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3.2.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years (10)

Sl. No	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Year of publication	ISBN/ISSN number of the proceeding	Whether at the time of publication Affiliating Institution Was same Yes/NO	Name of the publisher
1	Dr. D.K. Billore	Environment and Agriculture in the U.N. Sustainable Development Goals	Economic and Aesthetic Value of Wetland Ecosystems With Special Reference to Tapti River in Burhanpur District	Environment and Agriculture in the U.N. Sustainable Development Goals	2016		Govt. College Mundi Distirct Khandwa	Janparishad at Bhopal
2	Dr. D.K. Billore	Environmental Awareness Clean and Green Earth Today, Tomorrow and Forever	Pollen Allergy-A Neagitive Aspect of Plants	Environmental Awareness Clean and Green Earth Today, Tomorrow and Forever	2017	978-93-86369-23-9	Govt. College Mundi Distirct Khandwa	Horizon Books

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ECONOMIC AND AESTHETIC VALUE OF WETLAND ECOSYSTEMS WITH SPECIAL REFERENCE TO TAPTI RIVER IN BURHANPUR DISTRICT.

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Abstract: Wetland are important due to an important life support system for the flora and fauna. Wetland are of great economic and aesthetic values and have played key role in evolution of human settlement, culture, agriculture operation and industrial growth. The plants of aquatic habitats are used by man and animals by various ways viz. as source of vegetables medicine, green manure as food for fishes and birds and some miscellaneous and commercial uses.

Introduction- Wetlands have in recent years assumed importance due to their very important roles in the economy of nature and human welfare. Wetland can be used for conservation of biodiversity. It also improves the water quantity by decreasing water pollution due to presence of algal flora. This area is well known for its forest luxuriant vegetation and medicinal plants. In the light of this fact that both traditional knowledge as well as the medicinal wealth, it is important from the human health point of view for such need of conservation an attempt were made by present study. The present finding support the works of ambast & Ambast (1997), Zedler (2000), Lekhak & Yadav (2012) and kumar & Shukla (2014)

Study area- Burhanpur is a mid size city in M.P. state India. It is situated south western border of M.P. near north bank of the Tapti river Burhanpur was an important outpost of the Munghals. It is best known for the textile industries. It is the largest hub for power loom industry. The Tapti River flows in central India from east to west between Godavari, Narmada. Geographical location of Burhanpur 21.30° N latitude, 76.2° E longitude.

Material & Methods- In the present study monthly field observation were undertaken in Tapti river from 2015-2016. The collected specimens were identified with the aid of floras (cook 1966) Khanna 1993-2001 and other sources.

Hydrophytes as source of food -

S.N	Name of Species	Family	Parts
01	<i>Alternanthera sessilis</i>	Amaranthaceae	Leaves used as vegetable
02	<i>Commelina benghalensis</i>	Commelinaceae	Whole plant used as vegetable
03	<i>Ipomoea aquatica forsk</i>	Convolvulaceae	Stem & leaves used as vegetable
04	<i>Neptunia oleraceae</i>	Mimosaceae	Plant used as a pot herb & pods for vegetable
05	<i>Nelumbo nucifera</i>	Nelumbonaceae	Tender root sticks rhizome & young leaves are use as vegetable Flowers & seeds are eaten as raw or cooked
06	<i>Nymphaea nouchali</i>	Nymphaeaceae	Tender & ripe carpel are eaten as raw and roots of stems are eaten cooked seeds are eaten as raw
07	<i>Ottella alismoides</i>	Hydrocharitaceae	Leaves and fruits are used as vegetables.
08	<i>Oryza rufipogon</i>	Poaceae	Grain eaten by poor.

Hydrophytes as source of medicines-

S. N.	Species	Family	Part	Disease
01	<i>Ipomoea aquatica</i>	Convolvulaceae	Leaf	As invigorating tonic
02	<i>Neptunia Oleraceae</i>	Mimosaceae	Stem & root	Used for curing earache and for syphilis

⁴ International Conference on "Environment and Agriculture in the U.N. Sustainable Development Goals" held on 17th-19th Dec. 2016. Sponsored by MANIT, EPCO, MPCST, JMBVSS & SusTranCon (USA). Organized by JANPARISHAD, Jabalpur (M.P.) India.
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farmers in the two Villages of Hoshangabad district by pilot structured interview technique to find the role of innovation and technologies for achieving sustainability in agriculture and its adverse effect on environment.
Keywords - Environmental Degradation, Technological change, Innovation, Sustainability, Agro-chemicals.

ECONOMIC AND AESTHETIC VALUE OF WETLAND ECOSYSTEMS WITH SPECIAL REFERENCE TO TAPTI RIVER IN BURHANPUR DISTRICT [14 85]

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Abstract

Wetland are important due to an important life support system for the flora and fauna. Wetland are of great economic and aesthetic values and have played key role in evolution of human settlement, culture, agriculture operation and industrial growth. The plants of aquatic habitats are used by man and animals by various ways viz. as source of vegetables medicine, green manure as food for fishes and birds and some miscellaneous and commercial uses.

Keywords- Tapti wetland, aquatic plants, ecosystem etc.

REFUSE DERIVED FUEL IT'S IMPLICATIONS AND CHALLENGES IN INDIA [14 102]

Shubham Kumar Sharma, Naman Jain

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Abstract

Since the evolution of mankind we have largely been dependent on conventional sources of energy such as coal, wood. Even today coal is the most important source of electricity generation in India. These are non-renewable sources of energy and are on the verge of their extinction implying a need to look for possible and sustainable substitute of these. Also, governments across the world are facing issues regarding management of endless waste generated by the residents, industries and businesses as it is accumulating in the dumpsites and landfills. The above mentioned problems indicate us to switch to REFUSED DERIVED FUEL(RDF) as an alternative to conventional sources, for it not only possesses good calorific value, it also has least polluting by-products. Its usage can lead to a effective waste management as well. RDF is a fuel produced by shredding and dehydrating solid waste with a waste converter technology. The technology employs incineration of solid waste either in incinerators, cement kilns or other industrial burners. RDF majorly consists of combustible components of solid waste such as plastics and biodegradable waste. The process include drying, comminuting, densification, physical separation and chemical modification. RDF processing facilities are chiefly located near a source of MSW (Municipal Solid Waste) while an optional combustion facility is given close to the processing facility. Although RDF has least polluting by-products and tackles the issue of waste management, it has several ill affects too. The process produces poisonous gases as well as toxic ash which is inevitably released into the environment. It seriously disrupts the livelihood of millions of informal sector recyclers by taking away and burning materials that they chiefly depends on, especially in a county like India where this sector is immensely populated. In many cases, the burning technology violate local laws and policies, such as the Indian Municipal Solid Waste Management and Handling Rules and the EU waste hierarchy which has clearly specified guidelines mandating source segregation and maximum recycling. The RDF generation process faces challenges such as an RDF plant at Dev Guradia in Indore (M.P.) produces RDF which is not appropriate to be used in electricity generation. The challenge lies in its segregation from non-volatile waste which decreases its calorific value considerably. The paper emphasizes on understanding RDF, its production process, its environmental affects and challenges ahead for its implementation in India.

Keywords : RDF, MSW, waste converter technology, informal sector recyclers, biodegradable waste

SMART VILLAGE: A VISION FOR DEVELOPING INDIA THROUGH

*4th International Conference on "Environment and Agriculture in the U.N. Sustainable Development Goals", held on - 17th-19th Dec. 2014
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4th INTERNATIONAL CONFERENCE
Environment and Agriculture in
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17th - 19th December 2016 at Bhopal, Madhya Pradesh, India

CERTIFICATE

This is to certify that Prof/Dr/Mr/Mrs/ Ms **D. K. Billore** has presented a paper entitled "*Economics and aesthetic value of Wetland ecosystems with special reference to Tapi river in Bhanupur District*" and Agriculture in the U.N. Sustainable Development Goals" held at Hotel Noor-Us-Sabah Palace, Bhopal, M. P., India, from 17th to 19th December 2016.

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(3)

ENVIRONMENTAL AWARENESS: CLEAN AND GREEN EARTH TODAY, TOMORROW AND FOREVER

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"Pollen Allergy – A Negative Aspect of Plants"

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Abstract – Plants are considered as the objects which are there to support human life, to sustain it and to fulfill practically each and every need of human being. We always talk about the bright side of the plants but sometimes some sensitive people may develop allergic reactions against pollen grains of some plants. Indore is one of the important cities of Madhya Pradesh. A large number of populations at Indore suffer from various allergenic ailments like allergic rhinitis, bronchial asthma, atopic dermatitis, urticaria and allergic conjunctivitis. In the present study an attempt has been made to identify and manage such menaces. Some criteria have also been suggested to select the plants for large scale plantation.

Keywords – Pollen Allergy, Pollen Grains Indore

INTRODUCTION

Vegetation of a particular area is a result of many factors as climatic, geographic, topographic and anthropogenic factors. These plants particularly angiosperms bear flowers as a part of their life – cycle. These flowers have anthers and carpels as the male and female reproductive units respectively. Anthers produce pollen grains which reach to the stigma of the carpel to complete the most crucial phase of the life-cycle - the reproduction. Flowering is a periodical event which is repeated in a particular season, but the time of blooming may differ for different geographical regions and even from year to year in same area.

The journey of pollen grains from anthers to stigma may need a carrier agency like wind, insects, or through a combination of two. This journey also affects the

ecosystem in many ways. The pollen grains, which become air-borne, are of special interest as they are the main cause of some forms of human allergic disorders such as allergic rhinitis, bronchial asthma, atopic dermatitis, urticaria and allergic conjunctivitis. The concentration of these pollen grains, or the pollen spectrum as it may be called, is determined by the floristic composition of that particular area.

MATERIAL & METHODS

The study area, i.e. Indore and its adjoining areas, was periodically visited to observe the vegetation type and the flowering period for a period of three years from July 2009 to June 2012. The flowering period is considered with the commencement of budding to the shedding of all the flowers of the plant. A modified form of classical Durham's

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"Pollen Allergy - A Negative Aspect of Plants"

sampler was used to trap the pollen grains prevailing in the atmosphere of Indore. Sticky slides were exposed in it by using standard techniques. Pollen grains trapped through these slides were identified by using the artificial key. This artificial key was prepared on the basis of reference slides and available literature

Clinics of local allergologists were visited periodically to report the cases of allergy. Cases including nasobronchial allergy & urticaria were recorded & results of the skin tests being carried out were analyzed.

OBSERVATIONS AND RESULTS

Vegetation of Indore represents all types of plants. Old Indore and outer Indore still harbour the old trees and other plants as remnants of natural vegetation. Residential areas show presence of common ornamental & fruit yielding plants including some exotic ones. The road side plantations show many introduced and exotic plant species. Beautiful ornamentals and foliage plants are grown in public and private gardens these include some noteworthy plants like *Crescentia* sp. *Barringtonia* sp, *Ficus krishnaiti*, etc. Crop plants are grown in surrounding rural areas. Weeds and grasses grow wherever they find space. So, the vegetation of Indore is a fine assortment of native and introduced plant species. Present study listed 354 plants 89 of which were found to be allergenically significant.

It is a general consideration that pollen grains belonging to anemophilous species become air-borne; so, the atmosphere of a place should only be loaded with the pollen grains belonging to this category. Contrary to this belief, aerial surveys have reported amphiphilous (pollination by air and insects both) and entomophilous (insect pollinated) pollen grains in a sizeable amount. (Tripathi, 1978; Singh, 1987) All these categories together form the pollen flora of air and could trigger on allergic

manifestations in sensitive people. In the present study, the mode of pollination was determined by observations and with the help of relevant literature. The anemophilous pollen grains reported in this study are *Ailanthus*, *Cheno-amaranthus*, *Poaceae*, *Cyperaceae* etc. Their contribution to total aerospora is - 43.59%; these pollen grains become air-borne through various mechanisms. Anthers may vibrate, shake or explode to release the pollen grains in air. These pollen grains are produced in large number, light in weight, generally have smooth exine and are powdery in nature, so that, they can be carried away by air currents to long distances.

Some plants usually get pollinated through insect visits, but, they also liberate their pollen grains in air to ensure pollination. Such plants are known as amphiphilous plants. Amphiphilous pollen grains reported in this study are *Melia*, *Azadirachta*, *Acacia*, *Cassia*, *Brassica*, *Eucalyptus*, *Prosopis* and *Xanthium*. These pollen grains particularly, were reported to give significant positive reactions in patients of allergy.

Various types of insects like bees, moths, flies etc. help to disseminate pollen grains from male plants to female plants. Plants provide special attractions like aroma, fragrance, colour etc. to maximise their visits. They even develop special mechanisms to ensure their specificity. The pollen grains produced by such plants are large in size, have ornamented exine and are sticky in nature. Their stickiness helps them to adhere one other and also to the legs and mouthparts of pollinators (insects). They become air borne during the flight of insects. Some important entomophilous pollen grains reported from the atmosphere of Indore are *Bauhinia*, *Delonix*, *Peltophorum*, and *Hibiscus*.

Plants with any of the three modes of pollination not only become air borne and

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contribute significantly to aerospora but are also involved in allergic manifestations.

During this study, 89 plants were reported to be allergenically significant. Out of these, 38 were belonging to trees, 7 to shrubs, 26 to herbs and 18 to grasses. These pollen grains have shown allergic reactions in local patients.

Singh *et al.* (1979) also reported 43 trees, 11 shrubs, 23 grasses and 33 herbs out of 110 allergenic species of Delhi. Manake (1991) recorded 99 angiospermic species with suspected allergenic potential. These include 42 tree species, 20 herb species, 23 grass species and 8 shrubs.

Out of the 89 plants reported in this study, 43 are the natural inhabitants of this area, while 46 were either planted or cultivated. *Putranjiva*, *Cassia siamea*, *Eucalyptus*, *Azadirachta*, *Melia*, *Delonix* etc. are some of the 21 trees used for road side plantations. *Emblica*, *Morus*, *Tamarindus* etc. are fruit yielding trees. *Clerodendron inerme* & *Dodonaea viscosa* are grown as hedge plants.

The data obtained were compared with the aerial incidence of concerning pollen type. There are some allergens like *Asphodelus*, *Lawsoina*, *Salvadara*, *Gynadropsis*, *Crateava*, *Carica*; pollen grains of these plants were not reported from the atmosphere of Indore. Pollen grains that showed 2+ and 3+ positive reactions were considered as significant. Of these, *Parthenium* was the most common allergen which showed positive reactions in 36 sensitive people. Common allergens include *Cynodon*, *Amaranthus*, *Cassia*, *Artemisia*, and *Ageratum*, which showed positive reactions in local people.

Cenchrus, *Ricinus*, *Sorghum*, *Pennisetum*, *Zea*, *Chenopodium*, *Holoptelea*, *Brassica*, *Azadirachta* were also found to give positive reactions during skin tests.

Percentage occurrence of pollen grains in the air may be directly correlated with the

percentage of positive skin reactions as in the case of *Parthenium Holoptelea*, *Cynodon*, and *Cassia*. Some pollen types which showed low aerial incidence like were proved to be highly allergenic by skin tests.

DISCUSSION

Therefore, it may be inferred from the above observation that during large scale plantation of trees along the road side and in garden, the allergenic value of pollen grains produced by them is often not taken into consideration. This results in an increase in the concentration of these offending allergens in the atmosphere. Obnoxious weeds like *Parthenium*, *Ageratum*, and *Argemone* etc. also release loads of pollen grains to the surrounding environment and are trigger on allergic reactions in sensitive people. Local physicians are also of the opinion that cases of allergic disorders are increasing in recent years. In general, about 60% of total cases reported are sensitive to pollen grains.

Following remedial measures may be recommended in order to control allergic disorders –

1. Allergenicly significant trees should be avoided during plantation.
2. Existing Allergenicly-significant trees should be replaced by non-allergenic trees.
3. Ornamental trees with showy flowers especially ornithophillic should be recommended for plantation
4. Open areas dominated by weeds should be covered with pavements
5. Obnoxious weed eradication programme should be initiated
6. Proper identification of allergen

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7. Allergy forecasting
8. Self awareness programme.

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on

Environmental Awareness

Clean and Green Earth-Today, Tomorrow and Forever

2nd & 3rd December 2016

Letter of Appreciation

Date : 2nd December 2016

TO,

Dr. D.K. Billore
Head of Department, Botany,
Govt. P.G. College, Mundi.

Dear Sir/Madam,

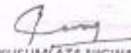
We are extremely thankful to you for your active contribution as ***Speaker for the session-II [2nd Dec 2016]*** in the two day National Seminar entitled "***Clean and Green Earth - Today, tomorrow and Forever***" [2nd & 3rd December 2016] and making it a grand success.

Once again we thank you and wish you all the best for future.

Dr. Billore


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