



DRINKING WATER AND WASTE WATER QUALITY ASSESSMENT AT DIFFERENT INDUSTRIES FROM MIDC TALOJA, NAVI MUMBAI. (M.S.)

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Abstract:

Water is an important limiting factor for the ecosystem, agriculture and human health. The quality of ground water is generally considered superior than surface water. Since soil column purifies the contaminants in water through processes such as decomposition, filtration, ion-exchange etc. However, over exploitation of this vital source may lead to decreasing of water level and deteriorate the quality; hence it is very important to assess the ground water quality not only for present use but also sources of water for future consumption. Safe drinking water is prior need of every human beings, most of the people mainly depends upon the surface water resources. Ground water is the only alternative source when surface water becomes scarce in summer season. In the present study an attempt has been made to identify drinking water, waste water quality at some different industries from MIDC Talaja, Navi Mumbai. The Waste water, drinking water samples collected from different industries were analysed for their physico-chemical characteristics. The various physico-chemical parameters like pH, Electrical Conductivity(EC), Total Dissolved Solids (TDS), Chemical Oxygen Demand (COD), Hardness, Chlorides and Nitrates etc were studied as per standard methods. The analysis results were compared with the BIS (Bureau of Indian Standard) standards of drinking water.

Keywords: Drinking water, waste water quality, pollution, physico-chemical.

Introduction:

The importance of ground water has been continuously increasing since last couple of decades because of uncertainties of the surface water resources, population growth and industrial development and urbanization. Because of dependability of ground water resources, there has been indiscriminate use and mismanagement leading to its scarcity and deterioration of quality (1). It is well known that occurrence of ground water and its resources is generally developed through ponds, lakes, wells and tube wells depending on the need for which it is being used and its availability in the area (2). Water intended for human consumption should be safe that is free from pathogenic agent and harmful chemicals, pleasant to taste, and usable for domestic purpose (3). The physico-chemical parameters like pH, Electrical Conductivity, TDS, Total Hardness, COD, Chlorides, nitrates were studied to analyse the potable ground water quality as well as waste water quality of the industrial area MIDC Talaja, Navi Mumbai (M.S.)

Water is the principle need of life on the earth the requirement of water in all lives, from microorganism to man is serious problem today because all water resources have been reached to point of crises due to unplanned urbanization and industrialization (4). Water pollution is the state of deviation from pure affected, aggregated environment problems often reflect the misuse or misunderstanding of technology (5).

Materials and Methods :

Sampling Technique : The waste water effluent and ground water samples were collected from MIDC Talaja Navi Mumbai (M.S.) INDIA. The samples were collected in well sterilized and pre cleaned plastic bottles with tight lid (6). Present study compares of interpretations and analysis of water samples collected from different industries from MIDC Talaja, Navi Mumbai. The samples were analysed for different chemical, physical parameters and the results were carefully studied.

Results and Discussion : The results of the physical and chemical analysis of the waste water samples as well as ground water samples are described in the following tables

Table-1) Methods or Apparatus used for physico-chemical analysis of water samples

A Low Cost Adsorbent Natural Zeolite and Fly Ash Zeolite¹ for the Removal of Methylene Blue dye, Fe(III) Metal Ions and NH₄⁺ Ions from their Model Solution : A Comparative Analysis by IR, XRD, SEM, EDX and TGA

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ABSTRACT: The adsorption studies on the removal of methylene blue dye, ammonium ions and iron from their aqueous solutions using non treated natural zeolite and treated fly ash zeolite¹ as a new adsorbent, both are locally available and lowcost, effective was carried out under varying experimental conditions. The maximum adsorption was observed to be a function of solution of pH, contact time and initial concentration of solution has been found out that specific surface on natural zeolite as well as fly ash zeolite¹ takes leading part at the adsorption of methylene blue dye, ammonium ions and iron from aqueous solutions at room temperature with different concentrations. Natural zeolite showed maximum adsorptive removal of ammonium ions and iron at about pH 3 and doses 1 gm per 50 ml solution in 2.5 hours contact time, while the fly ash zeolite¹ showed maximum adsorptive removal of ammonium ions at pH 3, doses 0.2 mg per 50 ml aqueous solution in 60 minutes. Ion exchange is probably one of the major adsorptive mechanisms for binding of NH₄⁺ ions, methylene blue dye and Fe(III) ions on the surface of natural zeolite as well as fly ash zeolite¹. The hypothesis is strongly supported by experimental analysis. On the basis of experimental results it can be said that the adsorbent natural zeolite and fly ash zeolite¹ may be used in developing an adsorptive technology for the removal of methylene blue dye, ammonium ions and Fe(III) ions.

KEYWORDS : Natural zeolite, Fly ash zeolite¹, Methylene blue dye, Ammonium ions, Fe(III) ions, Adsorption

I INTRODUCTION

Paper, plastic, leather and textile industries consume large amount of water mainly use in colour for dyeing their products and finishing processes and thus uses a huge amount of water which results in the production of dye containing wastewater. Although textile effluent is not highly toxic, the coloured nature of textile wastewater causes major environmental problems especially towards the aquatic ecosystem (1-2). The discharge of dye effluents from textile, paper, leather and plastic industries into the environment possess severe problems to many forms of life (3-5). Nowadays more than 9000 different types of dyes have been incorporated in the colour index (6).

Many dyes are toxic and may cause destruction or inhibiting of their catalytic capabilities (7). To reduce the risk of environmental pollution from such waste it's necessary to treat them before discharging to the receiving environment (8).

Methylene blue (MB) is the most commonly used substance for dyeing cotton, wood and silk (9). Methylene blue has wider application, which includes colouring paper, temporary hair colorant, dyeing cottons, wools, coating for paper stock etc. Though methylene blue is not strongly hazardous but on inhalation, it can show various harmful effects. It can give rise to short periods of rapid or difficult breathing while ingestion through the mouth produces a burning sensation and may cause nausea, vomiting, diarrhea and gastric problem (10-11). Different methods were used for dyes removal, one of them is adsorption method. Adsorption has been found to be superior to other techniques for water re-use in terms of initial cost, flexibility and simplicity of design, ease of operation and insensitivity of toxic pollutants (12-13).

The wide spread use of chemical fertilizers and contamination of water sources with industrial wastes increases the concentration of nitrogenous compounds in water bodies. These compounds, especially ammonium ions in high



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“Physico-Chemical analysis and detection of Heavy Metals in water through electro plating Industries by ICP-AES technique”

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Abstract: The physico-chemical properties and detection of heavy metals (Viz. Pb, As, Cd, Ni, Cu, Fe, Zn, Cr) and their accumulation have been studied in electroplating industrial waste water. This work describes the detection of concentration of these metals in industrial waste water by ICP-AES (Inductively Coupled Plasma Atomic Emission Spectroscopy) technique. In electroplating industrial waste water samples Pb, As, Ni, Cu, Fe, Cr are detected while Cd, Zn, As, Cu are detected in trace amount in some samples. For the accumulation of metals by the waste water samples were collected and analysed. This concentration of metals is due to various electro plating industries. The waste water samples were collected from MIDC, Ambad, Nashik. Maharashtra. At this point the soil is getting polluted by the disposal of different electro plating industrial waste water. Detected some of the metals are toxic.

Keywords: Accumulation, Heavy Metals, ICP-AES, waste water, detection, physico-chemical

I. INTRODUCTION

Industrial growth is an essential feature of the developing country. Without industrial growth a nation can not stand amongst the global scenario. Due to this rapid industrialization environmental pollution is becoming the most challenging threat to human beings (1,2). Pollutants in various forms are thrown into the nearby areas by industries. These pollutants pollute the air, soil, surface water as well as ground water (3). The industrial activities have contributes quantitatively as well as qualitatively to the large increase in the discharge of metallic pollutants into environmental sink. The heavy metals present in industrial effluents interact with organic and inorganic species and form complexes. Insoluble complexes are deposited on the surface of the soil but soluble complexes formed have a tendency to percolate through the soil (4) which affects the quality of the ground water and soil.

For this study the samples were collected from MIDC, Ambad, Nashik located in Maharashtra. In this industrial area most of the industries are electroplating industries which are being discharged the effluent into open places. Most of the industrial waste water are containing organic, inorganic matter and hazardous metals (5). These heavy metals and organic compounds affect the quality of soil and ground water of the area. The heavy metals like Pb, As, Cd, Ni, Cu, Fe, An and Cr and some water soluble pollutants percolate into the ground water (6). Due to industrialization and urbanization pollution growth all the sources of water are either polluted or contaminated (7). Release of treated and untreated industrial effluents in unplanned manner is one of the major causes of water pollution. The effluents which are released into various surfaces water bodies not only affect the water quality and soil but also pollute the ground water due to percolation of some water soluble pollutants (8).

The main objectives are to understand and evaluate water quality to control and minimize the incidence of pollutant oriented problems and to provide water of appropriate quality of various water users ass urban water supply, irrigation water, municipal water supply etc. In order to keep the quality of water at an optimal level, continuous periodical monitoring of water quality parameters is necessary. So that appropriate steps may be taken for water resources management practices (9). In this area no such type of study was reported so far, therefore this study was undertaken to detect and identify metals present in effluents which are being polluted at MIDC, Ambad, Nashik, Maharashtra (INDIA).

II. MATERIALS AND METHODS

- 1) **Sampling Technique:** The waste water samples were collected from MIDC, Ambad, Nashik (Maharashtra) INDIA. The samples were collected in well sterilized and pre cleaned plastic bottles with tight lid and adding 5 ml nitric acid for preserving the metals in the samples (10).



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**डॉ.बाबासाहेब आंबेडकर व बौद्धधर्म विषयक विचार कार्य****प्रा.डॉ.प्रदीप पांडुरंग तलवारे**

सहयोगी प्राध्यापक कर्म आ मा पाटील कला वाणिज्य आणि कौ. आण्णामाहेब

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डॉ. बाबासाहेबाचा जन्म १४ एप्रिल १८९१ रोजी मध्य प्रांतातील महू येथील लष्करी छावणीत सुभेदार रामजी मालोजी सकपाल, आंबावडेकर व भीमाबाई यांचे पाटी झाल्या. भीमराव हे त्याचे १४ वे अपत्य होते. त्यावेळी सुभेदार हे महू येथील लष्करी शाळेत शिक्षक होते. सन १८९४ साली सुभेदार रामजी लष्करी सेवेतून निवृत्त होऊन दापोलीला स्थलांतरीत झाले. काही दिवसांनी त्यांनी आपले बिन्हाड सातान्यास हलविले. डिसेंबर १८९६ मध्ये भीमबाईंचे मस्तक शूलाने निघून गेले. ७ नोव्हेंबर १९०० रोजी भीमरावांचे नाव सातारा येथील सरकारी माध्यमिकशाळा सातारा हायस्कूल या शाळेत सुभेदारांनी नोंदविले. शाळेतील शिक्षक कृष्णाजी केशव आंबेडकर या ब्राम्हण शिक्षकाने भीमरावांचे मुळ गावावरून पडलेले आंबावडेकर हे नाव बदलून आपले स्वतःचे 'आंबेडकर' हे आडनाव दिले व शाळेच्या दफ्तरीत नशी नोंदही करून टाकली.

नोव्हेंबर १९०४ मध्ये भीमराव सातारा हायस्कूल मधून इंग्रजी चौथीची परीक्षा उत्तीर्ण झाले. डिसेंबर १९०४ मध्ये चांगल्या शिक्षणाकरिता आले बिन्हाड मुंबई येथे हलविले. प्रथम भीमरावाना मराठा हायस्कूल मध्ये दाखल केले परंतु येथील अभ्यासक्रम उच्च दर्जाचा नसल्याने भीमरावाना एल्फिन्स्टनहायस्कूल मध्ये दाखल केले. जानेवारी १९०७ मध्ये भीमराव मॅट्रिकच्या परिक्षेत उत्तीर्ण झाले. अस्पृश्य समाजातील मॅट्रिक उत्तीर्ण झालेले ते पहिले विद्यार्थी होते. त्यावेळी आयोजित अभिनंदन सभेत सुभेदारांचे मित्र व भीमरावांचे गुरुवर्य कृष्णाजी अर्जुन केळुस्कर यांनी 'भगवान बुद्धांचे चरित्र', १८९८ हे पुस्तक भेट दिले होते. ३ जानेवारी १९०८ रोजी भीमरावाना एल्फिन्स्टन महाविद्यालयात प्रवेश घेतला. एप्रिल १९०८ मध्ये भीमरावांचा विवाह दापोली येथील भिकुधोत्रे वणंदकर यांची कन्या राणीबाई यांशी झाला. लग्नानंतर सुभेदारांनी वधुचे नाव रमाबाई ठेवले. १९०९ मध्ये भीमराव प्रिव्हिअस परीक्षा उत्तीर्ण झालेनंतर बडोद्याच्या संस्थानाने त्यांना दरमहा २५ रुपयांची शिष्यवृत्ती मंजूर केली आणि पदवी प्राप्त झाल्यानंतर बडोदा संस्थानाची नोकरी करण्याची अट घातली. जानेवारी १९१३ मध्ये त्यांनी बी.ए. अर्थशास्त्र राज्यशास्त्र विषय घेउन पदवी परीक्षा उत्तीर्ण झाले.

१५ जानेवारी १९१३ बडोदा सरकारच्या शिष्यवृत्ती करारानुसार भीमराव साहेबानी बडोदा सरकारच्या मिलीटरी डिपार्टमेंटच्या फर्स्ट इन्फन्टीग अकाउंट जनरलच्या कार्यालयात प्रोवेशनर म्हणून रुजू झाले. त्यांना दरमहा ७५ रु पगार होता. वडील आजारो असल्याची तारमिळताच बाबासाहेब आठ दिवसांची रजा घेउन मुंबईत आले. वडिलानी भीमरावाना डोळे भरून पाहिले पाठीवरून हात फिरवला आणि प्राण सोडला तो दिवस होता २ फेब्रुवारी १९१३. बडोदा संस्थानाने बाबासाहेबांना ४ एप्रिल १९१३ मध्ये परदेशात उच्च शिक्षणाकरिता दरमहा साडे अकरा पांडाची शिष्यवृत्ती दोन वर्षाकरिता मंजूर केली होती. पुढे त्यांच्या विनती वरून ही शिष्यवृत्ती एक वर्षाने वाढवून देण्यात आली होती. बडोदा संस्थानाच्या उच्च शिक्षण करारानंतर बाबासाहेबांनी उच्च शिक्षण पूर्ण केल्यानंतर बडोदा संस्थानाची दहा वर्षे नोकरी करण्याची अट घातली होती. न्युयॉर्क येथील कोलंबिया विद्यापीठातील राज्यशास्त्र शाखेत प्रवेश घेउन बाबासाहेबांनी दररोज १८ तास अभ्यास करून 'अॅडमिनिस्ट्रेशन ऑफ फायनान्स ऑल ईस्ट इंडिया कंपनी' या विषयावर प्रबंध लिहून कोलंबिया विद्यापीठाला एम.ए. पदवी साठी १५ मे १९१५ रोजी सादर केला. सादर केलेला शोध प्रबंध कोलंबिया विद्यापीठाने स्वीकारून त्यांना एम.ए. ची पदवी २ जून १९१५ रोजी प्रदान केली.

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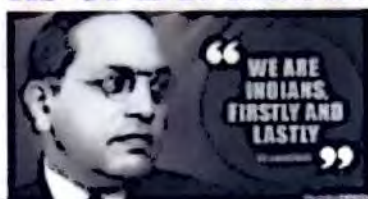
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प्रा.डॉ.सतीश मस्कें

सहयोगी प्राध्यापक व मराठी विभाग प्रमुख कर्म.आ.मा.पाटील वरिष्ठ

महाविद्यालय, पिंपळनेर, ता.साक्री, जि.धुळे मो.९४२३३९७४८४

डॉ.बाबासाहेब आंबेडकरांनी केवळ अस्पृश्य समाजासाठी किंवा दलित वर्गासाठीच कार्य केले असे नव्हे तर समाजातील कामगारवर्ग, श्रमिकवर्ग, शेतमजूर, खाणीत काम करणारे मजूर हयासाठीही त्यांनी अत्यंत मोलाचे कार्य केले आहे. भांडवलदारांच्या गुलामगिरीत कित्या कारखानदारांच्या दास्यात अनेक कामगार मजूर अडकले होते. त्यांच्यावर सतत अन्याय केला जात असे. त्यांना हवे तसे वागवून घेतले जायचे. अशा कामगारांनाही न्याय मिळवून देण्याचे महत्त्वपूर्ण कार्य डॉ.बाबासाहेब आंबेडकरांनी केले आहे. आज कामगारांच्या जीवनात जे नवीन चैतन्य दिसते आहे, नवीन उजेड दिसतो आहे. किंवा त्यांना जे हक्क प्राप्त झाले आहेत ते केवळ डॉ.बाबासाहेब आंबेडकरांमुळे. हे आम्ही नीटपणे समजून घ्यायला हवे, डॉ.बाबासाहेब आंबेडकर हे केवळ अस्पृश्य समाजात जन्माला आले असल्याने त्यांच्याकडे आणि त्यांनी केलेल्या कार्याकडे दुर्लक्ष करणे हे वाईट आहे.

मनमाड येथे १२,१३ फेब्रुवारी १९३८ साली रेल्वे कामगारांची फार मोठी कामगार परिषद भरली होती. रेल्वेत काम करणाऱ्या कामगारांचे फार मोठ्या प्रमाणावर शोषण केले जायचे. त्यांना कुठल्याच प्रकारचे स्वातंत्र्य तर नव्हतेच पण फार मोठ्या गुलामगिरीखाली वागवले जायचे. यातना दिल्या जायच्या. कामगारांच्या सेवेच्या अटीही फार जीवघेण्या म्हणजे जाचक होत्या. सहन न होणाऱ्या होत्या म्हणून वीस हजारपेक्षाही जास्त कामगार वर्ग (विविध जाती धर्मातील) या सभेस उपस्थित होता. या परिषदेत डॉ.बाबासाहेब आंबेडकर म्हणाले की, "ब्राम्हणशाही व भांडवलशाही हेच मुख्य दोन कामगारांचे शत्रु आहेत ब्राम्हणशाही म्हणजे समता, स्वातंत्र्य व बंधुभाव याचा अभाव आहे." हे सांगुण नेमक्यामर्मावर डॉ.बाबासाहेब आंबेडकरांनी बोट ठेवले आहे.

डॉ.बाबासाहेब आंबेडकर १९४२ साली मजूर मंत्री होते. मजूर मंत्री असतांना डॉ.बाबासाहेब आंबेडकरांनी शेतकरी, शेतमजूर, कामगार, मजूर किंवा खाणीत काम करणारे कामगार यांच्या वेदनाबाबत, दुःखाबाबत किंवा समस्याबाबत सखोल असे चिंतन करत असत. बिहारच्या एका खाणीत चारशे फूट खोल खाली उतरून कामगारांची विशेषतः स्त्रियांची त्यांच्या कामाबाबतची चौकशी केली होती. डॉ.बाबासाहेब आंबेडकरांनी 'स्वतंत्र मजूर पक्षा' ची स्थापना केली होती. यामध्ये मजूर नावाच्या शब्दावरूनही आपल्याला कामगाराबाबत त्यांचे असणारे प्रेम लक्षात यायला लागते. याच्या माध्यमातून विविध जाती, धर्मातील मजूर, कामगारांना एकत्र त्यांना करावयाचे होते. त्यांनी या पक्षाचा जाहिरनामाही प्रसिध्द केला होता. त्या जाहिरनाम्यात कामगारांच्या हितासंबंधीच सर्व काही होते. डॉ.बाबासाहेब आंबेडकर म्हणतात की, "हिंदुस्थानात राष्ट्रीय काँग्रेस हा प्रवळ पक्ष आहे. पण येथे भांडवलदार वर्गाचा सुळमुळ्याट झाला आहे. त्यामुळे हा पक्ष भांडवलदार वर्गाच्या हिताकडे लक्ष देणे शक्य नाही, दुसरा पक्ष लालबावटे वाल्यांच्या, पण याही पक्षाकडून श्रमजीवी वर्गाचे हित होईल असे चिन्ह दिसत नाही. यासाठी आम्ही स्वतंत्र मजूर पक्षाची स्थापना केली आहे."

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- डॉ. सतीश मस्के

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पिंपळनेर, ता. साक्री, जि. धुळे - ४२४३०६.

मो. ९४२३३९७४८४

आंबेडकरी चळवळीच्या इतिहासातील महाकवी वामनदादा कर्डक हे एक सोनेरी पान आहे. आंबेडकरी चळवळीत महाकवी, लोककवी वामनदादा कर्डकांचे नाव अतिशय आदराने घेतले जाते. आंबेडकरी चळवळीत गाण्याच्या माध्यमातून वामनदादांनी दिलेले योगदान हे फार मोलाचे आहे. मार्गदर्शक, दिशादर्शक आहे. गाण्याच्या माध्यमातून चळवळीचा आणि आंबेडकरी कार्याचा विचार जनसामान्यांच्या हृदयात त्यांनी कोरला आहे अनेकांच्या मस्तकात रुजवला आहे. त्यांनी आंबेडकरी चळवळीला एक सांस्कृतिक आयाम देण्याचे कार्य केले आहे. आंबेडकरी विचारांची एक नवी संस्कृती त्यांच्या गाण्याने निर्माण केली आहे. आंबेडकरी चळवळीला डॉ. बाबासाहेब आंबेडकरांचे विचार, तत्त्वज्ञान सांगून वामनदादा कर्डकांनी एक नवी दिशा दिली आहे. डॉ. बाबासाहेब आंबेडकर म्हणतात की, 'जागृतीचा विस्तव विझू देता कामा नये, तो सतत तेवत ठेवा.' अगदी त्याप्रमाणेच आपल्या गीतांच्या माध्यमातून वामनदादा कर्डकांनी कार्य केले आहे त्यांचे कार्य आजही जिवंत आहे. उद्याही जिवंत राहणार आहे. प्रेरणादायी आहे म्हणूनच त्यांना महाकवी म्हटले जाते.

वामनदादा कर्डक यांचा जीवनकाळ एवूण ८२ वर्षांचा म्हणजे १९२२ ते २००४ असा आहे. नाशिक जिल्ह्यातील देशवंडी हे त्यांचे गाव. दादा तीन वर्षांचे असतानाच तबाजी कर्डक (वडील) यांचे निधन झाले. आई सईबाई व दादांना मुंबईत सदाशिव कर्डक यांनी आणले. सदाशिव कर्डक हे दादांचे मोठे भाऊ. दादा मिळेल ते काम करून कुटुंबाची उपजीविका भागवण्यासाठी प्रयत्न करत होते. म्हणजे दादा निरक्षर असतानाही स्वयंप्रेरणेने लिहिण्याचा सराव त्यांनी केला ते वामनदादा कर्डक साहित्याच्या क्षेत्रात एक स्वतःचं अस्तित्व निर्माण करतात. म्हणूनच आजच्या साहित्यिकांपेक्षाही त्यांच्या साहित्याची उंची फार मोठी आहे. आजच्या साहित्यिकांना लाजवणारी आहे. वामनदादा कर्डकांनी जे लेखन केले ते केवळ परिवर्तनासाठी आणि प्रबोधनासाठी केलेले आहे. वामनदादा कर्डकांनी सर्व विषय आपल्या कवेत घेऊन लेखन आणि गायन केले आहे. डॉ. बाबासाहेब आंबेडकरही म्हणाले होते की, माझ्या दहा सभा आणि एक जलसा बरोबर आहे. त्यामुळे वामनदादा कर्डकांनी डॉ. बाबासाहेब आंबेडकरांचे जे सामाजिक, धार्मिक, राजकीय, शैक्षणिक, वैचारिक, आर्थिक, शोषणासंबंधीचे गुलामगिरीसंबंधीचे त्याचबरोबरच स्वातंत्र्य, समता, बंधुता, न्यायाचे, मानवतेचे जे तत्त्वज्ञान आहे ते आपल्या गाण्यातून मोठ्या उत्कटतेने मांडले आहे. त्यामुळे आंबेडकरी विचार खेडोपाडी जनसामान्यांपर्यंत पोहोचण्यास मदत झाली आहे डॉ. बाबासाहेब आंबेडकरांचे कार्य, कर्तृत्व हिमालयापेक्षाही उत्तुंग आहे. चातुर्वर्ष्य व्यवस्थेने अनेक जीवघेणी बंधने माणसावर लादली होती. कुणी काय करावचे हेही ह्या व्यवस्थेने ठरवले होते. त्यामुळे अस्पृश्य समाजाच्या वाट्याला दुःख, दैन्य, दारिद्र्य, शोषण, गुलामी, चाकरी आली होती. जनावरांपेक्षाही हीन जीण त्यांच्या वाट्याला आले होते तोंड असून बोलता येत नव्हते, पाय असून चालता येत



IoT- based automatic plant watering system

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Abstract

A certain amount of water is required for a plant to grow. People forget to water their plants while they are on vacation or forget to water them on a regular basis, resulting in plant damage. Watering plants is one of the most important practises and, in general, a labour-intensive task. Automatic watering systems relieve you of the obligation of watering your plants as necessary. Knowing when and how much to water the plants are the two most important aspects of the watering procedure. In this study, a system is developed that detects the plant's soil moisture content and turns on the motor to irrigate it when necessary. By watering itself, this technique makes the plant more self-sufficient.

Keywords: automatic, plant, IOT, water

Introduction

There is a scarcity of water on the planet. To address this issue, a system that uses water wisely and judiciously is required [3]. There are a variety of plants that are sensitive to water and require a certain amount of it for proper growth, health, and overall development. If the plant's water supply is insufficient, there's a good probability it won't be able to survive any longer and will die or grow insufficiently. It's unlikely that everyone is aware of pertinent facts on plant growth in relation to their water requirements. There is a scarcity of water on the planet. To address this issue, a system that uses water wisely and judiciously is required. There are a variety of plants that are sensitive to water and require a certain amount of it for proper growth, health, and overall development. If the plant's water supply is insufficient, there's a good probability it won't be able to survive any longer and will die or grow insufficiently. It's unlikely that everyone is aware of pertinent facts on plant growth in relation to their water requirements.

Rather than replacing dead grass and plants, we should strive to conserve them and provide them with the best resources available to ensure their survival. Watering is the most important social behaviour in daily activities associated with farming or planting. It is necessary to be able to vary the amount of water that reaches the plants regardless of the climate, whether it is excessively hot and dry or excessively overcast and damp. Watering frameworks that are already available might be successfully employed to water plants as needed.

Regardless, this manual watering technique necessitates the measurement of two critical factors: when to water and how much to water. We created a planned plant watering framework with the purpose of replacing manual exercises and making the work of plant specialists easier. Most plants can attain their maximum potential and save water by

adding an autonomous plant watering framework to a garden or horticulture area. We may create a framework that is ideal for each plant in our yard by combining sprinklers, dribble producers, or a combination of both. It's programmed to detect plant wetness levels at specified times, if the dampness content isn't as high as expected.

When a restriction is set based on a plant's water requirements, the desired amount of water is delivered until it reaches edge 5]. However, with an autonomous plant watering system, the volume and method of water delivery to the plant is considerably more exact and environmentally friendly. To control a watering system, an automatic watering system senses the soil moisture levels. A plant should be irrigated twice a day on average, first in the morning and again in the evening. Many individuals enjoy plants, the benefits they provide, and the feelings that come with caring for them. Nonetheless, many people find it difficult to preserve their health and stay alive. To meet this test, we created a model that allows a plant to become more self-sufficient by hydrating itself. The proposed prototype aims to address difficulties such as regular attention and time management. Apart from that, it aids in water conservation by watering the plant according to its needs on a regular basis. With technological advancements, there will always be a way to make labour easier and reduce hazards. Many problems can be solved with embedded systems and microcontrollers.

Literature Review

Watering the plant is the most important activity in gardening on a day-to-day basis. Regardless of the weather, everyone wants to be able to control the amount of water that gets to the plant. The "Automated Plant Watering System" checks the moisture content of plants twice a day, and if it is below the intended value (which is already set for

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A REVIEW ON CONCEPT OF NANOTECHNOLOGY IN TEXTILE ENGINEERING

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Abstract

The use of nanotechnology in the textile has increased rapidly with its unique properties. There is a considerable potential for profitable applications of nanotechnology in cotton and other textile industries. Its application can economically extend the properties and values of textile processing and products. The use of nanotechnology allows textiles to become multifunctional and produce fabrics with special functions, including antibacterial, UV protection, water-repellent, flame retardant and anti-odour. The future success of nanotechnology in textile applications lies in areas where new principles will be combined into durable, multifunctional textile systems without compromising the inherent textile properties, including processability, flexibility etc. The present study highlights the applications of nanotechnology in textile industries, with an emphasis on improving various properties of textiles.

Keywords : Nanotechnology, Textile industries, antibacterial, UV-blocking, wrinkle resistance, water repellence, etc.

1. Introduction

Nanomaterials can be used to improve human lives and the environment in a variety of ways. The 5000-year-old Indian system of medicine Ayurveda was discovered to have some understanding of nano-scale production for medical purposes. As a result, we may assert that nanotechnology existed long before the term was invented. A bulk material's physical qualities remain constant regardless of its size, however this is not always the case at the nanoscale. When studying materials at the nanoscale, certain well-characterized bulk materials have been discovered to exhibit the most fascinating features. There are several reasons for this, one of which is that nanoparticles have an extremely high aspect ratio, or surface to volume ratio. Nanoparticles are fascinating to scientists because they bridge the gap between bulk materials and their atomic and molecular structure. Because of their unique

optical, electrical, and catalytic capabilities, metallic nanoparticles are extensively explored. A wide range of study has been concentrated on controlling the size and form of nano-sized metal particles, which is vital in tuning their chemical and physical properties, in order to use and optimise their chemical and physical qualities. Several methods are used to make metallic nanoparticles, including electrochemical, sonochemical, and microwave aided processes, although the majority of these methods use a lot of energy, use dangerous chemicals, and are difficult to purify. To overcome these technical snags, biological concepts have lately been devised¹.

Nature's exquisite architectural abilities and precision inspire a lot in attempts to build inorganic materials utilising biological processes. Material scientists are attempting to learn from nature in order to create new synthetic materials with complex features. Nature has developed an amazing diversity of inorganic crystals over the course of evolution. The amazing architectures and functional qualities of materials found in biological systems have always captivated scientists and engineers. Biomimetics is the art and science of adapting natural materials' construction principles. Natural bioinorganic structures have inspired this study, in which material scientists are attempting to construct nanostructures with the accuracy of nature's faultless architectural talents, which is well ahead of current manmade capabilities. The majority of research in this area has focused on creating nanomaterials with complicated morphologies².

Different biomolecules can be used to synthesize inorganic nanomaterials. The organic matrix, which is made up of proteins or other biological macromolecules, regulates mineral deposition in biological organisms, which affects the nucleation and growth of inorganic structures. As a result of this realization, material scientists have begun to investigate and identify bio-mineralizing agents as enzymes for in vitro



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प्रा. संजय नामदेवराव तोरवणे

सहाय्यक प्राध्यापक, कर्मवरी आ. मा. पाटील आणि कै. आण्णासाहेब एन. के. पाटील, महाविद्यालय, पिंपळनेर,
ता. सांगली, जि. धुळे.

प्रस्तावना

सामाजिक शास्त्रांतर्गत संशोधन करतांना संशोधकास सांख्यिकीचे ज्ञान असणे आवश्यक आहे. कारण आशय विश्लेषणातील सांख्यिकी विश्लेषण ही एक महत्त्वाची अवस्था आहे. वस्तुस्थिती विषयक ज्ञान अवगत करण्यासाठी व त्याचा वापर करण्यासाठी सांख्यिकीय पद्धतीचा उपयोग केला जातो. "ज्यावेळेस व्यवहारीक परिस्थिती अनिश्चित स्वरूपाची असते त्यावेळेस संशोधकास निष्कार्पापर्यंत पोहचण्यासाठी तथ्यांचे संकलन व विश्लेषण करणाऱ्या सांख्यिकीय पद्धतीचा आधार घ्यावा लागतो. सामाजिकशास्त्र संशोधनातील अभ्यासविषय निसर्ग विज्ञानातील विषयांपेक्षा वेगळे असल्यामुळे ज्या प्रमाणे संख्याशास्त्रीय पद्धती वैज्ञानिक क्षेत्रात सर्रासपणे लागू केल्या जातात. तितक्या सहजतेने त्या सामाजिकशास्त्रात लागू ठरणार नाहीत. तरीही आज सामाजिक शास्त्रात देखील संख्याशास्त्रीय उपयोजनाचा आवाका विस्तारला आहे व या मापनात्मक पद्धतीचा नेमका वापर वाढावा यासाठी प्रयत्नशील राहिले पाहिजे."

नैसर्गिकशास्त्रात ज्याप्रमाणे प्रायोगिक अभ्यास पद्धतीचे अनन्यसाधारण महत्त्व आहे. त्याचप्रमाणे सर्व मानवशास्त्रात संख्यामान, किंवा संख्याशास्त्रीय अध्ययन पद्धतीचे महत्त्व आधुनिक काळात विशद केले जाते. सामाजिक शास्त्रामधील विकासाला संख्याशास्त्रीय पद्धतीमधील प्रगती सहाय्यभूत ठरली आहे. सामाजिकशास्त्रांच्या गरजेनुसार संख्याशास्त्रीय पद्धती विकसित होवू लागल्या आहेत. सामाजिक संशोधनात श्री.गिडगिज यांना सामाजिक वास्तवसिद्ध करण्यासाठी संख्याशास्त्राचा प्रथम परस्कार केला. त्यांच्यामते घटनेच्या किंवा समस्येच्या संदर्भात संकलीत केली जाणारी आकडेवारी म्हणजेच संख्यामान पद्धत होय. राजकीय किंवा सामाजिक संशोधनात अभ्यासविषयाच्या संदर्भात निरीक्षण, प्रश्नावली, मुलाखत इत्यादी तंत्राचा अवलंब करून जी शाब्दिक स्वरूपातून माहिती संकलीत केली जाते त्याचे आकडेशास्त्रात रुपांतर करण्याची जी पद्धत त्यास त्यांनी संख्याशास्त्रीय पद्धत अशी संज्ञा दिली आहे. वर्तमान कालखंडात सांख्यिकीचे क्षेत्र दिवसेंदिवस अतिशय व्यापक झाले आहे. सर्वच क्षेत्रात सांख्यिकी हे शास्त्र सहाय्यकारी शास्त्र म्हणून कार्य करते. संशोधनातील तथ्य संकलन कोणत्याही पद्धतीने (प्रश्नावली, अनुसूची आणि सर्वेक्षण) केलेले असले तरी, संशोधन सामुग्री आकाराने विस्तृत गुंतागुंतीची असली तरी या सामुग्रीला व्यवस्थित रूप देण्यासाठी अभ्यासात अचूकता व वस्तुनिष्ठता आणण्यासाठी सामाजिक शास्त्रांच्या अभ्यासात सांख्यिकी तंत्र मोठ्या प्रमाणात उपयुक्त ठरते. कोणत्याही शास्त्राची प्रगती ही त्या शास्त्रात अनिश्चित व गुणात्मक स्वरूपाची माहिती जमा करण्याऐवजी सांख्यिकी स्वरूपाची माहिती व वैज्ञानिक तंत्राचा वापर किती प्रमाणात होतो. यावर अवलंबून असतो.



Recent turmeric plants agronomy analysis and methodology using Artificial intelligence

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Abstract

Bacteria and viruses are the most common disease-causing microorganisms, and they are not apparent when they first damage the plant. Only at a later stage is it apparent to human eyes, and it has infected entire plant sections. Artificial Intelligence (AI) is a rapidly growing area in all fields of employment, with the goal of automating tasks and increasing efficiency. It is also used in the agricultural industry to boost crop output by detecting disease early and classifying the type of disease that has been affected so that precautionary measures can be taken to prevent the disease from spreading to other plants in the field. Image processing on computer vision and training the model with VGG-16 architecture make this possible.

Keywords: VGG 16, CV2, turmeric plant, artificial intelligence, network

Introduction

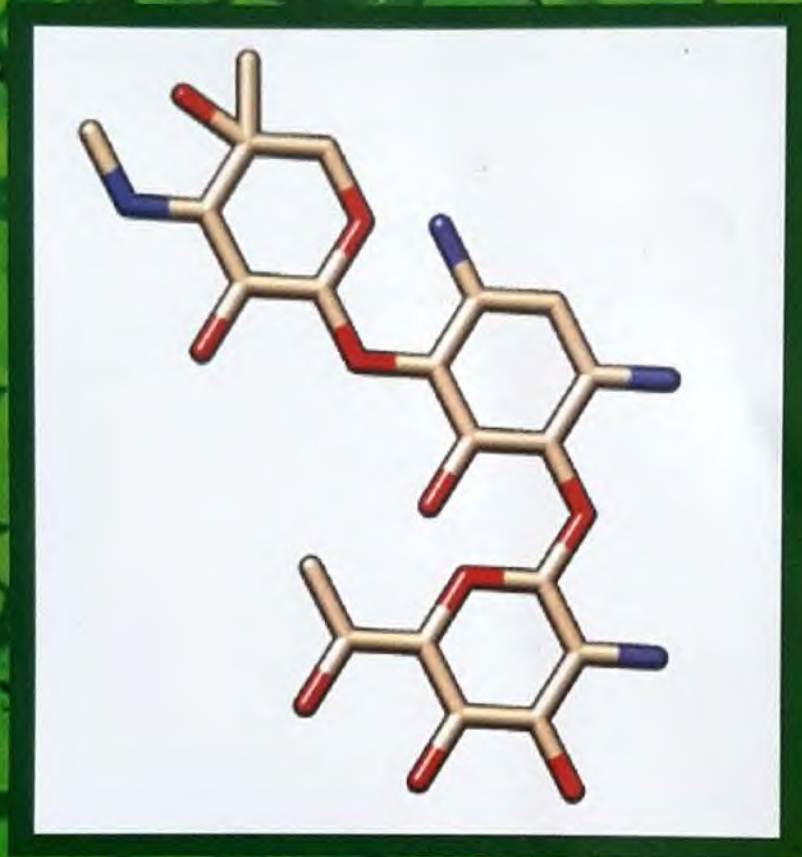
Agriculture is the support prepare of our country, and it is the most basic concept for human foodstuff creation. Due to many sorts of disease affection, agricultural land productivity falls year after year. Turmeric plant materials are used in our daily lives for food preparation, health care, and other purposes. The most common turmeric plant diseases are Leaf Spot and Leaf Blotch, both of which are airborne diseases that can wipe out an entire crop in a short period of time. VGG 16 is a CNN (Convolution Neural Network) architecture used for sick picture classification and detection. The images are processed in a hidden layer that contains various image processing layers for training the model, such as convolutional, padding, and pooling. Artificial Intelligence (AI) is a rapidly advancing technology that is now being used in all aspects of human life, including agriculture, for improved efficiency and complex purposes [1]. The 3D dimensional analysis is a futuristic analysis of disease and growth that uses this model to provide a 3D representation of the input image. AI is used in this analysis to help self-learn for disease and growth detection. The suggested AI approach aids disease identification and categorization on plants at any stage, whether early or later, employing image processing and a training dataset. For training and testing, the dataset is divided into two folders: diseased and non-diseased. Image segmentation helps to detect neuron value on each pixel image in the given folder, and the model is trained based on neuron value [7]. Finally, the real-time image is analysed and compared with the trained model to provide output results to the users. The following is how the rest of the paper is organised: The block diagram and hardware description are defined in Sections II and III. Sections IV-VI discuss comparative analysis, flow charts, and VGG16.

Description of Hardware

The IP Camera catches real-time photographs of the Turmeric plant from the agricultural land. The IP camera, which is connected to the internet via a router and collects data by capturing photos from agricultural land, stands for Internet Protocol. The router is a device that connects IP cameras, The programme analyses and compares input photographs from the field with training data in it. During the analysis, it was discovered that the input data was disease-infected, which meant that the input data had to be matched with trained data, and an output model in terms of message format had to be generated as a) Name of disease impacted b) Precaution steps to cure the sickness. With the help of the router, this output data are generated and sent to the user in message format to their email or default SMS app.

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EFFECT OF CuSO₄ AND ZnSO₄ ON HISTOLOGICAL STRUCTURES OF GONADS IN EARTHWORM, *EUDRILUS EUGENIAE*

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Key words : Histology, *Eudrilus eugeniae*, CuSO₄, ZnSO₄, Testis, Ovaries, etc.

Earlier investigations by the authors reported the effect of CuSO₄ and ZnSO₄ on morphological and behavioral pattern, as well as histological changes in the skin of earthworm (Patil and More, 2020a, 2020b), while the effect of these two chemicals on gonads has been discussed in present communication.

The reproductive system of earthworm (*Eudrilus eugeniae*) consists of the testes, seminal vesicles, ovary and its accessory glands (Vijaya et al., 2012). During present study, the experiment was performed in triplicate as described earlier (Patil and More, 2020a, 2020b).

The chemically treated live earthworms were thoroughly washed with water. Those on wet paper for 24 hours, in order to clear their gut, and thereafter cut into small pieces starting from 15 to 20 segments and placed it in Bouin's fixative for 24 hours. Several alcohol changes were given to remove the yellow color of the tissue and then they were passed through grades of alcohol, cleared in xylene, infiltrated with molten paraffin and finally embedded in paraffin wax

(58° M.P.). Transverse tissue sections were obtained by using rotary microtome. The sections were stained in Harris haematoxyline and eosin, followed by dehydrating them with alcohol. The tissues were then cleared in xylene and mounted in DPX.

The tissues were examined under a microscope. The slides were selected, labeled and photographed using a Coslab, STD 9 research microscope. Binocular attached with digital camera. All photographs were saved on computer for histopathological studies (Figures 1 and 2).

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यशवंतराव चव्हाण वाङ्मयीन कार्य आणि कर्तृत्व

डॉ. सतीश मस्के

सहयोगी प्राध्यापक व मराठी विभागप्रमुख, कर्म आ भा. पाटील कला, वाणिज्य व विज्ञान विश्व महाविद्यालय,
पिंपळनेर ता. साकी जि. पुणे ४२४३०६.

यशवंतराव चव्हाण यांचे व्यक्तित्व आणि कर्तृत्व हे वाखाणण्याजोगे आहे. त्यांनी आपल्या कृतिशील कार्यामुळे स्वतःच्या नावाचा ठसा भारताबाहेरही उमटविला आहे. यशवंतराव चव्हाण यांनी महाराष्ट्राचे मुख्यमंत्री म्हणून केलेले कार्य आणि साहित्य, कृषी व इतर क्षेत्रातही उमटवलेला ठसा दीपस्तंभाप्रमाणेच अनेकांना व सध्याच्या राजकारण्यांना मार्गदर्शक ठरणारा आहे. त्यांनी भारताचे संरक्षणमंत्री, गृहमंत्री, अर्थमंत्री परराष्ट्र मंत्री व महाराष्ट्राचे मुख्यमंत्री म्हणून केलेले कार्य आजच्या राजकारण्यांच्या डोळ्यात अंजन घालणारे आहे. आजच्या राजकारण्यांनी त्यांचा आदर्श घेऊन कार्य करणे महत्त्वाचे आहेच त्याचबरोबर काळाची गरज आहे.

यशवंतराव चव्हाण यांचे जीवन संघर्षात, कष्टात गेले आहे. लहानपणीच म्हणजे ते वार वर्षांचे असतानाच त्यांच्या वडिलांचे (बळवंतराव) 1917 साली निधन झाले. आईच्या (विठाबाई चव्हाण) स्वाभिमानात वाढणाने व संस्काराने ते घडले. शालेय व महाविद्यालयीन जीवनापासून यशवंतराव चव्हाण यांना सामाजिक कार्याची आवड निर्माण झाली होती. शिक्षण घेत असतानाच विविध स्पर्धेत भाग घेऊन त्यांनी आपल्या नावाचा ठसा उमटविला होता. वाचनाची आवड त्यांना असल्यामुळे त्यांचे व्यक्तिमत्त्व समृद्ध आणि जाणिवशील बनत होते. त्यामुळेच त्यांची बुद्धी तल्लख आणि विवेकशील बनत होती. महात्मा फुलेंचे चरित्र त्यांच्या वाचण्यात आले असल्यामुळे त्यांच्या मनात सामाजिक परिस्थितीची जाणीव निर्माण होऊ लागली होती. बहुजन समाजाविषयी त्यांना आस्था वाटू लागली होती. याविषयी विठ्ठलराव पाटील म्हणतात की, "म. फुले यांचे चरित्र वाचून शेतकरी समाजाची होणारी पिळवणूक, दलित समाजावर होणारा अन्याय आणि

शिक्षणापासून वंचित ठेवलेला बहुजन समाज व स्त्रिया यांचे प्रश्न सोडविल्या खेरीज देशाचे कार्य होणार नाही." हा विचार त्यांच्या मनात रुजला. १२ मार्च १९१३ साली जन्म झालेल्या यशवंतराव चव्हाण यांचा १९३० च्या स्वातंत्र्य संग्रमाशी संबंध आला. यावेळी त्यांनी या स्वातंत्र्य चळवळीत झोकून उडी घेतली. त्यामुळे त्यांना तुरुंगवासही भोगावा लागला. तरीही ते कचरले नाहीत. तुरुंगामध्येही आपले वाचन त्यांनी चालूच ठेवले. वाचनाच्या माध्यमातून आपले मन भक्कम बनवत होते. खरेतर ते कराडमध्ये ज्या वेळी आपले लहानपण, शालेय जीवन व्यतीत करत होते. त्याच वेळी त्यांच्यावर सत्यशोधकीय आणि ब्राह्मणेतर चळवळीचे संस्कार भाऊसाहेब कळंबे यांच्यामुळे होत होते. केशवराव जेधे आणि दिनकरराव जवळकर यांच्या खळबळजनक भाषणामुळे त्यांच्या मनावर परिणाम होत होता. परिवर्तन विचारांची पाळेमुळे मनात रुजत होती आणि ही व्यवस्थाही कळत होती. शिक्षण घेत असतानाच साताऱ्यात ते संघटनेच्या कामाकडेही वळले होते. संघटनेचे काम आहे ते जोरदारपणे करू लागले. हळूहळू काँग्रेस पक्षाचे कार्य करण्याचा कलही त्यांच्या मनात डॉ. मानवेंद्रनाथ रॉय यांच्यामुळे तयार झाला होता. खरे तर त्यांचा हा काळ संक्रमणाचा होता. त्यांना काय करावे आणि काय करू नये असे वाटत होते. त्यांच्या मनाची द्विधा अवस्था निर्माण झाली होती. पण त्यांनी जोमाने काँग्रेसचे काम करण्याचे ठरविले व करण्यास सुरुवात केली. सातारा जिल्हा मतदार संघातून ते आमदार

Onion growth monitoring system using internet of things and cloud

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Samata Gadde, J.Thilagavathi, S.Selvaraju, et al. Onion growth monitoring system using internet of things and cloud. *AGBIR*. 2022;38(3):291-293.

Many real-time apps acknowledge the different advancements made in many sectors through the usage of new technologies. Using Wireless Sensor Networks and Think speak Cloud; this research paper proposes a remote internet of things (IoT) based onion growth monitoring approach.

With the use of the internet of things and wireless sensor networks, the suggested study work improves the traditional approach to onion growing in rural areas. This study proposes the creation and deployment of a thermal-based Internet of Things system within onion farms, with the goal of managing devices such as fans and heaters according to the ideal range of onion production and good onion growth.

Key Words: Agriculture; Soil testing; IoT; Sensor

INTRODUCTION

Simulator is used to implement and validate the suggested model. The results show that the proposed method is faster, and that the proposed model has a lower simulation time while also being more efficient. This proposed research has continued to boost onion farm yields; however the outcomes may not be as predicted if the fields and onions are not adequately monitored. Modern tools, such as the internet of things, can aid onion development and farmers in not just monitoring their onions on the farm but also taking actions to produce them on time. They can boost onion production quality without using a lot of energy.

In this paper, we present an Arduino UNO-based onion growth monitoring system that uses Thing Speak to reduce the amount of energy used in the onion farming industry. The Arduino UNO is a primary microcontroller control tool that can communicate all collected data to the Thing Speak cloud and receive control commands from the service. Thing Speak is an open-source cloud computing tool that allows farmers to instantly and remotely visualise onion growth data. It also allows the farmer to read sensory data from a distance. On the onion farm, the camera module is also employed to maintain continuous views. The major goal of this study is to reduce the administrative burden and energy necessary for onion growth monitoring and farming.

Downy mildew is a devastating kind of onion disease caused by a soil infection caused by the *Peronospora* bug. It severely damages the leaves, causing a major loss in plant value. Due to a shortage of carbohydrates and potassium in the plant leaf, downy mildew develops, causing persistent dryness and constipation at the edges of the leaves and roots, resulting in a weakened immune system and numerous ailments. When the soil temperature is below 15 degrees Celsius, the fungus does not eat, but when the temperature is between 25 and 28 degrees Celsius, it thrives. Infection can also be caused by rainy weather before to harvest or moist packing. In addition, during mid-April and early May, onions are rapidly infected with repeated production. The disease strikes in the fall and spring, particularly in mid-April when it rains heavily. Infected onion leaves first show chlorosis, then turn yellow before dying. As a result of the recent growth in crop production, more advanced crop management technology is required to boost productivity and product stability. Many agricultural studies are now incorporating flying items such as drones to address this need.

The drone, however, is not as simple as real-time and long-term observations, such as rapid climatic change, without the use of particular scales. It is vital to share information such as the location and size of the crop in order to further monitor the yield in order to predict disease production and crop production.

Similarly, it requires real time to consider how IT technology might be used to measure growth and plant illnesses.

Monitoring system using internet of things

Farmers assist in determining the temperature and soil moisture content of local information supplied by authors [1], hence IoT is based on Agriculture stick. Muthunoori, et al. [2] suggested an Internet of Things (IoT) that connects the agribusiness diagram with a variety of activities, such as accuracy and development, to meet industry challenges [3] Gondchawar, et al. hope to help the agricultural industry thrive through robotization and IoT development in this article. Nobrega, et al., [4] proposed a tight IoT system to combine data from the creation and phase level, as well as optimization and energy efficiency, in order to feed ovine within areas appropriately. Grapes are being planted Stadiums and waterfowl fields are not always walled, according to Bavane, et al. [5].

The use of GSM technology to provide agricultural heat is reported by Zhao, et al. [6-8]. GSM technology with GPRS support allows for remote temperature monitoring in the Thing Speak platform the study of diverse soil kinds. Takekar, et al. developed a method for utilising IoT in agriculture. Khattab, et al. proposed a cloud-based IoT solution for a variety of precision agricultural applications, including a portal layer that connects an online storage layer to a data storage layer in the background, address the importance of current agricultural technology in the intelligent use of MQTT [9,10].

METHODOLOGY PROPOSED

Farmers collect data in a variety of ways, including employing mobile sensors and mobile devices such as Smartphone and tablets to collect data about crops, soil, and climate, allowing them to readily access and monitor their yield. For analysis, the acquired data is transferred to a central cloud platform. The findings are given to the farmers in order to improve the

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**Evaluation of Physico-Chemical Qualities of Ground Water from
Pimpalner region of Dhule District of Maharashtra (India)**

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ABSTRACT

The drinking water quality of ground water from Pimpalner region of Dhule District of Maharashtra was investigated to certify the safe drinking water for the public health protection. The Physico-chemical parameters considered for drinking water like pH, turbidity, electrical conductivity, total dissolved solids, total hardness, chlorides etc. were analyzed for-monsoon and post-monsoon well water samples collected from different areas and obtained values of each parameter were compared with the standard values set by the World Health Organization (WHO) and local standards such as National Drinking Water Quality Standard (NDWQS). The values of each parameter were found to be within the safe limits set by the WHO. Overall, the water from all the locations was found to be safe as drinking water.

KEYWORDS: Ground water, seasonal water quality standard, Pimpalner region, Physico-chemical qualities.

INTRODUCTION

Water is one of the most important of all natural resources for all kinds of life on this planet. Good quality of water is essential for existence of life. Provision of a safe drinking water supply is a high priority issue for safeguarding the health and wellbeing of humans (WHO, 2011). Water covers over 71% of the earth's surface and is a very important natural resource for people (National Environment Research Council, 2007). Yet, only 2.5% of the earth's water is fresh and thus suitable for consumption. Not only that, but of that 2.5%, more than two-thirds is locked away in glaciers and not particularly able to help meet the growing demands of society (Ward, 2003). The main source of water on earth is rainfall. Portions which penetrate into the earth are called the ground water and that can be collected by digging well. It is essential and important to all living organisms, most ecological systems, food production and economic development and plays a significant role in maintaining the human health and welfare. [1]. Several pollutants from point and nonpoint sources affected the water quality. Anthropogenic pressures and natural processes account for degradation in surface and ground water quality (Carpenter *et al.*, 1998). Contaminants in the water can affect the water quality and consequently the human health. The potential sources of water contamination are geological conditions, industrial and agricultural activities, and water treatment plants. These contaminants are further categorized as microorganisms, inorganic, organics, radionuclides, and disinfectants [2]. The safety of drinking water is affected by various contaminants which included chemical and microbiological. Such contaminants in the water can affect the water quality and consequently the human health problems. Due to these contaminants quality of the drinking water becomes poor. Sometimes such poor-quality water causes many diseases in the humans so that quality of the water must be tested for both the chemical as well as for the microbial contaminants. During the study it was found that maximum number of physical and chemical parameter were within the desirable limit, as suggested by [3].

Natural Water contains suspended impurities including microorganisms and dissolved impurities. Other pollutants can also be added to water through human activities [4]. Ground water is not pure because it usually contains some amount of dissolved minerals ion. The inorganic chemicals hold a greater portion as contaminants in drinking water in comparison to organic chemicals The type and concentration of these dissolved minerals can affect the usefulness for groundwater for various purposes. [5]. Water acts as a vehicle or medium for the transfer of these organisms to humans. So it has been proved that water quality and human health have been strongly related to each other. Water borne and related diseases have been the major cause of human morbidity and mortality [6].

In many residential areas those were purified and treated water is not available, ground water is the main source of potable water for people. In case of contamination of ground water borne diseases is likely to be happening. Agricultural pesticides and lack of proper drainage increase the danger of water borne diseases. Hard and soft

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**The Study of Physico-Chemical properties and Detection of Heavy Metals in
Water of Electro Plating Industries from MIDC Ambad Nashik (M.S.)**

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ABSTRACT

The physico-chemical properties and detection of heavy metals (Viz. Pb, As, Cd, Ni, Cu, Fe, Zn, Cr) and their accumulation have been studied in electroplating industrial waste water. This work describes the detection of concentration of these metals in industrial waste water by ICP-AES (Inductively Coupled Plasma Atomic Emission Spectroscopy) technique. In electroplating industrial waste water samples Pb, As, Ni, Cu, Fe, Cr are detected while Cd, Zn, As, Cu are detected in trace amount in some samples. For the accumulation of metals by the waste water samples were collected and analysed. This concentration of metals is due to various electro plating industries. The waste water samples were collected from MIDC, Ambad, Nashik, Maharashtra. At this point the soil is getting polluted by the disposal of different electro plating industrial waste water. Detected some of the metals are toxic.

KEYWORDS: Physico-chemical, Heavy Metals, Accumulation ICP-AES, waste water.

INTRODUCTION

Industrial growth is an essential feature of the developing country. Without industrial growth a nation cannot stand amongst the global scenario. Due to this rapid industrialization environmental pollution is becoming the most challenging threat to human beings (1,2). Pollutants in various forms are thrown into the nearby areas by industries. These pollutants pollute the air, soil, surface water as well as ground water (3). The industrial activities have contributed quantitatively as well as qualitatively to the large increase in the discharge of metallic pollutants into environmental sink. The heavy metals present in industrial effluents interact with organic and inorganic species and form complexes. Insoluble complexes are deposited on the surface of the soil but soluble complexes formed have a tendency to percolate through the soil (4) which affects the quality of the ground water and soil.

For this study the samples were collected from MIDC, Ambad, Nashik located in Maharashtra. In this industrial area most of the industries are electroplating industries which are being discharged the effluent into open places. Most of the industrial waste water are containing organic, inorganic matter and hazardous metals (5). These heavy metals and organic compounds affect the quality of soil and ground water of the area. The heavy metals like Pb, As, Cd, Ni, Cu, Fe, An and Cr and some water-soluble pollutants percolate into the ground water (6). Due to industrialization and urbanization pollution growth all the sources of water are either polluted or contaminated (7). Release of treated and untreated industrial effluents in unplanned manner is one of the major causes of water pollution. The effluents which are released into various surfaces water bodies not only affect the water quality and soil but also pollute the ground water due to percolation of some water-soluble pollutants (8).

The main objectives are to understand and evaluate water quality to control and minimize the incidence of pollutant-oriented problems and to provide water of appropriate quality of various water users ass urban water supply, irrigation water, municipal water supply etc. In order to keep the quality of water at an optimal level, continuous periodical monitoring of water quality parameters is necessary. So that appropriate steps may be taken for water resources management practices (9). In this area no such type of study was reported so far, therefore this study was undertaken to detect and identify metals present in effluents which are being polluted at MIDC, Ambad, Nashik, Maharashtra (INDIA).

EXPERIMENTAL

Sampling Technique: The waste water samples were collected from MIDC, Ambad, Nashik (Maharashtra) INDIA. The samples were collected in well sterilized and pre cleaned plastic bottles with tight lid and adding 5 ml nitric acid for preserving the metals in the samples (10).

तिफुण

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६.	छत्रपती शिवाजी महाराजांचा सामाजिक दृष्टिकोन - डॉ. सतीश मस्के	१७ - १८
७.	श्री छत्रपती शिवाजी महाराज आणि मराठी कविता - डॉ. चंद्रशेखर आत्माराम भगत	१९ - २४
८.	शिवकाळीन समाजव्यवस्थेचा समाजशास्त्रीय अभ्यास - प्रा. डॉ. संजय गंगाराम भुरेवाड	२५ - २९
९.	छत्रपती शिवाजी महाराज आणि मराठी बखर - प्रा. डॉ. अनिल बळीराम बांगर	३० - ३४
१०.	न्यायप्रिय राजा : छत्रपती शिवाजी महाराज यांचे कार्य - प्रा. डॉ. दादासाहेब पिंहे	३५ - ३७
११.	छत्रपती शिवाजी महाराज आणि मराठी बखर - प्रा. डॉ. वात्मीक शंकर आढावे	३८ - ४१
१२.	शिवाजी महाराजांची युद्धनीती - प्रा. योगेश मुलाबराव भदोणे	४२ - ४४
१३.	छत्रपती शिवाजी महाराज व्यक्तित्व आणि कार्य - डॉ. विठ्ठल केतारी	४५ - ४८
१४.	छत्रपती शिवाजी महाराजांची आरमारविषयक भूमिका - डॉ. भूषण गोविंद फडतरे	४९ - ५४
१५.	छत्रपती शिवाजी महाराजांचा स्त्रीविषयक दृष्टिकोन - प्रा. पालवे रामनाथ सूर्यभान	५५ - ५८



छत्रपती शिवाजी महाराजांचा सामाजिक दृष्टिकोन

- डॉ. सतीश मस्के

सहयोगी प्राध्यापक व मराठी विभागप्रमुख,
कर्म. आ. मा. पाटील कला, वाणिज्य व विज्ञान वरिष्ठ महाविद्यालय,
पिंपळनेर, ता. साक्री, जि. धुळे - ४२४ ३०६, मो. ९४२३३९७४८४

१९ फेब्रुवारी हा बहुजन प्रतिपालक, कुळवाडीभूषण छत्रपती शिवाजी महाराजांचा जन्मदिवस. १९ फेब्रुवारी १६३० मध्ये पुणे जिल्ह्यातील जुन्नर शहराजवळ असलेल्या 'शिवनेरी' या डोंगरी किल्ल्यावर छत्रपती शिवाजी महाराजांचा जन्म झाला. शिवनेरी किल्ल्याच्या बाजूला बौद्धलेण्यांचा परिसरही आहे. छत्रपती शिवाजी महाराजांची व त्यांच्या कार्याची ओळख जगभर व्हावी, त्यांच्या विचारांचा प्रचार आणि प्रसार सर्वसामान्यांपर्यंत व्हावा म्हणून १९ फेब्रुवारी रोजी त्यांची जयंती साजरी केली जाते. छत्रपती शिवाजी महाराजांचे व्यक्तिमत्त्व हे दीपस्तंभाप्रमाणे होते. ते अनेकांना प्रेरणा आणि स्फूर्ती देणारे आहे. त्यांचा आदर्श प्रत्येक क्षेत्रात कार्य करणाऱ्यांनी डोळ्यासमोर ठेवून आपल्या जीवनात कार्य करावे असेच होते. छत्रपती शिवाजी महाराजांनी आदिलशाहीविरुद्ध व मुघलशाहीविरुद्ध संघर्ष करून आपले राज्य स्थापन केले होते. छत्रपती शिवाजी महाराजांचे व्यक्तिमत्त्व हे समतावादी होते. विषमतेला मात्र अजिबात थारा दिसत नाही. शिवाजी महाराजांचे राज्य हे रयतेचे, गरिबांचे, शेतकऱ्यांचे व जनसामान्यांचे होते. त्यांनी कधी भेदाभेद किंवा विषमता केली नाही. त्यांच्या राज्यकारभारात सर्व जाती-धर्माची माणसे होती. त्यांच्या सैन्यात महत्त्वाच्या पदांवरही अनेक मुस्लीम होते. अंगरक्षकही मुस्लीम होते; परंतु आजच्या या समाजव्यवस्थेमध्ये व जुन्या इतिहासकाराने छत्रपती शिवाजी महाराज हे मुस्लिमांचे विरोधक आहेत, अशाच प्रकारची त्यांची प्रतिमा निर्माण केली आहे. छत्रपती शिवाजी महाराज हे कधीच मुसलमानांचे विरोधक नव्हते. उलट त्यांनी त्यांच्यासाठी मशीद बांधून दिल्याचे सांगितले जाते. याविषयी गौतम निकम आपल्या लेखात म्हणतात की, "रायगडावर राज्याभिषेकाच्या तयारीसाठी अनेक नवीन इमारती बांधल्या जात होत्या. बरेचसे बांधकाम पूर्ण झाले. तेव्हा छत्रपती

शिवाजी महाराज मोरोपंत त्रिंबक पिंगळे या प्रधानासह पाहणीकरिता रायगडावर गेले. सर्व पाहणी करून ते म्हणाले, तुम्ही जगदीश्वराचे मंदिर बांधले, चांगले केले; पण माझ्या मुस्लीम रयतेसाठी मशीद कुठे आहे? या प्रश्नावर प्रधान पिंगळे काय बोलणार, तो नुसता चूप नव्हता, तर चिडीचूप होता. या प्रश्नाने आतून त्याचा जळफळाट झाला होता. लागलीच महाराजांनी त्याला आज्ञा दिली की, माझ्या मुस्लीम रयतेसाठी माझ्या महालासमोर मशीद बांधा. छत्रपती शिवाजी महाराजांनी मशीद पाडली नाही, बांधली, तीही आपल्या स्वतःच्या महालासमोर."

छत्रपती शिवाजी महाराज हे स्त्रियांचे पाठीराखे होते. आजच्या राज्यात स्त्रियांवर जे मोठ्या प्रमाणावर अन्याय, अत्याचार व बलात्कार होतात, त्याप्रमाणे छत्रपती शिवाजी महाराजांच्या काळात होत नव्हते. आज आमच्या देशातली स्त्री सुरक्षित नाही. तिला कुठल्याही प्रकारचे संरक्षण नाही. लोकशाहीत तिला विविध यंत्रणांकडूनही खरा न्याय मिळत नाही. दुश्मनांची स्त्रीही सुखी असायची. याविषयी गोविंद पानसरे म्हणतात की, "ज्यांच्या पाठबळावर राज्य करायचं अशा वतनदारांचीसुद्धा गय न करायला न्यायावर एक जबर निष्ठा लागते. शिवाजीपाशी ती होती म्हणून रयत शिवकार्यात सहभागी होती आजही गोरगरीब रयतेच्या लेकीसुनावर खेडोपाडी अन् शहरांतसुद्धा अत्याचार अन् बलात्कार होतात; पण शिवाजीचा वारसा सांगणारे अन् ऊठसूट शिवाजीच्या नावाचा जयघोष करणारे आज काय करतात? अत्याचार करणाऱ्याला शिक्षा होते का? हात-पाय तोडायचे सोडा, कोर्टात केस तरी होते का? तो अत्याचार करणारा जितका मोठा 'वतनदार', जितका मोठा 'मालदार' तितक्या लवकर त्याची सुटका होते? का अटकच होत नाही?" छत्रपती शिवाजी महाराज हे राष्ट्रीय एकात्मतेचे प्रतीक होते. अठरापगड