low mammalian toxicity, and biodegradability (Zhou et al 2011). Pyrethroids are divided into two major groups depending on the presence of cyano groups.

Cypermethrin [cyano-(3-phenoxyphenyl) methyl-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropane-1-carboxylate] is one of the most widely used synthetic insecticides for agricultural and domestic purposes (Crawford et al. 1981), which comes under the category of type II pyrethroids with the presence of cyano group. It acts on the central nervous system, alters the axonic sodium channels leading to excessive ion entrance, and causes abnormal nervous activity (Stenersen 2004). Moreover, cypermethrin extends the opening of sodium channels in the central nervous system leading to hypopolarization and hyperexcitation of the neurons. Cypermethrin induces short-term neurotoxicity by hyperexcitation of the central nervous system. Additionally, cypermethrin also causes neurotoxicity by modulating gamma-aminobutyric acid (GABA) level (Eells and Dubocovich 1988, Narahashi et al. 1992, Kirby et al. 1999).

The use of pesticides sounds beneficial for agricultural practices; however, frequent use of pesticides can cause accumulation of pesticide residues in the environment. Thus, secondary toxic effects of pesticides on the nontarget organisms are inevitable (Vyjayanthi and Subramanyam 2002). Despite the beneficial effects, the uncontrolled

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CrossMark

ORIGINAL ARTICLE

Dissolved arsenic in the shallow alluvial aquifers in North Brahmaputra Plain, India: a case study in and around lower Jia Bharali River basin

Nayan J. Khound[1] · Parag Phukon[2] · Krishna G. Bhattacharyya[3]

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Abstract This study was carried out to investigate Arsenic (As) contamination in the alluvial aquifers of the lower Jia Bharali catchment and adjoining areas in Sonitpur district of Assam. Samples were collected twice a year (July and February) for three consecutive years from 50 monitoring wells spread into both older and younger alluvium between the Brahmaputra River towards south and Arunachal foothills towards north. The analytical results show that dissolved As content [both As(III) and As(V)] varies from below detection level (BDL) to 7.39 µg/L with a mean value of 1.92 µg/L and standard deviation of 1.37 µg/L during wet season (July). Thus, it remains within the WHO (2004) prescribed limit (10 µg/L) in the study area in the wet season. During the dry season, the range of variation is higher, from BDL to as much as 13.8 µg/L with a mean value of 2.57 µg/L and standard deviation of 2.23 µg/L. About 78% of the wells show a concentration between 1 and 10 µg/L in both the seasons. However, only one of the wells present in foothills of Arunachal Himalaya was found to have As content higher than the WHO limit in the dry season. Along with total As, examination of concentration levels of other key parameters, viz., Fe, Mn, Ca, Na, K, and Mg with pH and SO_4^{2-} was also carried out. Most of the wells (~92%) showed Fe concentration much higher than the WHO (2004) permissible limit of (0.3 mg/L) particularly during the dry season and it is likely that high Fe concentration was responsible for keeping total As concentration at comparatively low levels. 34% of the samples in the wet seasons and 86% of the samples in the dry seasons have Mn above the permissible limit of 0.1 mg/L.

Keywords Arsenic · Brahmaputra plain · Jia Bharali river basin · Iron · Alluvial aquifer

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Introduction

The common forms of As (arsenite and arsenate oxyanions) in natural waters and their concentrations are usually determined by pH, the redox potential, and such other factors that control the speciation and the mobility of As in the environment. Oxides and hydroxides of Fe(III), Al(III), or Mn(III/IV), humic substances and clay minerals take up arsenic compounds and also influence the mobility of arsenic species within soils (Bissen and Frimmel 2003; Ali and Jain 2004; Ali et al. 2006, 2011, 2012).

Volcanic or geothermal eruptions, loellingite ($FeAs_2$), sulfide minerals as orpiment (As_2S_3), realgar (AsS), and mispickel (FeAsS) are the principal sources of environmental arsenic (Smedley and Kinniburgh 2002; Mandal and Suzuki 2002). The anthropogenic contributions of As results from industrial or agricultural activities: the smelting of arsenic bearing minerals, the burning of fossil fuels, the glass industry, arsenical pesticides, herbicides, and crop desiccants (Smedley and Kinniburgh 2002). The usual concentration of arsenic in groundwater varies between 1 and 10 µg/L (Bissen and Frimmel 2003; Sharma and Sohn 2009) and geochemical conditions of the aquifers that favor the mobilization and the accumulation of the anionic species of As are considered to be mainly responsible (Matin et al. 2004; Aloupi et al. 2009). Inorganic arsenic species

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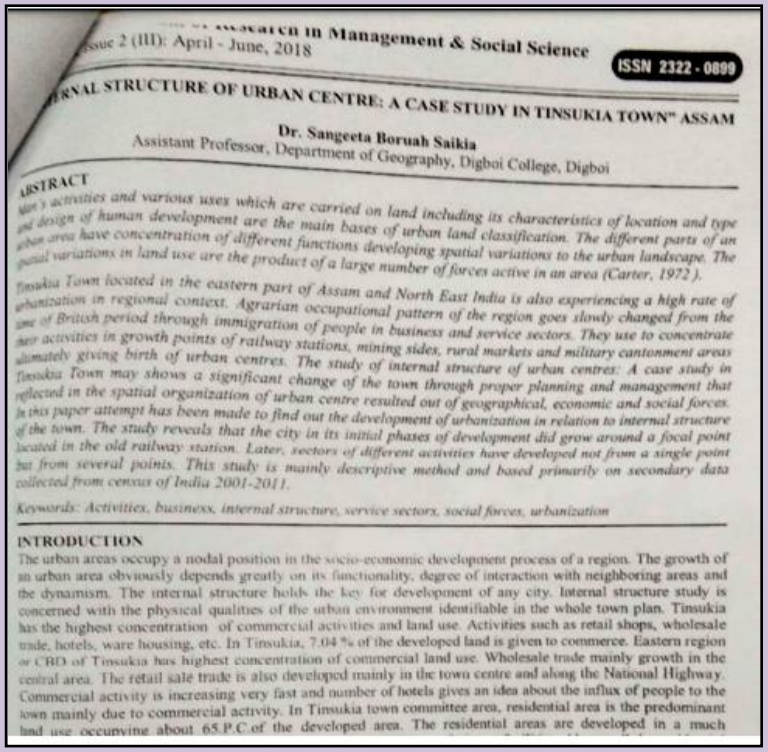

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...RNAL STRUCTURE OF URBAN CENTRE: A CASE STUDY IN TINSUKIA TOWN" ASSAM

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ABSTRACT

...an's activities and various uses which are carried on land including its characteristics of location and type ...and design of human development are the main bases of urban land classification. The different parts of an ...urban area have concentration of different functions developing spatial variations to the urban landscape. The ...spatial variations in land use are the product of a large number of forces active in an area (Carter, 1972).

Tinsukia Town located in the eastern part of Assam and North East India is also experiencing a high rate of ...urbanization in regional context. Agrarian occupational pattern of the region goes slowly changed from the ...time of British period through immigration of people in business and service sectors. They use to concentrate ...their activities in growth points of railway stations, mining sides, rural markets and military cantonment areas ...ultimately giving birth of urban centres. The study of internal structure of urban centres: A case study in ...Tinsukia Town may shows a significant change of the town through proper planning and management that ...reflected in the spatial organization of urban centre resulted out of geographical, economic and social forces. ...In this paper attempt has been made to find out the development of urbanization in relation to internal structure ...of the town. The study reveals that the city in its initial phases of development did grow around a focal point ...located in the old railway station. Later, sectors of different activities have developed not from a single point ...but from several points. This study is mainly descriptive method and based primarily on secondary data ...collected from census of India 2001-2011.

Keywords: Activities, business, internal structure, service sectors, social forces, urbanization

INTRODUCTION

The urban areas occupy a nodal position in the socio-economic development process of a region. The growth of an urban area obviously depends greatly on its functionality, degree of interaction with neighboring areas and the dynamism. The internal structure holds the key for development of any city. Internal structure study is concerned with the physical qualities of the urban environment identifiable in the whole town plan. Tinsukia has the highest concentration of commercial activities and land use. Activities such as retail shops, wholesale trade, hotels, ware housing, etc. In Tinsukia, 7.04 % of the developed land is given to commerce. Eastern region or CBD of Tinsukia has highest concentration of commercial land use. Wholesale trade mainly growth in the central area. The retail sale trade is also developed mainly in the town centre and along the National Highway. Commercial activity is increasing very fast and number of hotels gives an idea about the influx of people to the town mainly due to commercial activity. In Tinsukia town committee area, residential area is the predominant land use occupying about 65.P.C.of the developed area. The residential areas are developed in a much

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ORIGINAL ARTICLE

Shallow alluvial aquifers for drinking and agricultural purposes: a case study from Jia Bharali River Basin, North Brahmaputra Plain, India

Nayan J. Khound[1] · Parag Phukon[2] · Krishna G. Bhattacharyya[3]

Received: 21 August 2017 / Accepted: 30 August 2018

Abstract

A preliminary assessment of groundwater quality for drinking and irrigational purposes in the lower Jia Bharali river catchment and adjoining areas of North Brahmaputra Plain, India, was carried out with respect to major cations, anions, and trace elements. Water samples from 50 shallow alluvial dug wells were collected in wet and dry seasons for a period of 3 hydrological years (2008–2011). Seasonal analysis showed major cation and anion contents in a definite trend across the basin as Ca: 4.2–68.9 mg/L > Na 1.9–62.5 mg/L > Mg:1.0–29.2 mg/L > K (1.3–26.1 mg/L) and HCO_3 (16–118 mg/L) > Cl (2.8–138.3 mg/L) > SO_4 (1.2–99.5 mg/L) > PO_4 (BDL—1.50 mg/L) > NO_3 (BDL—1.20 mg/L) within WHO acceptable limit for drinking water in all the seasons. Low SAR (< 10) and RSC (< 1.25 meq/L) values of shallow wells showed their suitability as ponential source for agricultural purposes, while a few wells were found unsuitable with respect to Na% > 60% and Kelly's Index > 1. However, majority of the wells were found not suitable for drinking as well as irrigational purposes due to the presence of trace elements Cd (BDL—0.070 mg/L), Cr (BDL—0.24 mg/L), Fe (0.10–11.76 mg/L), Mn (BDL—1.37 mg/L), Ni (BDL—0.18 mg/L), and Pb (BDL—0.22 mg/L) beyond their respective standard limits. Piper trilinear diagram identified the major hydrochemical facies of the groundwater as alkaline earths (Ca, Mg) and weak acids (HCO_3) over alkalis (Na, K) and strong acids (SO_4, Cl).

Keywords Water quality · Cations · Anions · Trace elements · Irrigation suitability · Alluvial aquifer · Jia Bharali River · India

Introduction

Groundwater chemistry based on hydrochemical parameters presents preliminary information on water types, classification of water for various purposes, as well as study of differens chemical processes (Saxena et al. 2003; Jalali 2007; Sarwade et al. 2007; Mondal and Singh 2011; Mondal et al. 2011). Groundwater quality changes due to geogenic interaction or any type of anthropogenic influence (Kelley 1940; Wilcox 1948). Different hydrogeochemical processes like dissolution, precipitation, ion-exchange processes, etc. control the chemical composition of the ground water in the shallow alluvial aquifers (Apodaca et al. 2002).

Groundwater forms the major source of water supply for irrigation as well as drinking and domestic purposes in most parts of the India (Sridhar et al. 2013). A total of 90% of rural and 30% of urban Indian population still depend completely on untreated surface or groundwater resources (Kumar et al. 2005). Though recent years, microbiological problems in rural India are controlled to a certain extent by changing in usage from surface water to groundwater, but the same has led to sources of newer problems like fluorosis, arseniconis, and salinity due to overexploitation of groundwater (Singh et al. 2013). However, a number of studies on groundwater quality with respect to drinking and irrigation purposes have been reported to be carried out in different river basins of India (Majumdar and Gupta 2000; Dasgupta and Purohit 2001; Khurshid et al. 2002; Sajatha and Reddy 2003; Pulle et al. 2005; Hussain et al. 2005; Sunitha et al. 2005; Subba Rao 2006; Mondal et al. 2008, 2010; Sundaray

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ORIGINAL ARTICLE

Assessment of water quality in and around Jia-Bharali river basin, North Brahmaputra Plain, India, using multivariate statistical technique

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Abstract
The present study envisages the application of multivariate analysis, water utility class and conventional graphical representation to reveal the hidden factor responsible for deterioration of water quality and determine the hydrochemical facies of water sources in Jia-Bharali river basin, North Brahmaputra Plain, India. Fifty groundwater and 35 surface water samples were collected and analyzed for 15 parameters viz pH, TDS, hardness, COD, Ca^{2+}, Mg^{2+}, Na^+, K^+, Fe, HCO_3^-, Cl^-, SO_4^{2-}, NO_3^-, PO_4^{3-} and F^- for a period of 3 hydrological years (2009–2011) in six different seasons (three wet and three dry). The results were evaluated and compared with WHO and BIS water quality standards. Except Fe (> 0.3 mg/L), all parameters were found well within the desirable limit of WHO and BIS for drinking water. Ca^{2+} and HCO_3^- were dominant ions among cations and anions. The piper trilinear diagram classified majority of water samples for both seasons fall in the fields of Ca^{2+}–Mg^{2+}–HCO_3^- water type indicating temporary hardness. Various factors extracted by principal component analysis indicates anthropogenic (domestic and agricultural runoff) and geogenic influences on the trace elements. Hierarchical cluster analysis grouped water sources into three statistically significant clusters based on the similarity of water quality characteristics. This study illustrates the usefulness of multivariate statistical techniques for analysis and interpretation of complex datasets, and in water quality assessment, identification of pollution sources/factors and understanding temporal/spatial variations in water quality for effective water quality management.

Keywords Shallow aquifer · Multivariate statistical techniques · Hierarchical cluster · Principal component · Hydrochemistry

Introduction

The availability of good quality water is an indispensible feature for drinking, agriculture, industrial and irrigation purposes (Nagaraju et al. 2014) as well as for preventing diseases and improving the quality of life (Nahida et al. 2014). Water quality is controlled by many factors including climate, soil topography, and water rock interaction (Love et al. 2004; Li et al. 2016; Nagaraju et al. 2017). The analysis of freshwater sources is an important and sensitive issue in water quality monitoring to control and reduce the incidence of contamination (Alesto and Abankua 2014). Water, the most essential element for the existence of life on Earth, is easily exposed to pollution by rapid industrialization and increase in population which creates unhealthy environment (John Mohammad et al. 2015). The water quality assessment provides clear information about the subsurface geologic environments in which the water bodies are present (Raja et al. 2011). The conventional techniques such as trilinear plots, statistical techniques are widely accepted methods to determine the quality of water sources (Kumar et al. 2015; Qishlaqi et al. 2017; Nagaraju et al. 2017; Shigut et al. 2017). However, the use of these graphical methods to interpret water chemistry is limited to only two dimensions and these methods deal with a limited number of variables responsible for the water chemistry which can produce biased results (Güler et al. 2002). To overcome the limitations of these conventional methods, multivariate statistical

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Biosorption of fluoride from aqueous medium by Indian sandalwood (*Santalum Album*) leaf powder

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ABSTRACT

Sandalwood leaf powder prepared from mature, dried Indian sandalwood (Santalum album) leaves was investigated to assess its ability to remove fluoride from aqueous solutions using adsorption process. Effects of solution pH, contact time, adsorbent amount and solution temperature on fluoride sorption had been investigated. The biosorbent was effective at the pH range of 5.0–7.0 and its fluoride removal capacity was found to be above 75.0%. The kinetics of the interactions was measured with pseudo first order Lagergren equation (mean k_1: 2.22×10^{-2} min^{-1}), simple second order kinetics (mean k_2: 4.43×10^{-1} g/mg/min), and intra-particle diffusion (mean k_i: 8.31×10^{-2} mg/g/$min^{0.5}$) mechanism. The adsorption data give good fits with Langmuir, Freundlich and Temkin isotherms and yielded Langmuir monolayer capacity of 4.66 mg/g. The negative values of the thermodynamic parameters, ΔH, ΔS and ΔG showed the adsorption process to be exothermic in nature and thermodynamically favourable at lower temperature. These results indicated that Sandalwood leaf powder might be an effective adsorbent for treatment of water contaminated with fluoride.

1. Introduction

The essential micronutrient fluoride is beneficial when present in small concentrations (0.6–1.0 mg/L) in drinking water for calcification of dental enamel and bone formation [1]. However, it causes dental and skeletal fluorosis at higher concentrations [2]. If the fluoride concentration in drinking water is very high it is also linked to cancer [3]. The occurrence of fluoride in natural water is affected by the type of rocks, climatic conditions, nature of hydrogeological strata and time of contact between rock and the circulating ground water [4]. Presence of other ions, particularly bicarbonate and calcium ions also affects the concentration of fluoride in water. The World Health Organization (WHO) recommended a level of fluoride concentration in drinking water from 0.5 to 1.5 mg/L as the permissible limit for optimal dental health [5]. Many methods have already been developed for removal of excessive fluoride from drinking water. Adsorption on suitable solid adsorbent is the widely accepted defluoridation technique due to its green, simple to operate and cost-effective applications [6]. Several low cost adsorbent materials including activated alumina [7], bone char [8], zeolites [9], modified activated carbon [10] had been reported for removal of fluoride from aqueous medium. During the last few years, [illegible], tamarind (Tamarindus indica) fruit shell carbon [14], Neem (Azadirachta indica) leaf powder [15] etc., have also been studied and reported as effective adsorbents for removal of fluoride from water.

Sandalwood (Santalum album) is the second most expensive wood in the world, next to the African Blackwood (Dalbergia melanoxylon) [16]. Sandalwood is commercially known as the East Indian sandalwood and its oil as East Indian sandalwood oil [16]. The heartwood which constitutes the central part of the tree is described as aromatic, bitter, moderately hard, heavy, durable, yellow or brown in appearance, with an oily texture and is highly valued for its sweet fragrance [17]. The natural distribution of sandalwood extends from Indonesia in the east to Juan Fernandez Islands (Chile) in the west and from Hawaiian Archipelago in the north to New Zealand in the south [17]. Indian sandalwoods are small to medium-sized hemiparasitic trees and are widely distributed in the districts of southern region, especially in Karnataka, Tamil Nadu and Kerala [12]. India has been the traditional leader of oil production from sandalwood for perfumery and pharmaceuticals for more than 5000 years [16]. The aroma of the sandalwood oil and the wood is esteemed by three major religions of the world – Hinduism, Buddhism and Islam [19].

In the present study, Sandalwood leaf powder (SLP), developed

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HYDROCHEMISTRY, HYDROBIOLOGY: ENVIRONMENTAL ASPECTS

Hydrochemical and Multivariate Statistical Evaluation of Heavy Metals in Shallow Alluvial Aquifers of North Brahmaputra Plain, India[1]

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Abstract—The aim of this study was to display distribution and relationships of heavy elements in the unconfined, shallow alluvial aquifers of the lower Jia Bharali catchment and adjoining areas in central part of North Brahmaputra Plain (NBP), India using hydrochemical as well as multivariate statistical techniques such as principal component analysis (PCA) and cluster analysis. The original matrix was made up of 10 trace elements (As, Cd, Cu, Co, Cr, Fe, Mn, Pb, Ni and Zn) estimated from 50 shallow alluvial dug wells in both the wet and the dry season for a duration of 3 hydrological years (2008–2011). Except As, Cu and Zn all the other toxic metals in the shallow aquifers were found exceeding the WHO maximum permissible limits for drinking water. PCA extracted five varimax factors as geogenic, agricultural and anthropogenic explaining about 71.2% of the total variance in the wet season and 69.3% total variance in the dry season. Hierarchical cluster analysis classified the dug wells into two groups in the wet season and three groups in the dry season with respect to the heavy elements. The results emphasized the need for routine monitoring and management in order to avoid contamination of groundwater sources in the NBP with respect to the dissolved trace elements.

Keywords: shallow aquifer, Brahmaputra plain, health risk, multivariate, principal component, cluster analysis

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INTRODUCTION

The trace element composition of groundwater depends on natural factors such as the lithology of the aquifer, the quality of recharge waters, types of interaction between water and aquifer and on human activ-

River catchment and its adjoining areas in the central part of NBP is characterized by more than 800 m thick older and younger alluvium deposited by the west flowing Brahmaputra River and south flowing trans Himalayan rivers [8]. Metals are essential components

18) Dr. Poban Gogoi

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A Study on Principal's Leadership Effectiveness of General Degree Colleges in Tinsukia District of Assam

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Abstract: The principal plays an important role because he/she is the designated leader of the institution. The extents of cooperation from his colleagues as well as from other stakeholders depend to a great extent on effectiveness of Principal's leadership behavior. The investigator conducted the present study to reveal a clear picture of leadership effectiveness of principals of the General Degree Colleges of Tinsukia District. The main objective of the study is to find out Leadership Effectiveness of Principals of the General Degree Colleges in Tinsukia in general and in relation to location and management in particular. The method followed in this study is Normative Survey Method. Population of the study consists of all the 297 nos. of teachers in the colleges of Tinsukia District. A total of 88 nos. teachers were selected for the sample. The tool used for collection of data was Leadership Effectiveness Scale (LES). It was developed by the investigator. Conclusion drawn from the study were that the Leadership Effectiveness of the majority of the Principals is slightly higher than the average, no significant difference between Leadership Effectiveness of the Principals of the Rural and Urban General Degree Colleges, no significant difference between Leadership Effectiveness of the Principals of the Provincialised and Non-Provincialised General Degree Colleges etc.

Key words: *Leadership Effectiveness, General Degree Colleges.*

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I. INTRODUCTION

Leadership means organizing a group of people to achieve a common goal. The leader may or may not have any formal authority. Leadership is a process whereby an individual influences a group of individuals to achieve a common goal[1]. Effective leadership is the ability to integrate successfully and maximize available resources within the internal and external environment for the attainment of organizational or societal goals.

In the colleges, the principal plays an important role because he/she is the designated leader of the institution. The principal is responsible for exercising the expertise in the management of college affairs. The principal as leader communicate the vision of the colleges to the teachers, non-teaching staff and students to turn the same into reality. His/her leadership is responsible for developing the proper mechanism to utilize the abilities of the teachers, students, office staff and other stakeholders of the colleges to the fullest extent. Development as well as a favorable environment for extending the services by the stakeholders of the colleges will be shaped in accordance with the leadership effectiveness of the principals. For the achievement of the goals set by the principals for their colleges, they need cooperation from their colleagues.

The extents of cooperation from his colleagues as well as from other stakeholders depend to a great extent on effectiveness of Principal's leadership behavior. Principal's effectiveness as leader creates perceptible effects on its stakeholders. The overall growth and development of the colleges depend on the competency and leadership effectiveness of the principals therein. He is to lead the teacher force from the front in the accomplishment of the goals of the colleges as an institution for higher education.

Over the years, a steady flow of research on leadership effectiveness has emerged. Many studies sought to analyze the leadership behavior of the principals or head of the institutions in terms of effectiveness. Some such studies are of Darji (1975), Prabhakar (1989), Srivastava (1999), Ali (2002), Mehrotra (2002), Nayal (2005), D'Souza (2006), Mourkani (2006), Njuguna (2006), Timilehin (2010), Olatunji and others (2011) etc. Some other studies sought to study Leadership Effectiveness of the Principals or head of the institutions with

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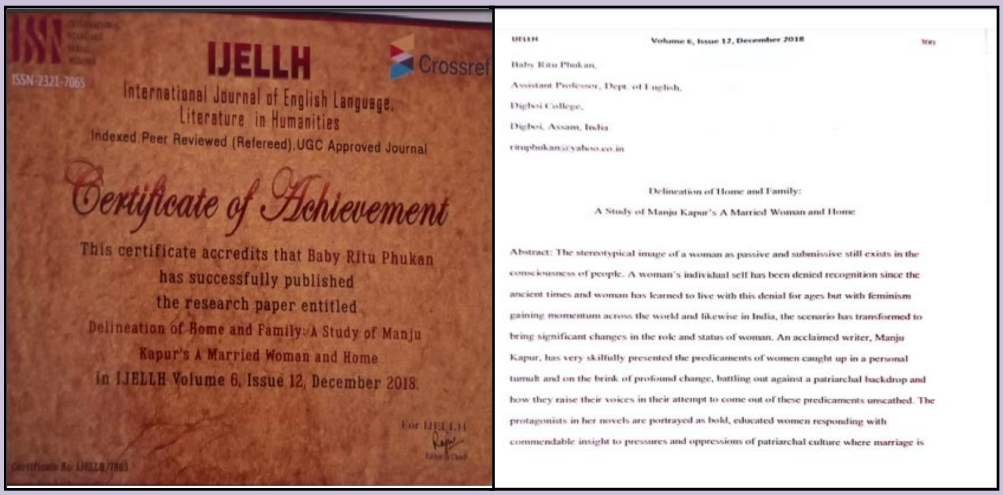
19) Baby Ritu Phukan



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Certificate of Achievement

This certificate accredits that Baby Ritu Phukan has successfully published the research paper entitled Delineation of Home and Family: A Study of Manju Kapur's A Married Woman and Home in IJELLH Volume 6, Issue 12, December 2018.

For IJELLH

IJELLH Volume 6, Issue 12, December 2018 300

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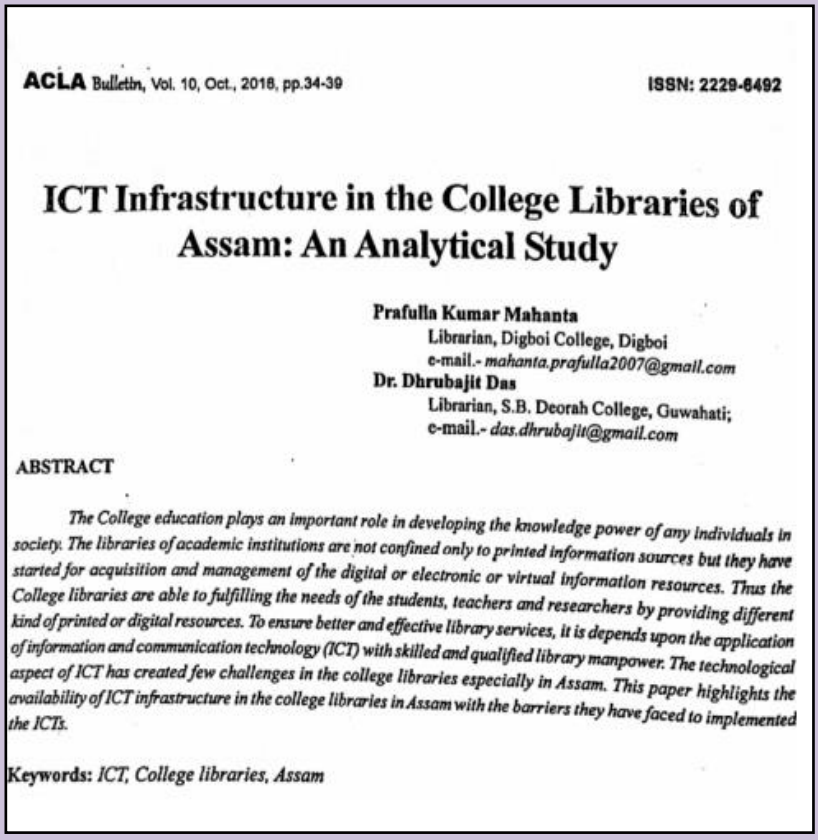
Delineation of Home and Family:
A Study of Manju Kapur's A Married Woman and Home

Abstract: The stereotypical image of a woman as passive and submissive still exists in the consciousness of people. A woman's individual self has been denied recognition since the ancient times and woman has learned to live with this denial for ages but with feminism gaining momentum across the world and likewise in India, the scenario has transformed to bring significant changes in the role and status of woman. An acclaimed writer, Manju Kapur, has very skilfully presented the predicaments of women caught up in a personal tumult and on the brink of profound change, battling out against a patriarchal backdrop and how they raise their voices in their attempt to come out of these predicaments unscathed. The protagonists in her novels are portrayed as bold, educated women responding with commendable insight to pressures and oppressions of patriarchal culture where marriage is

20) Dr. Prafulla Kumar Mahanta



ACLA Bulletin, Vol. 10, Oct., 2018, pp.34-39 **ISSN: 2229-6492**

ICT Infrastructure in the College Libraries of Assam: An Analytical Study

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Dr. Dhrubajit Das
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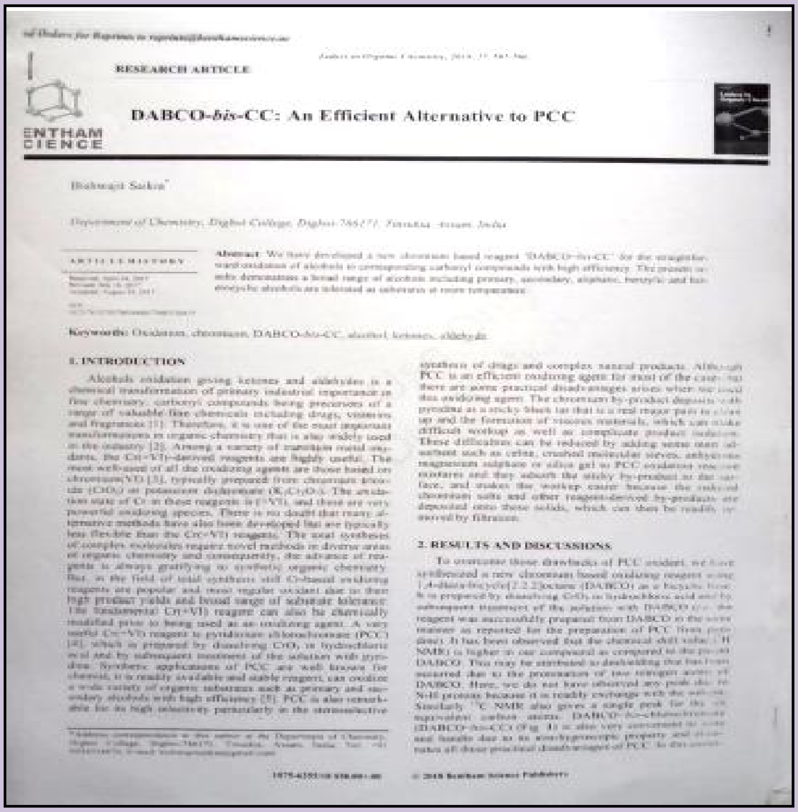
ABSTRACT

The College education plays an important role in developing the knowledge power of any individuals in society. The libraries of academic institutions are not confined only to printed information sources but they have started for acquisition and management of the digital or electronic or virtual information resources. Thus the College libraries are able to fulfilling the needs of the students, teachers and researchers by providing different kind of printed or digital resources. To ensure better and effective library services, it is depends upon the application of information and communication technology (ICT) with skilled and qualified library manpower. The technological aspect of ICT has created few challenges in the college libraries especially in Assam. This paper highlights the availability of ICT infrastructure in the college libraries in Assam with the barriers they have faced to implemented the ICTs.

Keywords: *ICT, College libraries, Assam*

21) Dr. Biswajit Saikia



RESEARCH ARTICLE

DABCO-*bis*-CC: An Efficient Alternative to PCC

Biswajit Saikia*

Department of Chemistry, Digboi College, Digboi-786171, Tinsukia, Assam, India

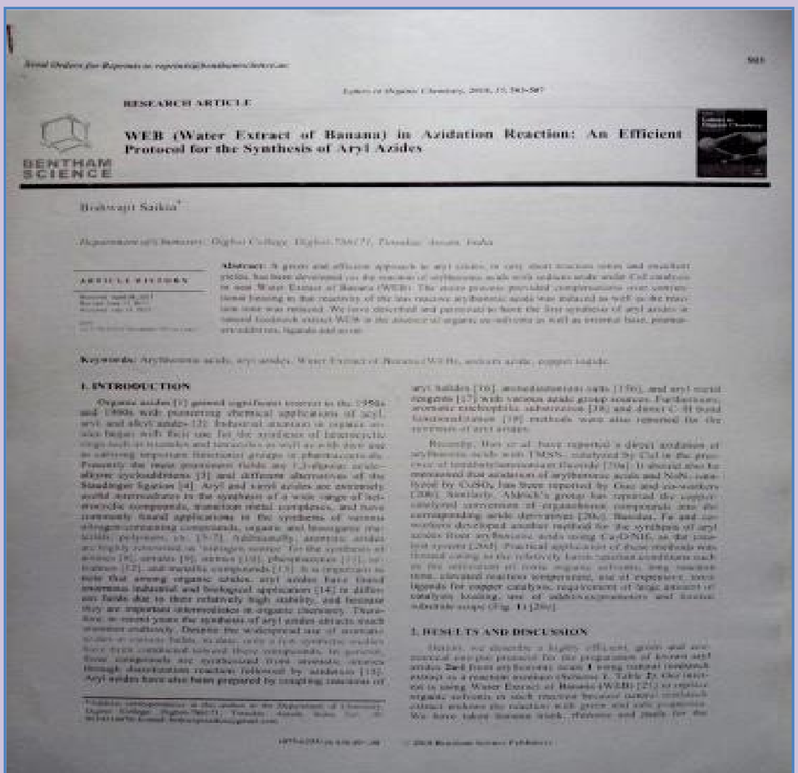
Abstract: We have developed a new chromium based reagent 'DABCO-bis-CC' for the straightforward oxidation of alcohols to corresponding carbonyl compounds with high efficiency. The present work demonstrates a broad range of alcohols including primary, secondary, aliphatic, benzylic and heterocyclic alcohols are tolerated as substrates at room temperature.

Keywords: Oxidation, chromium, DABCO-*bis*-CC, alcohol, ketones, aldehyde.

1. INTRODUCTION

2. RESULTS AND DISCUSSIONS

22) Dr. Biswajit Saikia



RESEARCH ARTICLE

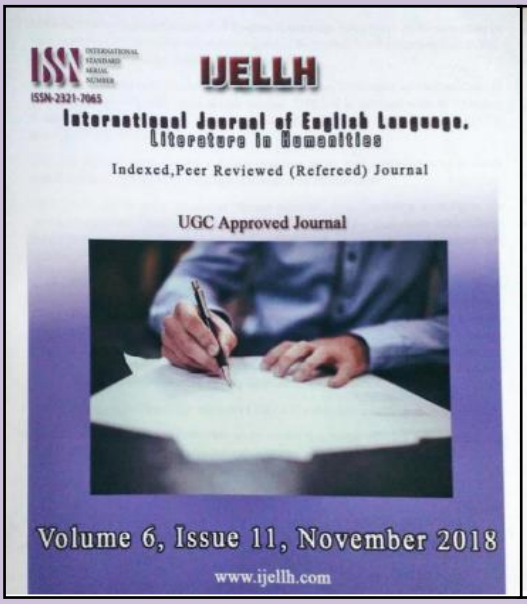
WEB (Water Extract of Banana) in Azidation Reaction: An Efficient Protocol for the Synthesis of Aryl Azides

Biswajit Saikia*

1. INTRODUCTION

2. RESULTS AND DISCUSSION

23) Dr. Pabitra Bharali



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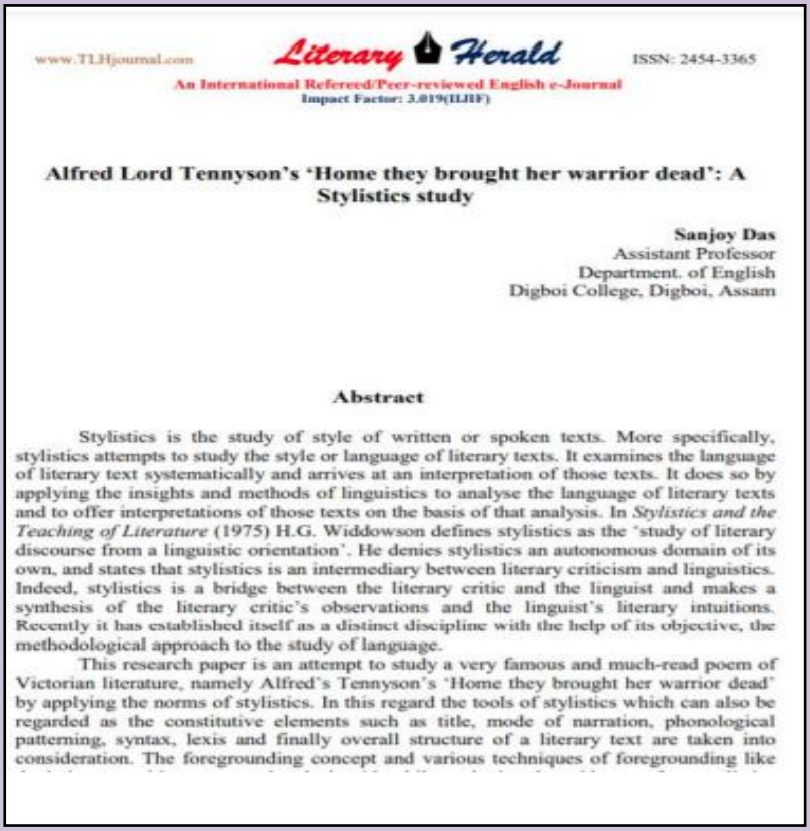
Relocating Diasporic Subalterns: Carving of 'space' and 'history' in Michael Ondaatje's In the Skin of a Lion and Amitav Ghosh's In an Antique Land

Abstract:

Diasporic people undergo traumatic sense of rootlessness and dislocation because of the separation from the warmth of native home/culture as well their marginalization in the land of adoption. The postcolonial cultural Diasporas that voluntarily migrate to the promising metropolitan west are shocked to discover their utter subordination and subaltern status. With the denial of access to the institutions of power/authorities, the diasporic persons remain in the margin as subalterns, but instead of giving up the venture, they resist, recreate and revamp themselves and thus carve a space in the official history. Diasporic fiction such as Michael Ondaatje's In the Skin of a Lion and Amitav Ghosh's In an Antique Land, while questioning the hegemonic practices, depict the author's mission to bring the margin to the centre of discourse. While Ondaatje reclaims a neglected history by highlighting the contribution of the migrants to the modernization of Toronto, Canada and thereby suggests what a writer's political role should be; Ghosh brings to light the relationship between diaspora and mobile trading culture in the two ancient continents – Asia and Africa - and in the form of an

24) Sanjoy Das



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Alfred Lord Tennyson's 'Home they brought her warrior dead': A Stylistics study

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Department. of English
Digboi College, Digboi, Assam

Abstract

Stylistics is the study of style of written or spoken texts. More specifically, stylistics attempts to study the style or language of literary texts. It examines the language of literary text systematically and arrives at an interpretation of those texts. It does so by applying the insights and methods of linguistics to analyse the language of literary texts and to offer interpretations of those texts on the basis of that analysis. In *Stylistics and the Teaching of Literature* (1975) H.G. Widdowson defines stylistics as the 'study of literary discourse from a linguistic orientation'. He denies stylistics an autonomous domain of its own, and states that stylistics is an intermediary between literary criticism and linguistics. Indeed, stylistics is a bridge between the literary critic and the linguist and makes a synthesis of the literary critic's observations and the linguist's literary intuitions. Recently it has established itself as a distinct discipline with the help of its objective, the methodological approach to the study of language.

This research paper is an attempt to study a very famous and much-read poem of Victorian literature, namely Alfred's Tennyson's 'Home they brought her warrior dead' by applying the norms of stylistics. In this regard the tools of stylistics which can also be regarded as the constitutive elements such as title, mode of narration, phonological patterning, syntax, lexis and finally overall structure of a literary text are taken into consideration. The foregrounding concept and various techniques of foregrounding like

2019

25) Dr. Nayan Jyoti Khound

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Toxic Trace Metals in the Surface Water Sources of Jia–Bharali River Basin, North Brahmaputra Plain, India—A Hydrochemical Elucidation[1]

Nayan J. Khound[a, *], Parag Phukon[a], and Krishna G. Bhattacharyya[c]

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[b]*Department of Geological Sciences, Gauhati University, Guwahati, India*
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Abstract—Surface water samples from thirty five sources in the Jia Bharali river basin in north Brahmaputra plain, North East India were analyzed for ten toxic trace elements namely As, Cd, Co, Cr, Cu, Fe, Mn, Ni, Pb and Zn. This first ever systematic analysis reveals seasonal variation of these elements with invariably higher concentration during dry season (February–March) in compared to the wet season (July–August) concentration for a period of 2008–2010. All the trace metals were estimated by using atomic absorption spectrometer (Varian AA 220). The whole study area shows As and Zn content below the WHO permissible limit [39] while surface water of some areas are found to be contaminated with Cr, Pb and Fe. Cr in higher in as much as 92% samples in dry season and 69% samples in wet season. Higher Fe concentration is found in 86% dry season samples and in 46% wet season samples. Pb concentration is above permissible limit for most of the study area during dry season (0.11 mg/L). Cd, Ni and Mn are also found to be of higher concentration in isolated areas. The quantity of trace metals in watersources should be checked time to time as their accumulation will cause numerous problems to living being.

Keywords: toxic trace metal, North Brahmaputra Plain, surface water source
DOI: 10.1134/S009780781901010X

INTRODUCTION

Surface water continues to remain a natural resource on which the livelihoods of both the rich and the poor are directly or indirectly dependent [5, 15]. Surface water pollution is therefore not limited to potable water criteria but include the effects on general health of humans, livestock, agriculture, and aquatic life. Trace metals attributing as common pollutants are found to be widely distributed in the river catchments originating from natural sources and processes as chemical weathering, soil erosion, fallout of aerosols from marine, volcanic or arid soils sources [13]. However as a result of human inputs and activities [26], the level of these metals in the environment has increased tremendously. For some metals like Hg and Cd, natural and anthropogenic inputs are of the same order whereas for others like Pb, inputs due to human activities dwarf natural inputs [10]. The metals present in trace quantity are important for life as it helps and regulates many physiological function of the body. The same metal, however, can cause severe toxicological effects on human health and the aquatic ecosystem. For example metals like Cu, Fe, Mn, Ni, and Zn are essential as micronutrients for life processes in plants and microorganisms while many other metals like Cd, Cr, and Pb have no known physiological activity, they are proved toxic beyond a certain limit [7]. Because of its unique property of dissolving and carrying in suspension a huge variety of chemicals water can easily become contaminated [36] with the consequent negative impact on human health if present above certain limits. Some trace metals like Fe, Mn, Cu, Zn, Co, and Ni are much needed micronutrient for living system and their excess, just the same way their deficiency, can lead to disorder in human body [21]. Among the toxic trace elements, As contamination in the groundwater system in lower Ganga plains and coastal aquifers in West Bengal and Bangladesh is well established. Singh [35] has summarized the related works on As mobilization and contamination of groundwater in the Ganges-Brahmaputra river basin. Concern on higher As content in the groundwater in some districts in Assam have been raised in recent times based on some sporadic works and a screening

26) Dr. Poban Gogoi

Research Paper | Education | E-ISSN No : 2454-9916 | Volume : 5 | Issue : 4 | April 2019

CONSTRUCTION AND STANDARDIZATION OF TEACHERS' PERCEPTION ON LEADERSHIP EFFECTIVENESS SCALE (TPLES)

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[2] Associate Professor, Department of Education, Dibrugarh University, Assam, India.

ABSTRACT

The present research paper is the outcome of an attempt to construct and standardise a scale for the college level teachers to measure their perception on Principals' leadership effectiveness. The final scale consisted of 60 statements distributed over six dimensions of leadership effectiveness. The reliability of the scale was calculated by using split-half method and it was found to be 0.94. Content validity of the scale was ensured by a team of experts from the Department of Education, Dibrugarh University, Assam, India.

KEY WORDS: Leadership Effectiveness, College Teachers, Perception.

1. INTRODUCTION:

Leadership means organizing a group of people to achieve a common goal. The leader may or may not have any formal authority. Leadership is a process whereby an individual influences a group of individuals to arrive at a common goal. Leaders get things done through other people or followers. They set the direction and get other people to follow them accordingly. The concept of leadership Effectiveness differs from person to person. It is because of the fact that the type of consequence or outcome is used to determine how successful a leader is. Leadership effectiveness can be explained as a leader's success in influencing subordinates to achieving organizational goal. Effective leader has the ability to integrate successfully and maximize available resources within the internal and external environment for the attainment of organizational or societal goals.

This research paper is the outcome of an attempt to construct and standardise a scale for measuring teachers' perception on leadership effectiveness of Principals.

2. RATIONALE OF CONSTRUCTION OF THE TOOL:

The demand and need for development of new and standardized tool is growing to a certain extent because of the fact that most of the tools are having reliability and validity in the context of a particular area only. Though several leadership scale and questionnaires are there to measure perception of teachers on Principal's leadership effectiveness but the investigator did not find any suitable scale/questionnaire to measure the perception of the college teachers on Principal's leadership effectiveness in the colleges of Assam, in general and in the col-

whole scenario of collegiate education has been changed tremendously. Besides, most of the Governing Bodies of the colleges have appointed new permanent Principal in accordance with new rules and regulations provided by Directorate of Higher Education (DHE), Assam. At this changing situation, construction of a new leadership effectiveness scale by incorporating all those recent impressions of the colleges is a matter of urgent concern.

Keeping this gap in mind, the investigator attempted to construct and standardise the present tool viz. Teachers' Perception on Leadership Effectiveness Scale (TPLES).

3. STEPS FOLLOWED FOR CONSTRUCTION AND STANDARDIZATION OF TPLES:

The investigator decided to follow Likerts' technique to construct and standardize the Teachers' Perception on Leadership Effectiveness Scale (TPLES). Accordingly the following steps have been carried out for construction of the scale:

3.1 Preparing and editing of statements
3.2 Try-out
3.3 Item analysis and preparation of the final draft
3.4 Standardisation of the Scale
  a. Determination of reliability

27)Sanjoy Das

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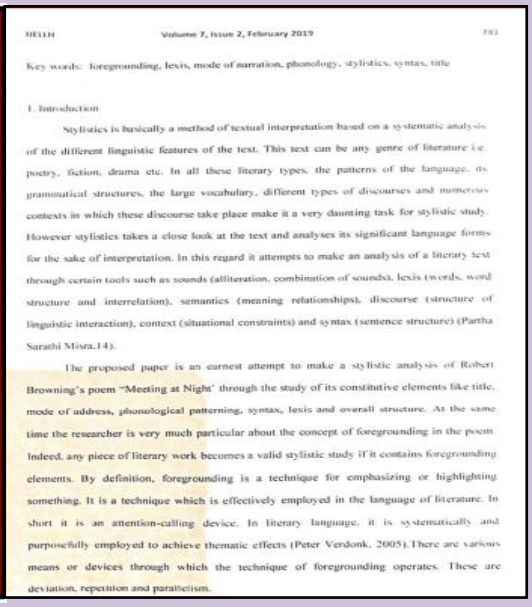
Certificate of Achievement

This certificate accredits that Sanjoy Das has successfully published the research Paper entitled Robert Browning's "Meeting at Night": A Stylistics Perspective in IJELLH Volume 7, Issue 2, February 2019.

For IJELLH

Editor-in-Chief

Certificate No: IJELLH/9186



IJELLH Volume 7, Issue 2, February 2019 781

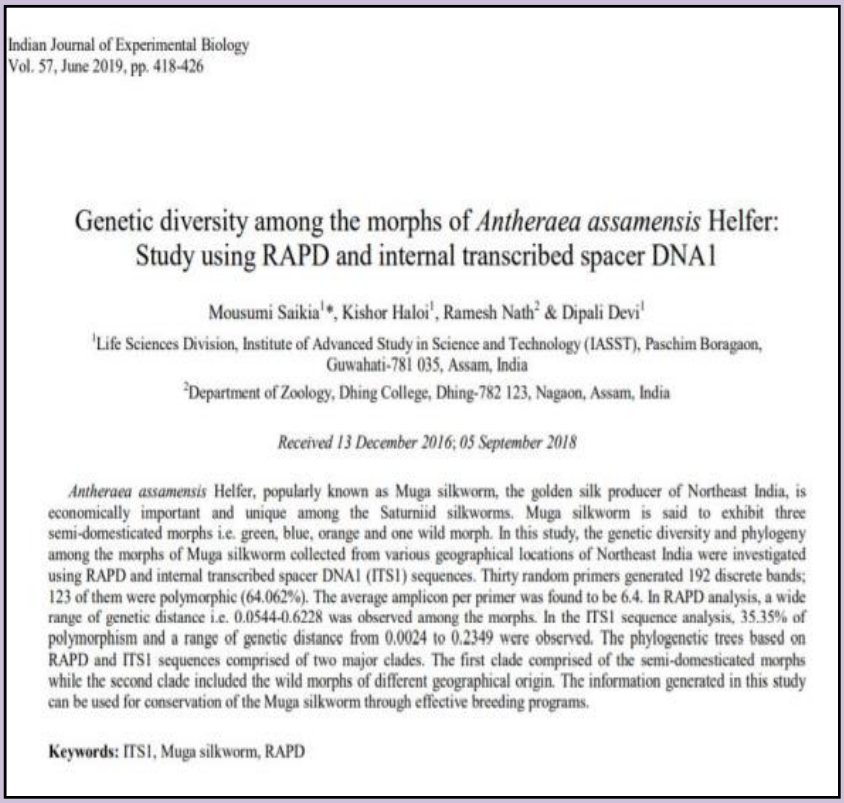
Key words: foregrounding, lexis, mode of narration, phonology, stylistics, syntax, title

1. Introduction

Stylistics is basically a method of textual interpretation based on a systematic analysis of the different linguistic features of the text. This text can be any genre of literature i.e. poetry, fiction, drama etc. In all these literary types, the patterns of the language, its grammatical structures, the large vocabulary, different types of discourses and numerous contexts in which these discourse take place make it a very daunting task for stylistic study. However stylistics takes a close look at the text and analyses its significant language forms for the sake of interpretation. In this regard it attempts to make an analysis of a literary text through certain tools such as sounds (alliteration, combination of sounds), lexis (words, word structure and interrelation), semantics (meaning relationships), discourse (structure of linguistic interaction), context (situational constraints) and syntax (sentence structure) (Partha Sarathi Misra,14).

The proposed paper is an earnest attempt to make a stylistic analysis of Robert Browning's poem "Meeting at Night' through the study of its constitutive elements like title, mode of address, phonological patterning, syntax, lexis and overall structure. At the same time the researcher is very much particular about the concept of foregrounding in the poem. Indeed, any piece of literary work becomes a valid stylistic study if it contains foregrounding elements. By definition, foregrounding is a technique for emphasizing or highlighting something. It is a technique which is effectively employed in the language of literature. In short it is an attention-calling device. In literary language, it is systematically and purposefully employed to achieve thematic effects (Peter Verdonk, 2005).There are various means or devices through which the technique of foregrounding operates. These are deviation, repetition and parallelism.

28) Dr. Kishor Haloi



Indian Journal of Experimental Biology
Vol. 57, June 2019, pp. 418-426

Genetic diversity among the morphs of *Antheraea assamensis* Helfer: Study using RAPD and internal transcribed spacer DNA1

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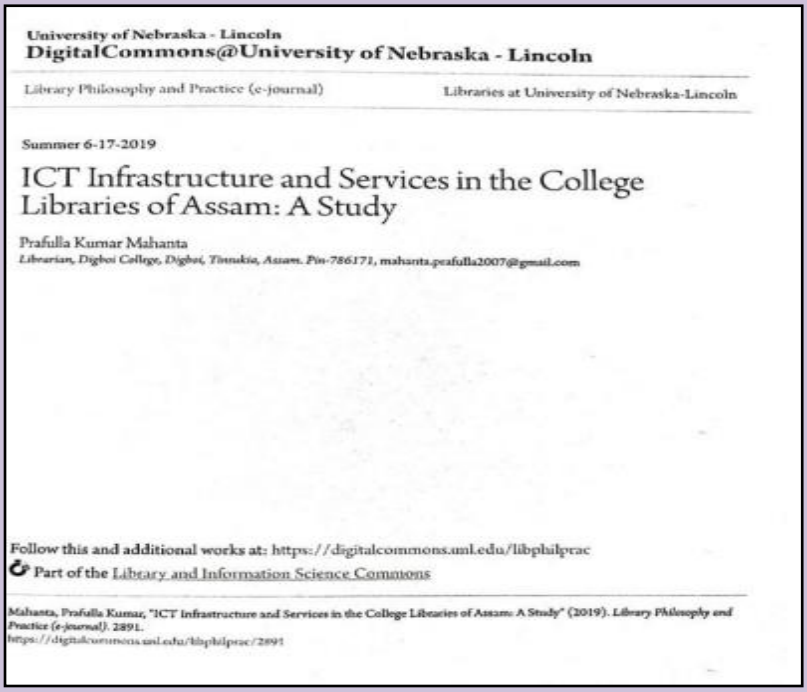
Antheraea assamensis Helfer, popularly known as Muga silkworm, the golden silk producer of Northeast India, is economically important and unique among the Saturniid silkworms. Muga silkworm is said to exhibit three semi-domesticated morphs i.e. green, blue, orange and one wild morph. In this study, the genetic diversity and phylogeny among the morphs of Muga silkworm collected from various geographical locations of Northeast India were investigated using RAPD and internal transcribed spacer DNA1 (ITS1) sequences. Thirty random primers generated 192 discrete bands; 123 of them were polymorphic (64.062%). The average amplicon per primer was found to be 6.4. In RAPD analysis, a wide range of genetic distance i.e. 0.0544-0.6228 was observed among the morphs. In the ITS1 sequence analysis, 35.35% of polymorphism and a range of genetic distance from 0.0024 to 0.2349 were observed. The phylogenetic trees based on RAPD and ITS1 sequences comprised of two major clades. The first clade comprised of the semi-domesticated morphs while the second clade included the wild morphs of different geographical origin. The information generated in this study can be used for conservation of the Muga silkworm through effective breeding programs.

Keywords: ITS1, Muga silkworm, RAPD

29) Dr. Prafulla Kumar Mahanta



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Library Philosophy and Practice (e-journal) — Libraries at University of Nebraska-Lincoln

Summer 6-17-2019

ICT Infrastructure and Services in the College Libraries of Assam: A Study

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30) Dr. Biswajit Saikia

Original Article
Asian Pacific Journal of Tropical Medicine
journal homepage: www.apjtm.org

Antimalarial activity of a novel series of artemisinin–derived 1, 2, 3–triazole dimers

Kabita Gogoi[1], Gokul Baishya[2], Biswajit Saikia[3], Nabin Chandra Barua[2], Chandrajit Dobutia[1,*], Akalesh Kumar Verma[4], Anil Prakash[1,4]

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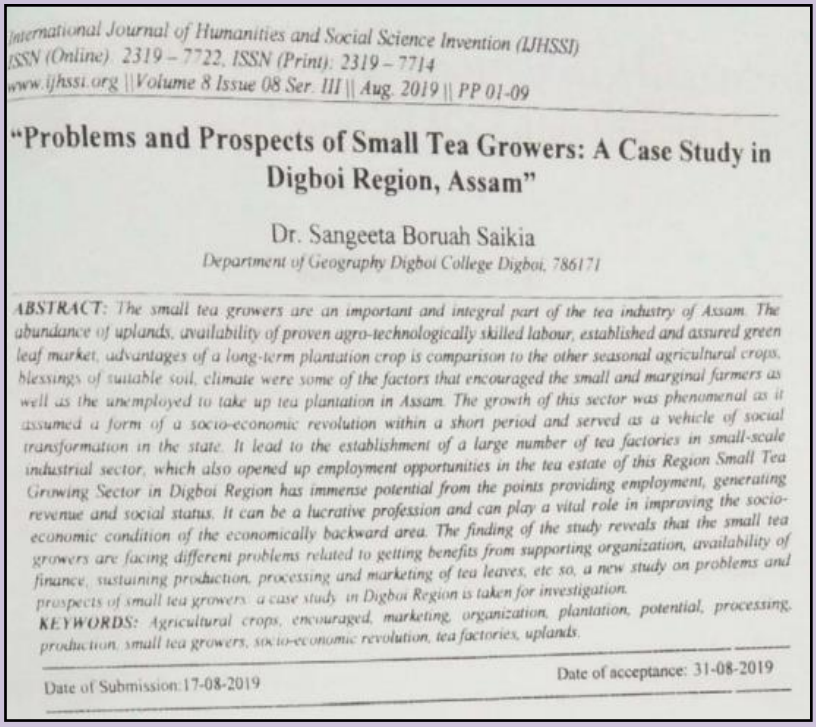
Molecular docking

ABSTRACT
Objective: To obtain suitable artemisinin-based drug candidates with high antimalarial activity.
Methods: Three different reaction schemes were used to synthesize a total of 15 artemisinin-based compounds. The first synthetic scheme involved the synthesis of diazido aliphatic and aromatic compounds from commercially available diiodides and azido derivatives of artemisinin. The second scheme consisted of the reaction of dibromoaliphatic compounds with sodium azide in dimethylformamide which yielded the desired compounds. Artemisinin-based compounds on treatment with sodium azide and bromotrimethylsilane in dichloromethane produced the most potent compound GB-2. Another potent compound GB-1 was synthesized from artemisinin by treatment with alcohols in the presence of Amberlyst-15 in anhydrous dichloromethane. The third scheme involved the Huisgen 1,3-dipolar cycloaddition between the synthesized aliphatic and aromatic diazides and two alkyne derivatives of artemisinin to obtain the desired artemisinin dimers with average yields.
Results: The best in vitro antiplasmodial activity was shown by the compound GB-2 registering IC_{50} value 0.066 μg/mL against chloroquine-sensitive and 0.865 μg/mL against chloroquine-resistant strain of *Plasmodium falciparum*. It suppressed 59.0% parasitaemia in vivo of rodent malaria parasite *Plasmodium berghei* in Swiss albino model at 50 μg/kg body weight dosage. Molecular docking interactions of *Plasmodium falciparum* ATP6 (PfATP6) protein revealed strong binding of GB-2 with Thr255 residue which is likely to be the reason for excellent antimalarial activity of this compound.
Conclusions: Two compounds GB-1 and GB-2 exhibited excellent in vivo antiplasmodial activity and fair in vitro antimalarial activity. Of the two, GB-2 showed better activity which could be attributed to its strong bonding interactions with Thr255 as evidenced from the molecular docking study. Study helped in identifying artemisinin analogues possessing good antimalarial properties and further research in structural alterations of the selected molecules should be carried out which may result in obtaining potent drug candidates against the malarial parasite.

31) Dr. Sangeeta Baruah Saikia



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"Problems and Prospects of Small Tea Growers: A Case Study in Digboi Region, Assam"

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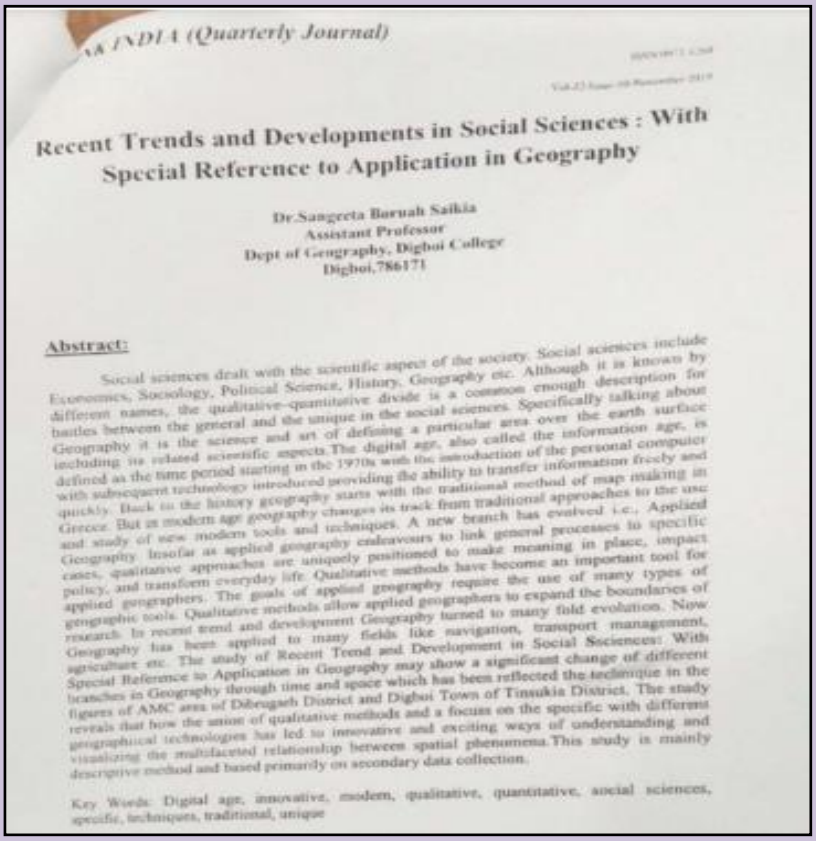
Department of Geography Digboi College Digboi, 786171

ABSTRACT: *The small tea growers are an important and integral part of the tea industry of Assam. The abundance of uplands, availability of proven agro-technologically skilled labour, established and assured green leaf market, advantages of a long-term plantation crop is comparison to the other seasonal agricultural crops, blessings of suitable soil, climate were some of the factors that encouraged the small and marginal farmers as well as the unemployed to take up tea plantation in Assam. The growth of this sector was phenomenal as it assumed a form of a socio-economic revolution within a short period and served as a vehicle of social transformation in the state. It lead to the establishment of a large number of tea factories in small-scale industrial sector, which also opened up employment opportunities in the tea estate of this Region Small Tea Growing Sector in Digboi Region has immense potential from the points providing employment, generating revenue and social status. It can be a lucrative profession and can play a vital role in improving the socio-economic condition of the economically backward area. The finding of the study reveals that the small tea growers are facing different problems related to getting benefits from supporting organization, availability of finance, sustaining production, processing and marketing of tea leaves, etc so, a new study on problems and prospects of small tea growers. a case study in Digboi Region is taken for investigation.*

KEYWORDS: *Agricultural crops, encouraged, marketing, organization, plantation, potential, processing, production, small tea growers, socio-economic revolution, tea factories, uplands.*

Date of Submission:17-08-2019 Date of acceptance: 31-08-2019

32) Dr. Sangeeta baruah saikia



AA INDIA (Quarterly Journal)

Recent Trends and Developments in Social Sciences : With Special Reference to Application in Geography

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Dept of Geography, Digboi College
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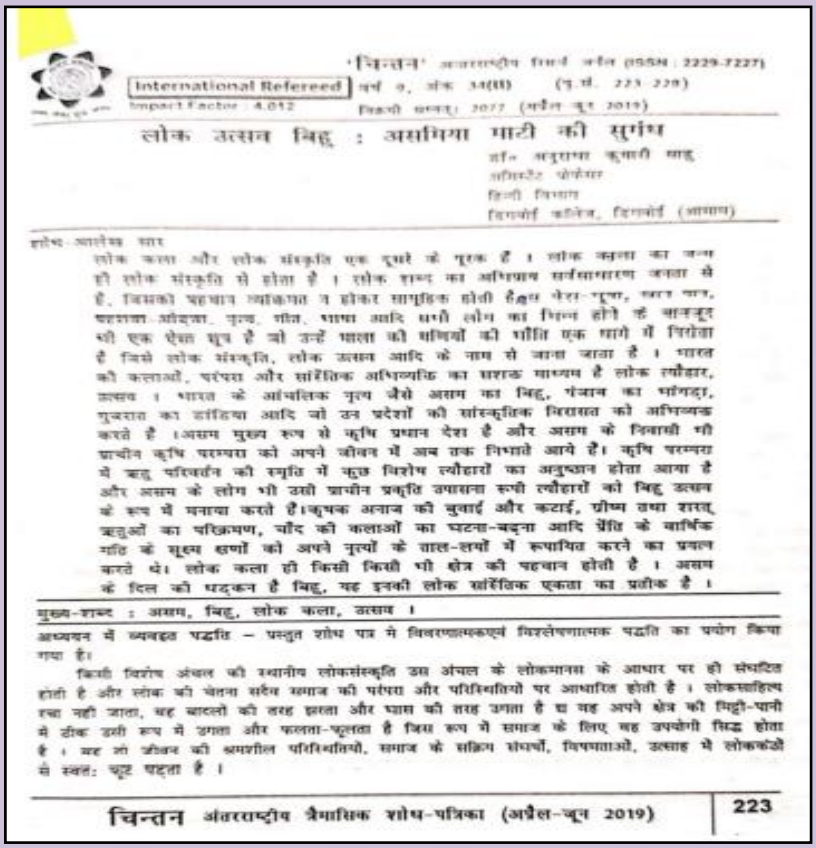
Abstract:

Social sciences dealt with the scientific aspect of the society. Social sciences include Economics, Sociology, Political Science, History, Geography etc. Although it is known by different names, the qualitative-quantitative divide is a common enough description for battles between the general and the unique in the social sciences. Specifically talking about Geography it is the science and art of defining a particular area over the earth surface including its related scientific aspects.The digital age, also called the information age, is defined as the time period starting in the 1970s with the introduction of the personal computer with subsequent technology introduced providing the ability to transfer information freely and quickly. Back to the history geography starts with the traditional method of map making in Greece. But in modern age geography changes its track from traditional approaches to the use and study of new modern tools and techniques. A new branch has evolved i.e., Applied Geography. Insofar as applied geography endeavours to link general processes to specific cases, qualitative approaches are uniquely positioned to make meaning in place, impact policy, and transform everyday life. Qualitative methods have become an important tool for applied geographers. The goals of applied geography require the use of many types of geographic tools. Qualitative methods allow applied geographers to expand the boundaries of research. In recent trend and development Geography turned to many field evolution. Now Geography has been applied to many fields like navigation, transport management, agriculture etc. The study of Recent Trend and Development in Social Sciences: With Special Reference to Application in Geography may show a significant change of different branches in Geography through time and space which has been reflected the technique in the figures of AMC area of Dibrugarh District and Digboi Town of Tinsukia District. The study reveals that how the union of qualitative methods and a focus on the specific with different geographical technologies has led to innovative and exciting ways of understanding and visualizing the multifaceted relationship between spatial phenomena.This study is mainly descriptive method and based primarily on secondary data collection.

Key Words: Digital age, innovative, modern, qualitative, quantitative, social sciences, specific, techniques, traditional, unique

33) Dr. Anuradha Kumari Sahu



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लोक उत्सव बिहू : असमिया माटी की सुगंध

डॉ० अनुराधा कुमारी साहू
असिस्टेंट प्रोफेसर
हिन्दी विभाग
डिगबोई कॉलेज, डिगबोई (असम)

शोध-आलेख सार

लोक कला और लोक संस्कृति एक दूसरे के पूरक हैं । लोक कला का जन्म ही लोक संस्कृति से होता है । लोक शब्द का अभिप्राय सर्वसाधारण जनता से है, जिसकी पहचान व्यक्तिगत न होकर सामूहिक होती है। इस लेख-सूची, खान पान, पहनावा-ओढ़ना, नृत्य, गीत, भाषा आदि सभी लोग का चिन्ह होते हैं वास्तुकला भी एक ऐसा सूत्र है जो उन्हें शाला की शक्तियों की भाँति एक सूत्र में पिरोता है जिसे लोक संस्कृति, लोक उत्सव आदि के नाम से जाना जाता है । भारत की कलाओं, परंपरा और सांस्कृतिक अभिव्यक्ति का सशक्त माध्यम है लोक त्यौहार, उत्सव । भारत के आंचलिक नृत्य जैसे असम का बिहू, पंजाब का भांगड़ा, गुजरात का डांडिया आदि जो उन प्रदेशों की सांस्कृतिक विरासत को अभिव्यक्त करते हैं ।असम मुख्य रूप से कृषि प्रधान देश है और असम के निवासी भी प्राचीन कृषि परम्परा को अपने जीवन में अब तक निभाते आये हैं। कृषि परम्परा से बिहू परिवर्तन की स्मृति में कुछ विशेष त्यौहारों का अनुष्ठान होता आया है और असम के लोग भी उसी प्राचीन प्रकृति उपासना रूपी त्यौहारों को बिहू उत्सव के रूप में मनाया करते हैं।कृषक अनाज की बुवाई और कटाई, ग्रीष्म तथा शरद् ऋतुओं का परिक्रमण, चाँद की कलाओं का घटना-बढ़ना आदि खेति के वार्षिक गति के सूक्ष्म क्षणों को अपने नृत्यों के ताल-लयों में रूपायित करने का प्रयत्न करते थे। लोक कला ही किसी किसी भी क्षेत्र की पहचान होती है । असम के दिल की धड़कन है बिहू, यह इनकी लोक सांस्कृतिक एकता का प्रतीक है ।

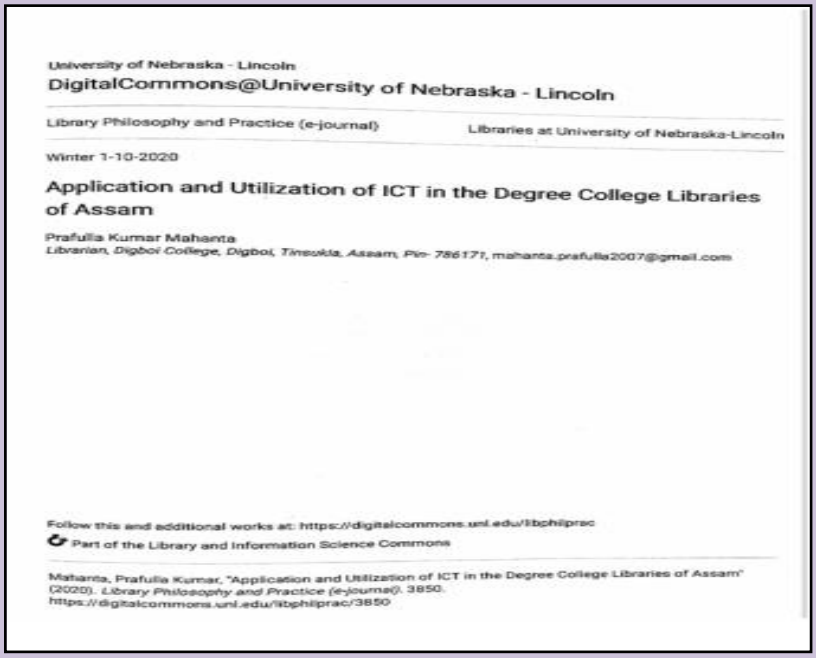
मुख्य-शब्द : असम, बिहू, लोक कला, उत्सव ।

अध्ययन में व्यवहृत पद्धति – प्रस्तुत शोध पत्र में विवरणात्मकएवं विश्लेषणात्मक पद्धति का प्रयोग किया गया है।

किसी विशेष अंचल की स्थानीय लोकसंस्कृति उस अंचल के लोकमानस के आधार पर ही संघटित होती है और लोक की चेतना सदैव समाज की परंपरा और परिस्थितियों पर आधारित होती है । लोकसाहित्य रचा नहीं जाता, वह बादलों की तरह झरता और घास की तरह उगता है या वह अपने क्षेत्र की मिट्टी-पानी में ठीक उसी रूप में उगता और फलता-फूलता है जिस रूप में समाज के लिए वह उपयोगी सिद्ध होता है । वह तो जीवन की श्रमशील परिस्थितियों, समाज के सक्रिय संघर्षों, विपन्नताओं, उत्साह में लोककंठों से स्वतः फूट पड़ता है ।

2020

34) Dr. Prafulla Kumar Mahanta



Winter 1-10-2020

Application and Utilization of ICT in the Degree College Libraries of Assam

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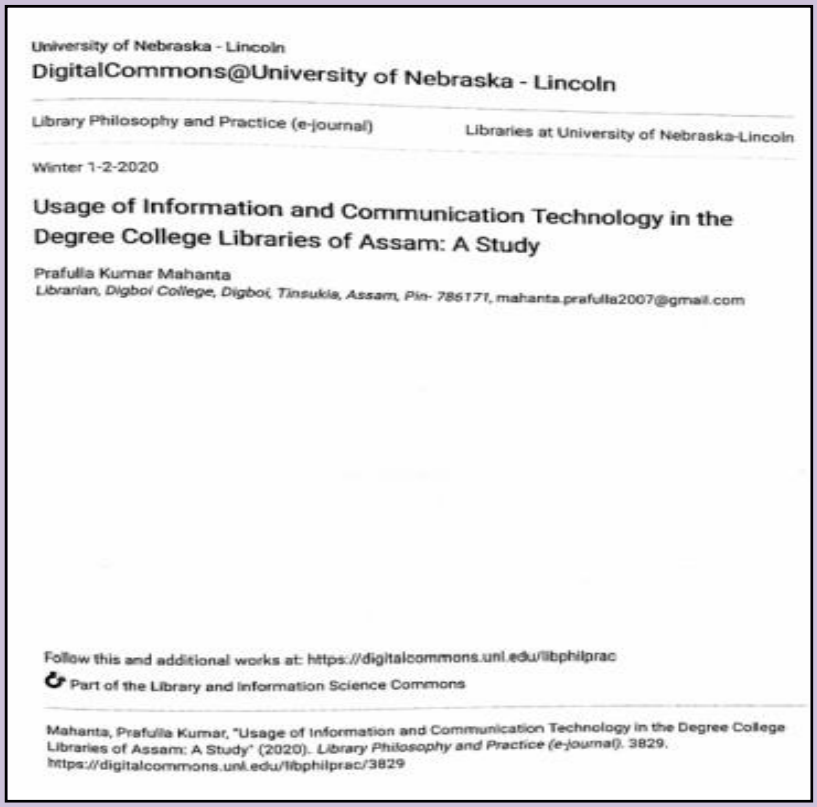
35) Dr. Prafulla Kumar Mahanta



Winter 1-2-2020

Usage of Information and Communication Technology in the Degree College Libraries of Assam: A Study

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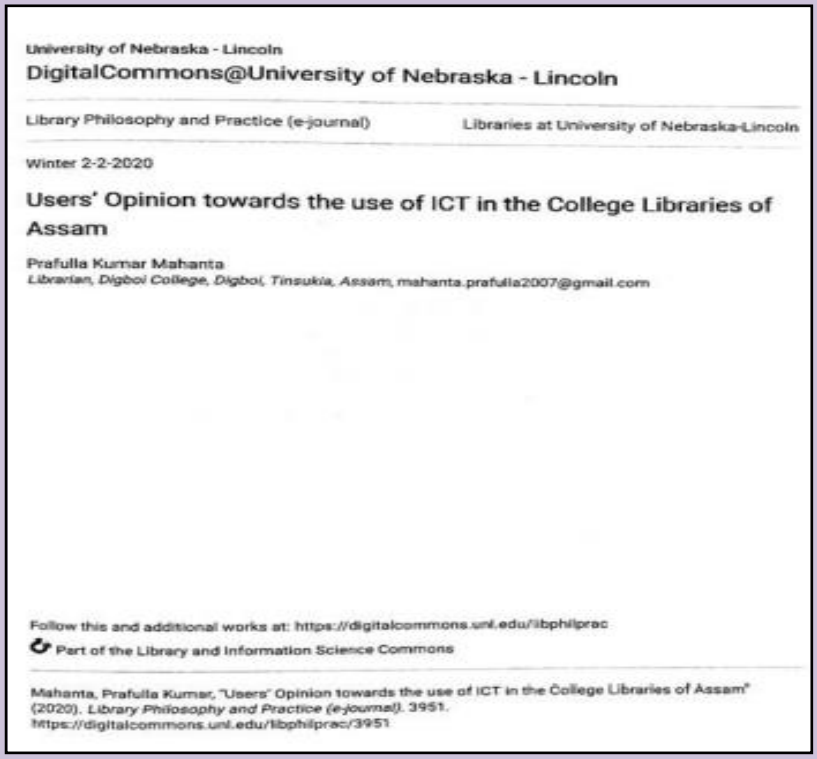
36) Dr. Prafulla Kumar Mahanta



Winter 2-2-2020

Users' Opinion towards the use of ICT in the College Libraries of Assam

Prafulla Kumar Mahanta
Librarian, Digboi College, Digboi, Tinsukia, Assam, mahanta.prafulla2007@gmail.com

37) Dr. Sampritee baruah

Studies in Indian Place Names
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Awareness of Green Banking Among the Customers of Select Public Sector Banks Operating in Assam

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Research Scholar,
Gauhati University

Dr. Kalyan Mukherjee,
Hojai College

ABSTRACT

The concept of green banking has assumed a significant impact in recent times especially in backdrop of growing concerns for widespread environmental damages. The banks constitute a significant paper consumer population of Indian paper industry and therefore adoption of green banking products (viz. Internet banking, generating online statement, green channel counter etc) will go a long way in promotion of a sustainable and greener world.

Banks can do much more to help the environment than just promote online banking. As we know that banks themselves is not a polluter but it's having relationship with some companies and institution which are polluters or could be in future. So the bank and other financial institution can provide a vital support in maintain the environmental and sustaining the economic development by encouraging prudent lending and environmentally responsible investment to the institution, which are became green and which are on its way to get green.

38) Karuna Phukan

GIS Business

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The Challenges of Human Development in India

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Abstract

This study is an attempt to check the degree and trend of human development in India and also to find out the factors responsible for India's pathetic position in Human Development Index. Using secondary data for statistical analysis the study finds that though the country has successfully maintained to have an upward trend in human development yet its achievement is much lower compared to the developed world. In order to find out the challenges of human development the study carries out the Prais- Winsten Regression analysis using time series data for the period 1990-2018 and finds poverty, illiteracy and unemployment as the major responsible factors.

39) Dr. kishor Haloi

International Journal of Entomology Research

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Alteration of gut histology and induced toxicity in flacherie infected muga silkworm, *Antheraea assamensis* Helfer (Saturniidae: Lepidoptera)

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[1, 3] Department of Zoology, Digboi College, Digboi, Assam, India
[2] Seribiotech Unit, Life Sciences Division, Institute of Advanced Study in Science and Technology, Guwahati, Assam, India
* Corresponding Author: Kishor Haloi

Abstract
Antheraea assamensis Helfer, known as muga silkworm being wild in nature are exposed to various conditions of changing environment. Therefore, the muga silkworms are prone to various bacterial diseases including flacherie. In present study microbial strains *Staphylococcus aureus* strain FLG1 (KR025521), *Bacillus thuringiensis* strain MK1 (KR069143) and *Pseudomonas aeruginosa* strain DRK1 (KP688076) isolated from the gut of flacherie diseased muga silkworm were used to study their effect on alanineaminotransferase (ALT) activity and gut histology. Study results revealed that both oral administration and injected groups of larvae had an altered activity of ALT in different time interval. The midgut of oral administration group showed higher enzymatic activity than foregut and hindgut, however infected groups showed higher activity than control one. At 24 h, both *B. thuringienesis* and *P. aerogonisa* showed significantly higher ALT activity, however in *S. aureus* infected group the alteration was not significant at 48 and 72 h. Moreover, in bacteria injected group, 24 h of infection did not show significant alteration in foregut, however at 48 and 72 h significantly higher ALT activity was observed. The midgut and hindgut showed significantly higher ALT activity at 24 – 72 h of infection period. Similarly in oral administered groups, alteration in gut line, degenerative changes in mucous layer, broken and fused microvilli were observed.

Keywords: Muga silkworm, flacherie, alt activity, gut histology

40) Dr. Moni kankana Kalita

International Journal of Entomology Research

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[1, 3] Department of Zoology, Digboi College, Digboi, Assam, India
[2] Seribiotech Unit, Life Sciences Division, Institute of Advanced Study in Science and Technology, Guwahati, Assam, India
* Corresponding Author: Kishor Haloi

Abstract
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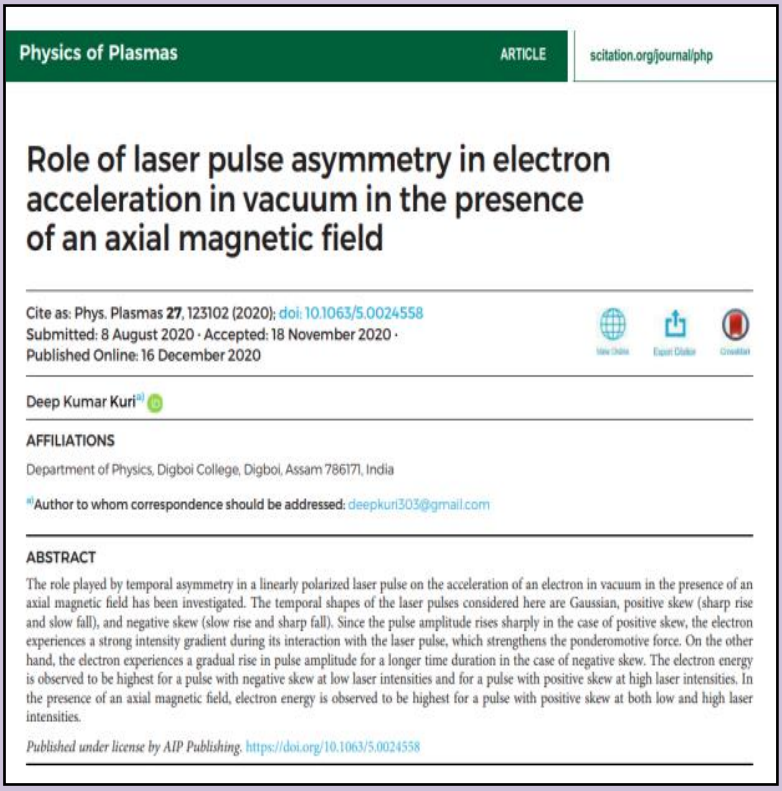
Keywords: Muga silkworm, flacherie, alt activity, gut histology

41) Dr. Deep Kumar Kuri



Physics of Plasmas ARTICLE scitation.org/journal/php

Role of laser pulse asymmetry in electron acceleration in vacuum in the presence of an axial magnetic field

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Submitted: 8 August 2020 · Accepted: 18 November 2020 ·
Published Online: 16 December 2020

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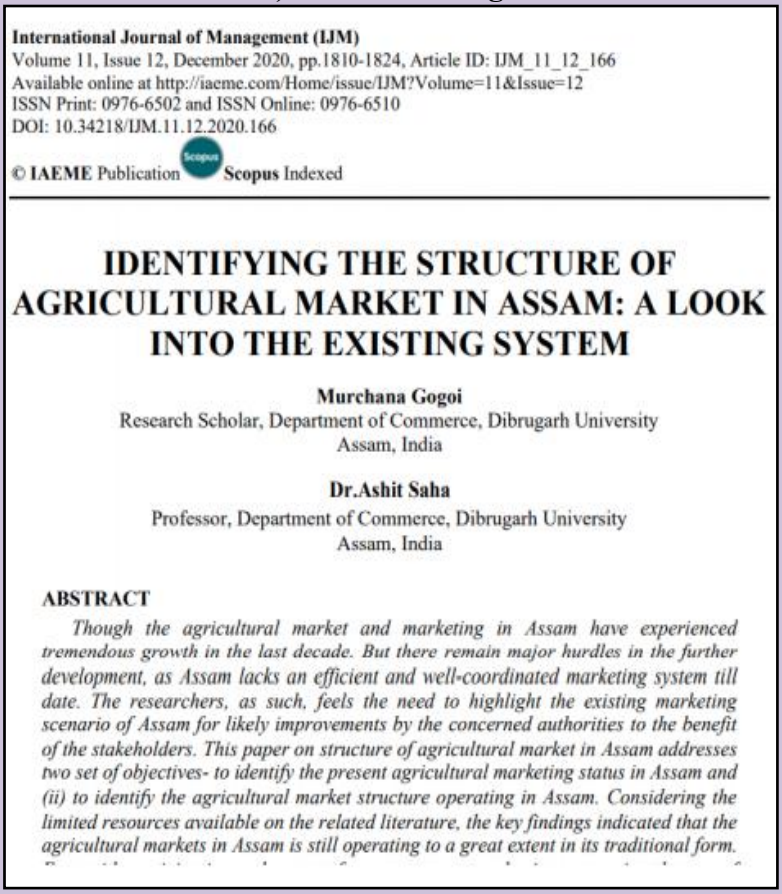
ABSTRACT

The role played by temporal asymmetry in a linearly polarized laser pulse on the acceleration of an electron in vacuum in the presence of an axial magnetic field has been investigated. The temporal shapes of the laser pulses considered here are Gaussian, positive skew (sharp rise and slow fall), and negative skew (slow rise and sharp fall). Since the pulse amplitude rises sharply in the case of positive skew, the electron experiences a strong intensity gradient during its interaction with the laser pulse, which strengthens the ponderomotive force. On the other hand, the electron experiences a gradual rise in pulse amplitude for a longer time duration in the case of negative skew. The electron energy is observed to be highest for a pulse with negative skew at low laser intensities and for a pulse with positive skew at high laser intensities. In the presence of an axial magnetic field, electron energy is observed to be highest for a pulse with positive skew at both low and high laser intensities.

42) Murchana Gogoi



International Journal of Management (IJM)
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Available online at http://iaeme.com/Home/issue/IJM?Volume=11&Issue=12
ISSN Print: 0976-6502 and ISSN Online: 0976-6510
DOI: 10.34218/IJM.11.12.2020.166

IDENTIFYING THE STRUCTURE OF AGRICULTURAL MARKET IN ASSAM: A LOOK INTO THE EXISTING SYSTEM

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Assam, India

Dr.Ashit Saha
Professor, Department of Commerce, Dibrugarh University
Assam, India

ABSTRACT

Though the agricultural market and marketing in Assam have experienced tremendous growth in the last decade. But there remain major hurdles in the further development, as Assam lacks an efficient and well-coordinated marketing system till date. The researchers, as such, feels the need to highlight the existing marketing scenario of Assam for likely improvements by the concerned authorities to the benefit of the stakeholders. This paper on structure of agricultural market in Assam addresses two set of objectives- to identify the present agricultural marketing status in Assam and (ii) to identify the agricultural market structure operating in Assam. Considering the limited resources available on the related literature, the key findings indicated that the agricultural markets in Assam is still operating to a great extent in its traditional form.

43) Dr. Lakshmi Devi

Solid State Technology
ISSN: 0038-111X
Vol. 63, No. 1, (2020)

Mass Mediation of Bihu Dance and Songs in Assamese Cinema with reference to *Joymoti* and *Maniram Dewan*

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Abstract- The paper focuses on the differences of folk media forms of Bihu dance and songs and the mass mediated forms of Bihu dance and songs. Bihu is the most vibrant folk festival in Assam. Oral literature, material culture, folk customs and rituals, folk performing art forms are associated with Bihu. Bihu dance and songs are included in the folk performing arts associated with Bihu. The folk songs and folk dance of Bihu has grassroots involvement among people. The lyrics are either transmitted from generations or are created by folk artist in a spontaneous way of expressing folk life experiences. The folk Bihu dance is representative of the nature and suits the expression of the folk Bihu songs. Folk Bihu dance and songs are created and performed by common people through the life and living process of the folk society. On the other hand, mass media express through the fusion of art with technology. Cinema is one of the important mass media. Cinema forms the popular culture. Bihu dance and songs are mass mediated to represent through Assamese cinema. The cinematic form of bihu dance and songs has distinct variations from the folk Bihu dance and songs. Due to the process of shaping popular culture by cinema, the forms of Bihu dance and songs represented through the Assamese cinema definitely deviates from the folk media forms of Bihu dance and songs. Therefore, there are distinct differences between the folk media forms of Bihu dance and songs versus the cinematic forms of Bihu dance and songs in Assamese films. This paper analyses the representation of Bihu dance and songs in Assamese cinema through the process of mass mediation. Two evergreen Assamese cinema *Joymoti* and *Maniram Dewan* are analysed to find out how cinematic representation of Bihu dance and songs are performed. *Joymoti* is the first Assamese film made by Jyotiprasad Agarwala in 1935 and *Maniram Dewan* is one evergreen Assamese film made in 1963 with music direction by Dr Bhupen Hazarika. Both the films are taken as reference for studying the cinematic representation of Bihu dance and songs through Assamese films.

Keywords – Cinematic representation, Folk media, mass mediation, Bihu, Assamese cinema, *Joymoti, Maniram Dewan*

44) Dr. Sampreeti Baruah

International Journal of Advanced Research in Engineering and Technology (IJARET)
Volume 11, Issue 9, September 2020, pp. 226-231, Article ID: IJARET_11_09_023
Available online athttp://www.iaeme.com/IJARET/issues.asp?JType=IJARET&VType=11&IType=9
ISSN Print: 0976-6480 and ISSN Online: 0976-6499
DOI: 10.34218/IJARET.11.9.2020.023

CONSUMER AWARENESS AND GREEN BANKING: A GAREET RANKING APPRAOCH

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Sampreeti Baruah
Assistant Professor, Department of Commerce, Digboi College, Digboi, Assam, India

ABSTRACT

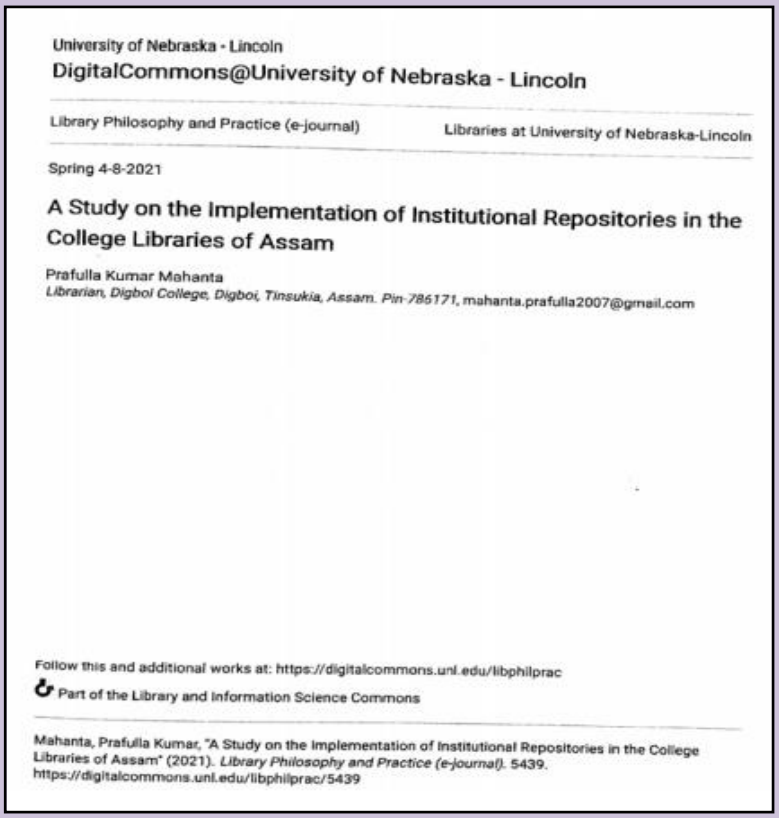
The emerging ICT enhanced concept which is closely associated with banking practices is popularly known as "Green Banking". The term itself implies its environmental benefits. In this study we have investigated the awareness level of the consumers regarding green banking. A detailed investigation is also carried out for the usage of green banking services by the customers.

Keywords: Green Banking, ICT, Environmental Benefits.

Cite this Article: Simismita Borah and Sampreeti Baruah, Consumer Awareness and Green Banking: A Gareet Ranking Appraoch, *International Journal of Advanced Research in Engineering and Technology (IJARET)*, 11(9), 2020, pp. 226-231.
http://www.iacme.com/IJARET/issues.asp?JType=IJARET&VType=11&IType=9

2021

45) Dr. Prafulla Kumar Mahanta



A Study on the Implementation of Institutional Repositories in the College Libraries of Assam

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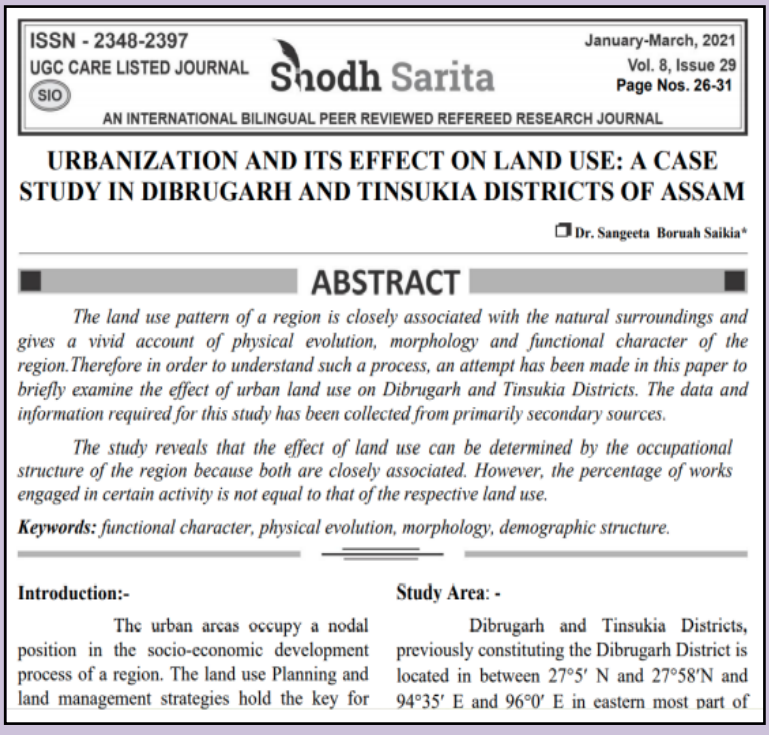
Librarian, Digboi College, Digboi, Tinsukia, Assam. Pin-786171, mahanta.prafulla2007@gmail.com

46) Dr. Sangeeta Baruah Saikia



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January-March, 2021
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AN INTERNATIONAL BILINGUAL PEER REVIEWED REFEREED RESEARCH JOURNAL

URBANIZATION AND ITS EFFECT ON LAND USE: A CASE STUDY IN DIBRUGARH AND TINSUKIA DISTRICTS OF ASSAM

Dr. Sangeeta Boruah Saikia*

ABSTRACT

The land use pattern of a region is closely associated with the natural surroundings and gives a vivid account of physical evolution, morphology and functional character of the region.Therefore in order to understand such a process, an attempt has been made in this paper to briefly examine the effect of urban land use on Dibrugarh and Tinsukia Districts. The data and information required for this study has been collected from primarily secondary sources.

The study reveals that the effect of land use can be determined by the occupational structure of the region because both are closely associated. However, the percentage of works engaged in certain activity is not equal to that of the respective land use.

Keywords: *functional character, physical evolution, morphology, demographic structure.*

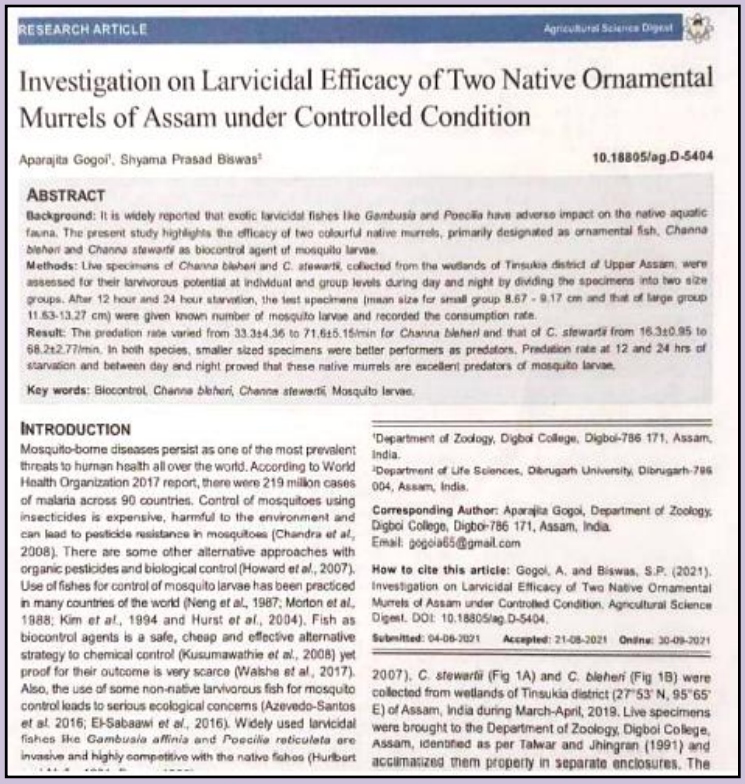
Introduction:-

The urban areas occupy a nodal position in the socio-economic development process of a region. The land use Planning and land management strategies hold the key for

Study Area: -

Dibrugarh and Tinsukia Districts, previously constituting the Dibrugarh District is located in between 27°5′ N and 27°58′N and 94°35′ E and 96°0′ E in eastern most part of

47) Aparijita Gogoi



RESEARCH ARTICLE

Agricultural Science Digest

Investigation on Larvicidal Efficacy of Two Native Ornamental Murrels of Assam under Controlled Condition

Aparajita Gogoi[1], Shyama Prasad Biswas[2]

10.18805/ag.D-5404

ABSTRACT

Background: It is widely reported that exotic larvicidal fishes like *Gambusia* and *Poecilia* have adverse impact on the native aquatic fauna. The present study highlights the efficacy of two colourful native murrels, primarily designated as ornamental fish, *Channa bleheri* and *Channa stewartii* as biocontrol agent of mosquito larvae.

Methods: Live specimens of *Channa bleheri* and *C. stewartii*, collected from the wetlands of Tinsukia district of Upper Assam, were assessed for their larvivorous potential at individual and group levels during day and night by dividing the specimens into two size groups. After 12 hour and 24 hour starvation, the test specimens (mean size for small group 8.67 - 9.17 cm and that of large group 11.63-13.27 cm) were given known number of mosquito larvae and recorded the consumption rate.

Result: The predation rate varied from 33.3±4.36 to 71.6±5.15/min for *Channa bleheri* and that of *C. stewartii* from 16.3±0.95 to 68.2±2.77/min. In both species, smaller sized specimens were better performers as predators. Predation rate at 12 and 24 hrs of starvation and between day and night proved that these native murrels are excellent predators of mosquito larvae.

Key words: Biocontrol, *Channa bleheri*, *Channa stewartii*, Mosquito larvae.

INTRODUCTION

Mosquito-borne diseases persist as one of the most prevalent threats to human health all over the world. According to World Health Organization 2017 report, there were 219 million cases of malaria across 90 countries. Control of mosquitoes using insecticides is expensive, harmful to the environment and can lead to pesticide resistance in mosquitoes (Chandra *et al.*, 2008). There are some other alternative approaches with organic pesticides and biological control (Howard *et al.*, 2007). Use of fishes for control of mosquito larvae has been practiced in many countries of the world (Neng *et al.*, 1987; Morton *et al.*, 1988; Kim *et al.*, 1994 and Hurst *et al.*, 2004). Fish as biocontrol agents is a safe, cheap and effective alternative strategy to chemical control (Kusumawathie *et al.*, 2008) yet proof for their outcome is very scarce (Walshe *et al.*, 2017). Also, the use of some non-native larvivorous fish for mosquito control leads to serious ecological concerns (Azevedo-Santos *et al.* 2016; El-Sabaawi *et al.*, 2016). Widely used larvicidal fishes like *Gambusia affinis* and *Poecilia reticulata* are invasive and highly competitive with the native fishes (Hurlbert

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[2]Department of Life Sciences, Dibrugarh University, Dibrugarh-786 004, Assam, India.

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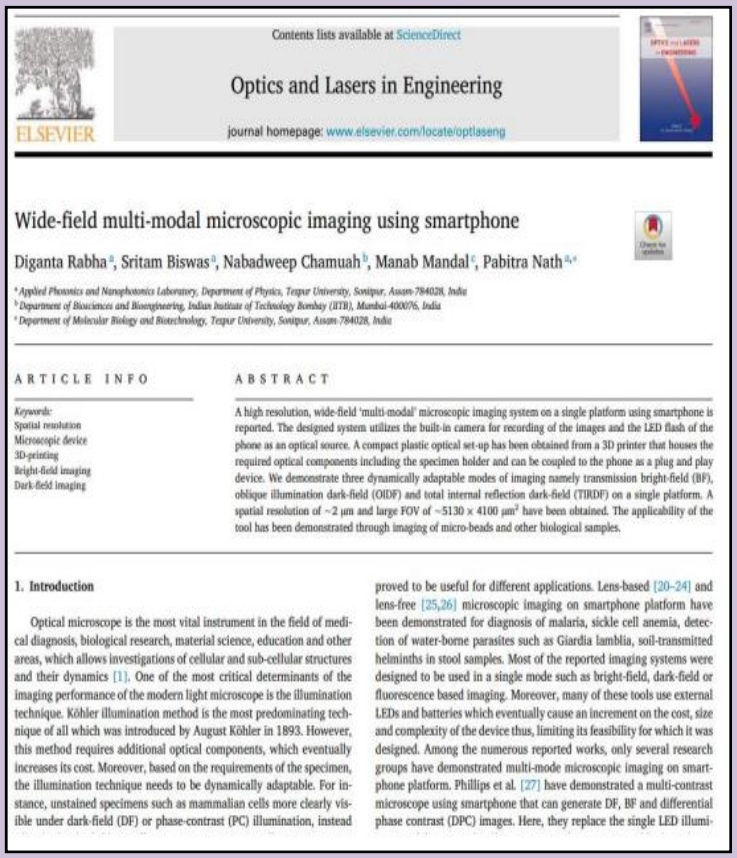
2007). *C. stewartii* (Fig 1A) and *C. bleheri* (Fig 1B) were collected from wetlands of Tinsukia district (27°53' N, 95°65' E) of Assam, India during March-April, 2019. Live specimens were brought to the Department of Zoology, Digboi College, Assam, identified as per Talwar and Jhingran (1991) and acclimatized them properly in separate enclosures. The

48) Dr. Nabadweep Chamuah



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Optics and Lasers in Engineering

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Wide-field multi-modal microscopic imaging using smartphone

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ARTICLE INFO

Keywords:
Spatial resolution
Microscopic device
3D-printing
Bright-field imaging
Dark-field imaging

ABSTRACT

A high resolution, wide-field 'multi-modal' microscopic imaging system on a single platform using smartphone is reported. The designed system utilizes the built-in camera for recording of the images and the LED flash of the phone as an optical source. A compact plastic optical set-up has been obtained from a 3D printer that houses the required optical components including the specimen holder and can be coupled to the phone as a plug and play device. We demonstrate three dynamically adaptable modes of imaging namely transmission bright-field (BF), oblique illumination dark-field (OIDF) and total internal reflection dark-field (TIRDF) on a single platform. A spatial resolution of ~2 μm and large FOV of ~5130 × 4100 μm² have been obtained. The applicability of the tool has been demonstrated through imaging of micro-beads and other biological samples.

1. Introduction

Optical microscope is the most vital instrument in the field of medical diagnosis, biological research, material science, education and other areas, which allows investigations of cellular and sub-cellular structures and their dynamics [1]. One of the most critical determinants of the imaging performance of the modern light microscope is the illumination technique. Köhler illumination method is the most predominating technique of all which was introduced by August Köhler in 1893. However, this method requires additional optical components, which eventually increases its cost. Moreover, based on the requirements of the specimen, the illumination technique needs to be dynamically adaptable. For instance, unstained specimens such as mammalian cells more clearly visible under dark-field (DF) or phase-contrast (PC) illumination, instead proved to be useful for different applications. Lens-based [20–24] and lens-free [25,26] microscopic imaging on smartphone platform have been demonstrated for diagnosis of malaria, sickle cell anemia, detection of water-borne parasites such as Giardia lamblia, soil-transmitted helminths in stool samples. Most of the reported imaging systems were designed to be used in a single mode such as bright-field, dark-field or fluorescence based imaging. Moreover, many of these tools use external LEDs and batteries which eventually cause an increment on the cost, size and complexity of the device thus, limiting its feasibility for which it was designed. Among the numerous reported works, only several research groups have demonstrated multi-mode microscopic imaging on smartphone platform. Phillips et al. [27] have demonstrated a multi-contrast microscope using smartphone that can generate DF, BF and differential phase contrast (DPC) images. Here, they replace the single LED illumi-

49) Dr. Samrat Bharadwaj

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Decoding Consumer Psychology toward Dietary Supplements: A Mediation analysis between Freebies and Brand Loyalty

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ABSTRACT

The present study ponders a significant type of non-monetary form of sales promotion called freebies. It refers to offering a gift of some worth to the customer along with the product purchased. While prior studies focused primarily on monetary forms of sales promotion, a very minimal number of works were conducted on its counterpart. The study bridges the gap between non-monetary sales promotion and brand loyalty in India and inspects into Generation Z consumer behavior toward dietary supplements. It checks whether a freebie campaign influences perceived quality, customer perceived value and purchase intentions. It also investigates the role of the variables as mediators and inspects whether they play any role between freebies and brand loyalty. Intercept method of data collection is applied for the survey across 388 health-conscious respondents. Regression and mediation analysis present that freebies influence the variables positively and partial mediation exists between the causal and outcome variable.

KEYWORDS
Freebies; dietary supplements; perceived quality; purchase intentions; brand loyalty

Subject classification codes
90B60; 91b42

Introduction

Dietary supplements refer to those that compensate for the lapses in the routine diet's daily nutritional requirement. Dietary supplements to be available in the form of tablets, capsules, gummies, liquids, jelly, powders, energy drinks, and energy bars. Researchers like (Dudeja & Gupta, 2017; Télessy, 2018; M. S. Yang, 2021) define these dietary supplements fall under the

50) Dr. Samrat Bharadwaj

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Behavioural intention towards investment in cryptocurrency: an integration of Rogers' diffusion of innovation theory and the technology acceptance model

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DOI: 10.23762/FSO_VOL9_NO4_7

Abstract

Despite being one of the fastest-growing digital assets in the present day, investment in cryptocurrencies is still a matter of questionable interest. Therefore, the present study intends to study the behavioural intention of Generation Z Indians towards investment in cryptocurrencies. With the integration of Rogers' Diffusion of Innovation Theory and the Technology Acceptance Model, the study analyses the behaviour of respondents aged between 18 and 23. Data was collected from 392 respondents using the street-intercept data collection method, which was further tested using structural equation modelling and associated tests. The study finds that complexity, compatibility, and observability influence perceived usefulness and perceived ease of use, which further influence behavioural intention. Besides offering practical implications for crypto exchanges and online trading platforms, it is also found to be novel as it integrates the two most significant theories of technology adoption, contributing significantly to the existing literature.

Key words

Cryptocurrency, Rogers' diffusion of Innovation Theory, Technology Acceptance Model, behavioural intention, generation Z.

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51) Dr. Abhijit Mahanta

Current Research in Green and Sustainable Chemistry

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Effective utilization of basic nature of WEB in copper catalyzed Chan-Lam *N*-arylation reaction under ligand free conditions

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ARTICLE INFO

Keywords:
Cross-coupling
N-arylation
WEB
Sustainable

ABSTRACT

A mild and green protocol has been developed for a copper catalyzed *N*-arylation of anilines and imidazoles under external base/additive, promoter and ligand free conditions. The main advantage of this work is that agro waste WEB (Water Extract of Banana Peel Ash) has emerged as solvent as well as base. The reaction protocol avoids hazardous solvents, toxic chemicals, ligands etc. Interestingly addition of alcoholic co-solvent enhanced the yield of the product.

1. Introduction

N-arylation of aniline and imidazole derivative has attracted significant interest due to the frequent occurrence of these fragments in pharmaceutical and agriculture products [1–5]. In recent years couple of successful methodologies such as Pd catalyzed Buchwald-Hartwig amination and Cu catalyzed Ullmann coupling were established for *N*-arylation of amines [6–8] using aryl halide as arylating agent. Cu mediated Chan-Lam *N*-arylation reaction is another straight forward methodology for this transformation where less-toxic arylboronic acid [9] has been used as arylating agent under mild reaction condition using air as oxidant at room temperature. However, some demerits such as long reaction time [10–12], use of excess of Cu salt [13,14], ligand assisted reaction conditions [15–20], halogenated solvents [21,22] etc. have to be overcome to make this method more applicable.

Consequently, some ligand based catalytic systems were also developed for easy progress and to minimize the reaction time. But, expensive nature of the ligands encourages the researchers for searching some easily available cost-effective reaction conditions.

Nowadays, green chemistry encompasses lots of the research areas such as design of processes which efficiently consume natural feedstock, sustainable resource management [23] and possesses the reduction of waste, hazardous chemicals etc. So, researchers are giving continuous effort towards organic synthetic methodology employing easily available reaction medium and it has shown prospective as a green solvent for organic synthesis. The basic nature of WEB is an interesting property and in many reactions WEB has effectively played dual role as reaction medium as well as base. Recently, WEB and related agro waste based reaction medium has been successfully utilized in Suzuki-Miyaura cross-coupling [25], Henry [26], Dakin [27] reactions, ipso-hydroxylation of arylboronic acid [28,29] peptide synthesis [30], Sonogashira reaction [31] etc.

In this article, we wish to report WEB as a green and sustainable reaction medium as well as base for *N*-arylation of anilines and imidazoles with arylboronic acid. The WEB was prepared by following a reported procedure by burning the dry banana peels followed by adding distilled water to the ash and mixing properly. The resulting filtrate is known as WEB and used for further reactions.

Although the exact mechanism is still not clear for Chan Lam coupling reaction, yet the proposed mechanisms in the existing literature reveal that the base has a substantial role for progress of the reaction. According to literature, the reaction mechanism has several steps like deprotonation of amine, transmetalation, reductive elimination etc. Most interestingly, for both of the important steps transmetalation and reductive elimination [32] respectively, there is a need of strong base. Earlier Et_3N, pyridine type bases were used for this reaction. But these bases are not safe to handle due to their toxic nature. As a result, continuous efforts have been given by the researchers to replace the amine bases with some non-toxic

52) Dr. Abhijit Mahanta

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Biocatalysis with Baker's yeast: A green and sustainable approach for C–B bond cleavage of aryl/heteroarylboronic acids and boronate esters at room temperature

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ARTICLE INFO

Keywords:
Ipso-hydroxylation
Baker's yeast
Biocatalyst
Green parameters
Water

ABSTRACT

This work shows the application of a cheap biocatalyst, Baker's Yeast, towards quick, water mediated, chemoselective, oxidative hydroxylation of aryl/heteroarylboronic acids and arylboronate esters at room temperature, in a metal and ligand free condition, without the addition of external base or acid. A total of eighteen (18) different types of aryl/heteroaryl boronic acids and arylboronate esters were studied for the applicability of this protocol and the resultant phenols were formed in excellent yields (85–97% isolated). The reaction procedure is easy to follow and takes place at room temperature (25-28 °C) and under weakly acidic conditions (pH ~ 6). Baker's Yeast is a fairly stable substrate, bearing considerably good shelf life. Commercially available Baker's Yeast is very cheap and is required in very less amount (5 mg per mmol of arylboronic acid). Thus, economic viability, easy availability of catalyst and ease of handling the reaction, make this an efficient and facile methodology for the synthesis of diversified phenols.

1. Introduction

Consciousness towards environmental safeguarding has drawn the attention of scientific communities to develop sustainable routes for the synthesis of fine chemicals; thereby, instigating a search for naturally abundant and environmentally benign biochemicals to fulfil the purpose. Thus, application of biocatalysts, especially enzymes, in organic transformations has nowadays turned out to be a popular choice. Their display of versatility and efficient regio-as well as chemoselectivity under mild reaction conditions, fall in the lines of green chemistry and therefore, have prompted to their utility in diverse fields (Mane et al., 2016, Sheldon and Woodley, 2018). However, the enzyme based biocatalysis has not yet seen its full potential, as their laboratory isolation has been only marginally explored. Another aspect of enzymatic catalReis et al., 2019; Sheldon and Pelt, 2013). In addition to this, enzyme catalysis can also demand functional group protection. This only makes the process more tedious (Mateo et al., 2007; Galvao et al., 2018; Pinheiro et al., 2018; Lima et al., 2017). Again, isolated enzymes require the addition of cofactors. Therefore, the processes of biocatalysis has shifted its attention towards employing whole cells instead of isolated enzymes (Silva et al., 2013). Whole cells already contain all of the cofactors and under given conditions, they can continue with the metabolic pathways required for the regeneration of the cell, thereby aiding the process of reusability of the catalyst. The elimination of the process of addition of cofactors eventually eliminates the potential for generating products due to side reactions. Baker's Yeast (*Saccharomyces cerevisiae*), which had been at the centre stage of the bakery industry for centuries, is one such biocatalyst, which generates metabolites *in situ* and these metab-

52) Dr. Abhijit Mahanta

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Pd–NPs@MMT–K10 Catalysis of Suzuki–Miyaura Cross-coupling Reaction: In Situ Generation and Ex Situ Use

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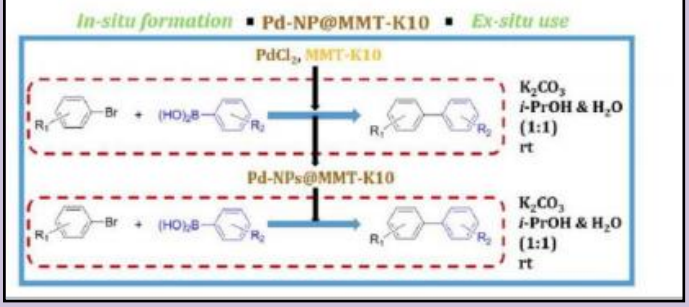
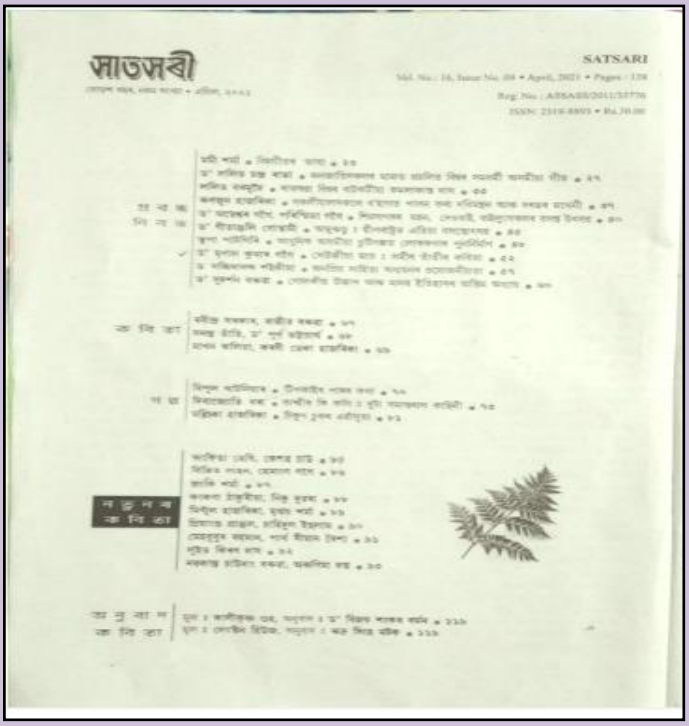
Abstract
Due to high surface area and low swelling property, Montmorillonite–K10 (MMT–K10) has been gaining widespread applications in heterogeneous catalysis as a material that is used for supporting varieties of catalyst species. The current report describes in situ generation of Pd–NPs@MMT–K10 catalytic system for heterogeneous catalysis of Suzuki–Miyaura (SM) cross-coupling reaction and it's ex situ applications. While the in situ derived Pd@MMT–K10 was found very effective to deliver the coupling products within short span of time, the same when isolated and purified could serve equally as an externally added heterogeneous catalyst for the same reaction. In our observation, this report is first to include studies on ex situ application of in situ derived heterogeneous catalytic system by carrying out multiple new reactions with varied substrate combinations. PXRD, TEM and XPES studies were performed to have insight into the isolated catalytic system, while ^{1}H & ^{13}C NMR spectroscopy were used to establish the structure of the organic products. In terms of reusability, the catalytic system was very consistent in delivering SM cross-coupling product of 1-bromo-4-methoxybenzene & phenylboronic acid up to 5th run.

Graphical Abstract



53) Dr. Mrinal Kumar Gogoi



54) Dr. Anuradha Kumari Sahu

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असम राष्ट्रभाषा प्रचार समिति द्वारा प्रकाशित
भाषा, साहित्य, कला व संस्कृति विषयक शोध-पत्रिका

द्विभाषी राष्ट्रसेवक

वर्ष : 14 अंक : 7 अक्टूबर, 2021

विषय-सूची

: हिंदी विभाग :

आधी आबादी

मृदुला गर्ग के उपन्यासों में नारी अस्मिता की खोज

- डॉ. अनुराधा कुमारी साहु

सार संक्षेप : नारी अस्मिता की खोज, अपने अस्तित्व की तलाश, खुद को मनुष्य के रूप में पहचान दिलाने की जद्दोजहद ने साहित्य में 'नारी विमर्श' की नींव रखी। सामंती युग से लेकर आधुनिक युग तक नारी का जो रूप इस पितृसत्तात्मक व्यवस्था में मौजूद है, वह है माँ, बहन, बेटी, पत्नी। नारी में अपनी अभिव्यक्ति की खोज ने सामंती ढाँचे में सरसराहट और पितृसत्तात्मक व्यवस्था में घबराहट को उत्पन्न कर दिया। शिक्षा ने नारी के इरादों को और मजबूत किया, साहित्य ने उस विचार का पोषण किया। ऐसा नहीं है कि नारी की इस दयनीय स्थिति पर सिर्फ नारी ने आवाज उठाई, वरन् राजाराम मोहन राय, ईश्वरचंद विद्यासागर, जयशंकर प्रसाद आदि ने उसे इस परिस्थिति से उबारने का प्रयास किया, परंतु नारी अपने संघर्ष को जिस रूप से व्यक्त कर सकती है, पुरुष नहीं, क्योंकि एक ने अनुभव किया और दूसरे ने भोगा है। आठवें दशक की हिंदी महिला लेखिकाओं में मृदुला गर्ग का स्थान महत्वपूर्ण है। मृदुलाजी अपनी रचना जगत में जिस युग-यथार्थ को शब्द देती हैं उसे कह पाने की हिम्मत सभी में नहीं होती है। उनके लिए समाज में पुरुषों की बराबरी कर लेना या पुरुषों से आगे बढ़ जाना तथा सामाजिक एवं संवैधानिक अधिकार प्राप्त कर शारीरिक रूप से स्वतंत्र हो जाना मात्र ही 'स्त्री स्वतंत्रता' नहीं है। उनके लिए स्त्री की आजादी का अर्थ तन और मन दोनों की मुक्ति में निहित है। वे 'फेमिनिज्म' का अर्थ दरअसल सोच की जकड़बंदी से मुक्ति के रूप में लेती हैं। समाज की सड़ी-गली मान्यताओं, संस्कारों आदि से मुक्ति पा लेना ही उनके लिए स्त्रीवाद है। नारी मनोभावों तथा संवेदनाओं की सूक्ष्म पड़ताल मृदुलाजी के उपन्यासों के आधार पर इस आलेख में किया जा रहा है।

बीज शब्द : अस्मिता, अस्तित्व, बोल्ड, समाज, स्त्री-विमर्श, साहित्य, उपन्यास, गाथा आदि।

पद्धति : प्रस्तुत शोध आलेख नारी की अस्मिता की खोज पर आधारित होने के कारण मैंने इसके आरंभ में नारी विमर्श से जुड़े कुछ विवरणों को प्रस्तुत किया है तथा शेष अध्ययन में मृदुलाजी के उपन्यासों में वर्णित विचारों को विश्लेषणात्मक शैली में विवेचित किया है। अतः इस शोध आलेख को लिखने के क्रम में शोध पद्धति के रूप में विवरणात्मक, विश्लेषणात्मक और कहीं-कहीं आलोचनात्मक शैली का निर्वाह किया गया है।

55) Dr. Dimpy Das

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Micropropagation of Pongamia pinnata L. from cotyledonary node.

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Abstract

An efficient protocol was developed for micropropagation of *Pongamia pinnata* L. from cotyledonary node. Cotyledonary node was cultured onto Murashige and Skoog medium (1962) supplemented with 6-Benzylaminopurine, adenine sulfate 6-Benzylaminopurine in combination with adenine sulfate and 6-Benzylaminopurine in combination with kinetin. The greatest mean number of lateral shoots (8.77) was obtained when cotyledonary nodes were cultured on Murashige and Skoog medium with 1.0mg/L each of 6-Benzylaminopurine and adenine sulfate. Early and maximum root induction was noted when shoots were cultured on half strength Murashige and Skoog medium enriched with 0.2gm/L Activated Charcoal. *In vitro* grown plants were successfully hardened in a mixture of soil and cow dung in ratio of 3:1 and transferred to field. During hardening 86.67% plants survived and 100% survival rate was recorded in field condition. After three months of field transfer it was noted that *in vitro* raised plants were increased in size and developed new shoots.

Key words: *Pongamia pinnata*, cotyledonary node, 6-Benzylaminopurine, adenine sulfate, activated charcoal.

Introduction

Pongamia is a genus having one species *pinnata* (L.) [Syn. *Pongamia glabra* (Vent); *Derris indica* (Lamk.)] which belongs to the family Fabaceae (Papilionaceae). *Pongamia pinnata* is commonly known as Karanj. The versatile *P. pinnata* is a multipurpose plant. Pongam is commonly used as fuel wood. The wood is used for cabinet making, cart wheels, posts, agricultural implements, tool handles and combs. Seeds yield a thick yellow-orange to brown non-edible oil. In India, the oil is used as a fuel for lamps as a substitute for kerosene. The oil is also used as a lubricant, water-paint binder, pesticide, and in soap making and tanning industries. Kapoor, 2001 has reported that *Pongamia* oil is used for making cosmetics. The oil cake is used as poultry feed. Leaves and the oil are used to enrich soil fertility. Dried leaves are used as an insect repellent in stored grains.

The oil cake shows pesticidal activity, particularly against nematodes. Aboli and Kulkarni (2010) have reported the mosquitoes, cockroaches and houseflies repellent property of different parts of the plant. *P. pinnata* is an ideal species to control soil erosion. Its extensive network of root system binds sand dunes and prevents soil erosion. Pongam is used for wastelands management and reforestation of marginal lands. Being a member of Fabaceae family, *Pongamia* fixes atmospheric nitrogen and improves soil quality. *P. pinnata*'s oil is widely employed for treatment of rheumatism. In Ayurveda and Unani, *P. pinnata* plant is used as anti-inflammatory, anti-plasmodial, anti-nonciceptive, anti-hyperglycaemic, anti-diarrhoeal, anti-lipidperoxidative, anti-ulcer, anti-hyperammonic and antioxidant as reported by Chopade *et al.*, 2008. Porwal *et al.*, (2010) have reported that root of *P. pinnata* is good for cleaning foul ulcer, cleaning teeth, strengthening gums and gonorrhoea. Fresh bark is useful in beriberi, ulcers, eye problems, dermatopathy and vaginopathy. Leaves are digestive, laxative and good for cough, leprosy etc. Flowers are useful in diabetes (Akhtar and Akhtar, 1999). De and Bhattacharya (1999) studied the fuel characteristics and has found Karanja oil can be used as cheap raw material for synthesis of Biodiesel. This oil has been tried as a fuel in diesel engines, showing a good thermal efficiency (CSIR, 1948-76). Though it is known that *P. pinnata* is a multipurpose plant but very little information is available on micropropagation of this plant. *In vitro* propagation method provides an opportunity for luxurious propagation from different explants. The present study is an attempt to develop an efficient micropropagation protocol from cotyledonary node of *P. pinnata*.