



Shri Baneshwar Shikshan Sansthas

**Arts, Science and Commerce College,
Burhannagar, Ahmednagar 414002**



3.3 Research Publication and Awards

3.3.2. Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years



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Index of Books/Chapters/Paper published

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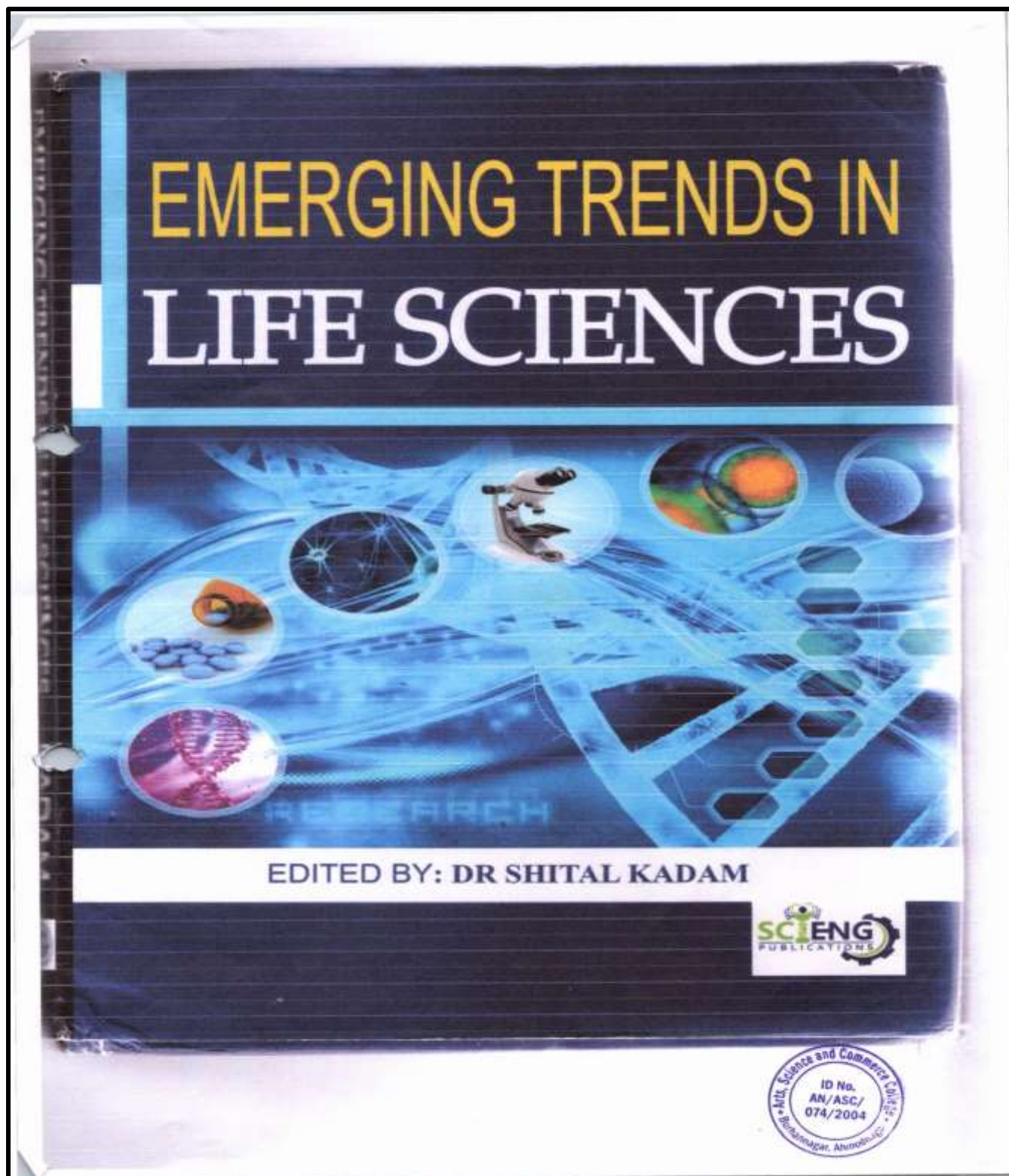


3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five year

Sr. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	National / International	Year of publication	ISBN number of the proceeding	Name of the publisher
1	Dr. (Smt) S. G. Wagh Mr. D. A. Shinde	Medicinal Plants used for Covid-19				2022	978-81-955557-2-7	SCIENG Publications
2	Dr. (Smt) S. G. Wagh Mr. D. A. Shinde	Soil and water analysis				2022	978-81-955557-2-8	SCIENG Publications
3	Dr. V. M. Jadhav	SOCIOLOGY(G2)- Population & Society				2020	978-93-87020-24-5	Success Publication
	Dr. V. M. Jadhav	SOCIOLOGY(G2)-Social Institution & Changes				2019	978-93-89529-51-7	Success Publication
4	Dr. V. M. Jadhav		Drought and Difficulties in WATER Distribution	Drought in Maharashtra:Eco-political Perspectives	National	2017	ISSN NO: 2229-5623	Sponsor: B.C.U.D.S.P.P.U
5	Mrs. V.A.Kale		Drought and Women	Drought in Maharashtra:Eco-political Perspectives	National	2017	ISSN NO: 2229-5624	Sponsor: B.C.U.D.S.P.P.U
6	Mrs. M.N.Punde		Drought in Maharashtra	Drought in Maharashtra:Eco-political Perspectives	National	2017	ISSN NO: 2229-5625	Sponsor: B.C.U.D.S.P.P.U
7	Dr. V. M. Jadhav	SOCIOLOGY(G3)-Crime and Society				2017	978-93-87020-11-5	Success Publication
8	Dr. V. M. Jadhav	SOCIOLOGY(G3)-Crime and Society				2015	978-93-5158-336-3	Success Publication



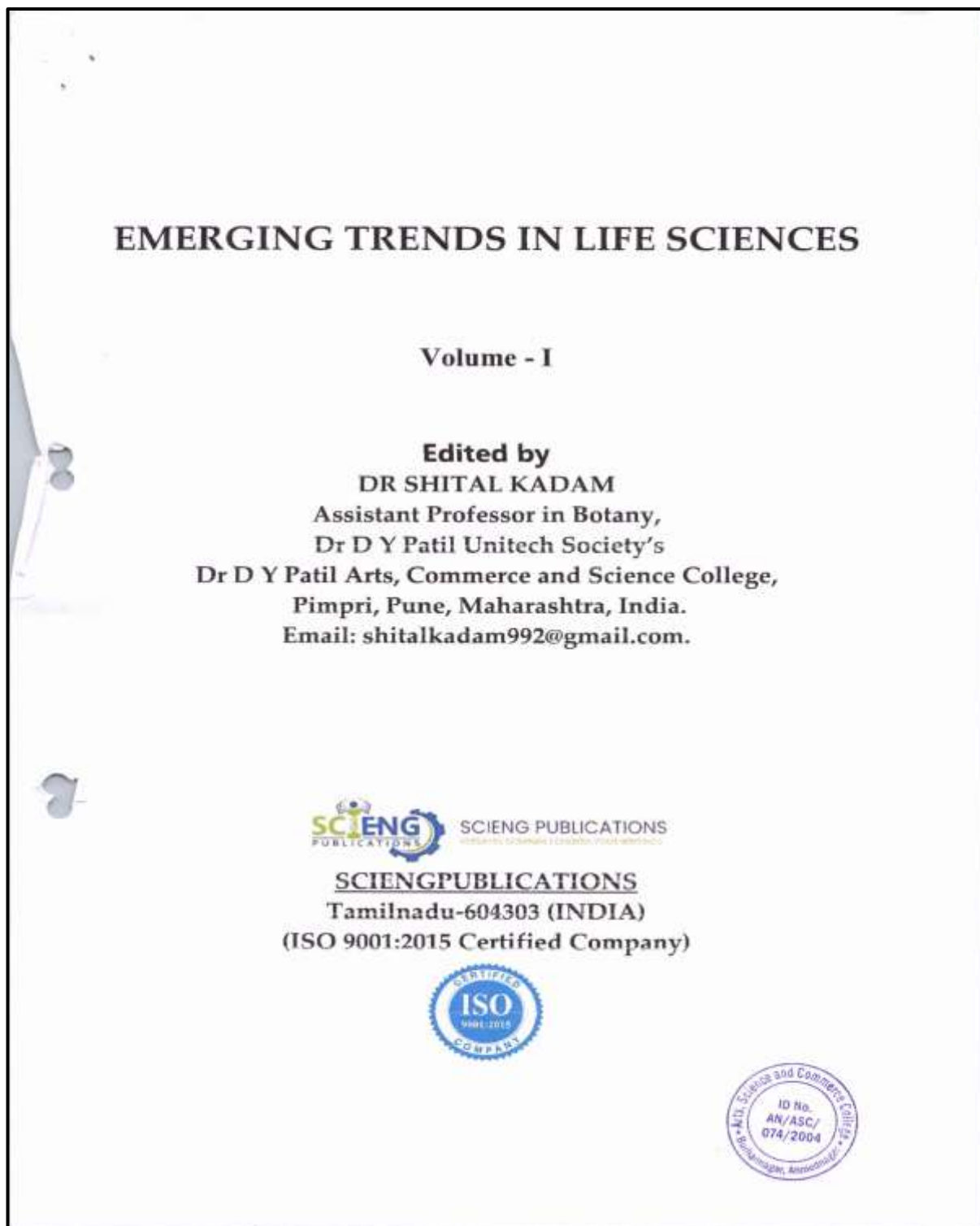
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MEDICINAL PLANTS USED FOR COVID-19 CARE

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ABSTRACT

The success of the therapeutic benefits of natural plants and herbs has been known to humans since ancient times. Plants contain phytochemicals and bioactive compounds due to this they have an important role in curing human disease. Medicinal plants and traditional Indian medicine (TIM) shows ability to cure many diseases and our country is known for that. The review highlights the detailed information of various Indian medicinal plants and their potential therapeutic role as antiviral and immunomodulatory therapeutics. Ministry of AYUSH has already issued several health advisory and routinely use of medicinal plants to strengthen the immune system to fight against COVID-19. Various medicinal plants, such as *Ocimum tenuiflorum*, *Withania somnifera*, *Curcuma longa*, *Zingiber officinalis*, *Azadirachta indica*, *Phyllanthus emblica*, *Justicia adhatoda*, *Syzygium aromaticum*, *Cinnamomum verum*, *Glycyrrhiza glabra*. With their antiviral properties against several viruses including SARS-CoV-2 virus have been discussed in the review, which might be an effective prophylaxis against COVID-19. Special emphasis has been given on the antiviral activities of these plants against SARS-CoV-2, highlighting their efficiency as potential drug candidates.

KEYWORDS: COVID-19, Medicinal plants, Photochemical and bioactive compounds.

INTRODUCTION:

All over the world is entangled by the corona virus disease in (COVID-19) is an infectious disease caused by SARS-Cov-2 virus. The most of people infected with the covid virus will experience to moderate respiratory illness.

The corona virus is spread through droplet and virus particles are released into the air when an infected person talks, laugh, breathes, cough or sneezes. All over the centuries plant and herbs are most useful for the important source of medicines. Since, the COVID-19 outbreak, different traditional herbal medicines with results to used alone or in combination



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with modern drugs to treat infected patients. In view the success of traditional Indian medicine drugs during the pandemic in the past. It is prove and the examine the contribution of the Naturopathy, Unani, Ayurveda, Yoga, Siddha and Homeopathy is helpful for the treatment of COVID-19 pandemic. The herbal medicine are many beneficial like easier to obtain the prescription medicine natural healing, fewer side effects strength in immune system.

According to world health organization the traditional medicines always have been major source of treatment in primary health care of human being. Many different plants have been utilized from centuries for improving symptoms such as coughing, digestive system disorders and weakness. Plant extract of a specific part i.e. flowers, roots, stem, fruits and seeds, plant-derived chemicals, and nutraceuticals are broadly apply in dealing with general ailment including cough, flu to complex chest infections. In fact, the 1/4th of the most commonly employed medicinal compounds contain plant-based component.

AYUSH Recommendations for Management of COVID-19 on the basis of Indian Medicine different systems, separate recommendations has delivered by the Ministry of AYUSH for the management of COVID-19. Different approaches are followed by the Hospitals according to specialization, mainly as supportive to modern medicine, which could be potentially relevant for COVID- 19 treatment. Details of recommended formulations are given in below table:

S. No.	Scientific Name	Vernacular Names	Family	Chemical Constituents	Plant Part Used	Uses
1	<i>Withania somnifera</i>	Sanskrit: Aswagandha, English: Winter cherry, Tamil: Amukara, Telugu: Penneru, Hindi: Asgandha	Solanaceae	Withaferin A, withanolide WS-1, withanolide A to Y, somnirol, withasomniferin A	Root, Leaf	Fatigue, weakness, emaciation, tumors, dyspnoea, insomnia
2	<i>Ocimum tenuiflorum</i>	Sanskrit: Tulasi, English: Sacred basil, Tamil: Tulasi, Telugu: Tulasi, Hindi: Tulsi	Lamiaceae	Bornylacetate, eugenol, methyl ether, methyl chavicol, Cadinene, limonene	Leaf, root, seed	Intermittent fever, viral hepatitis, toxic disorders, dyspnoea, cough, worms



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3	<i>Cinnamomum verum</i>	Sanskrit: Tvak, English: Cinnamom, Tamil: Ilavangam, Telugu: Lavangapatta. Hindi: Dalchini	Lauraceae	Cinnamaldehyde, eugenol, benzaldehyde, caryophyllene, methyl eugenol, cinnazeylanin, cinnacassiol	Stem bark	Rhinitis, cough, headache, indigestion, to improve taste, worm infestation, cardiac ailments
4	<i>Zingiber officinale</i>	Sanskrit: Ardhraka, English: Ginger, Tamil: Inji/chukka, Telugu: Allaem, Hindi: Sonth	Scitamineae/ Zingiberaceae	Alpha curcumene, citral, citronellol, gingerol, zingiberenes, zingiberol, zingerone, gingerols, gingerenone A	Rhizome	Fever, dyspnoea, cough, heart ailments, reduced appetite, diarrhoea, bloated abdomen, bleeding disease, Anaemia
5	<i>Curcuma longa</i>	Sanskrit: Haridra, English: Turmeric, Tamil: Manzhai, Telugu: Pasuppu, Hindi: Haldi	Zingiberaceae	Curcumene, Curcumenone, Curcnone, Cineole, Curzerenone, eugenol, procurcumenol, epiprocurcumenol, curcuminoids	Rhizome	Bronchitis, Respiratory illness, Bronchial asthma, tropical eosinophilia, diabetes, Anaemia, jaundice, skin disease, relieves toxicity
6	<i>Phyllanthus emblica</i>	Sanskrit: Amalaki, English: Gooseberry, Tamil:	Euphorbiaceae	Vitamin C, phyllembin, linolic acid, indole acetic	Fruit pulp	Diabetes, bleeding disorders, dysuria, ulcer,



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		Nellikai, Telugu: Usirikaya, Hindi: Amla		acid, corilangine, ellagic acid		leucorrhoea
7	<i>Glycyrrhiza glabra</i>	Sanskrit: Yashtimadhu, English: Liquorice, Tamil: atimadhuram, Telugu: Athimadhuram, Hindi: Mulethi	Fabaceae	Glycyrrhizin (inhibits replication of clinical isolates of SARS virus), Glycyrrhizic acid, liquiritin, glycyrrhetic acid, glycyrrhetic acid, liquiritogenin	Root	Improves strength, consumption, bleeding disorder, Rejuvenative, cardio tonic
8	<i>Azadirachta indica</i>	Sanskrit: Nimba, English: Margosa tree, Tamil: Vembu, Telugu: Vepachettu, Hindi: Nimb	Meliaceae	Nimbin, Nimbidin, Azaradactin, Nimbandiol, Margosinolid, Sitosterol etc	Root bark, stem bark, leaves	Fever, skin diseases, cough, alleviates toxicity, diabetes
9	<i>Justicia adhatoda</i>	Sanskrit: Vasa, English: Malabar nut, Tamil: Adhathodai, Telugu: Addasaramu, Hindi: Adusa	Acanthaceae	β -sitosterol, Vasicine, Vasicinol, Vitamin-C, Carotene, α -hydroxy vasicine, Vasicolone.	Leaf, root, flowers	Fever, cough, dyspnoea, consumption, anaemia, bleeding disorder, diarrhea, skin diseases
10	<i>Syzygium aromaticum</i>	Sanskrit: Lavanga, English: Clove, Tamil: Kirambu, Telugu: Lavangamu, Hindi: Laung	Myrtaceae	Beta-caryophyllene, eugenol, furfural, vanillin, isoeugenitol, eugenone, eugenine	Floral bud	Consumption, cough, dyspnoea, thirst, vomiting, bleeding disorders



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1. ASVAGANDHA

- **Botanical name:** *Withania somnifera* (L.) Dunal
- **Description:** A branched erect under shrub 0.3 - 1.5m high. Branches, leaves 5 - 10 by 2.5 - 5cm ovate, subacute, entire, pubescent, base acute. Flowers greenish or light yellow, sessile. Seeds 2.5 mm diameter, yellow, somewhat scurfy.
- **Properties and Action:** Pungent, bitter, astringent in taste, hot in potency, pungent in vipaka, action-alleviates vata and kapha, enhances strength, rejuvenative and increases sperm count.
- **Pharmacological principle:** Anti covid 19 activity, Anti pyretic, Anti-microbial, Antibacterial, Antioxidant, Immunomodulator, Anti-inflammatory, Anti-malarial, cardio protective, neuro protective, hepato protective, Adaptogenic, Anti diabetic.
- **Dosage:** Powder 3-6 gm
- **Important Formulations:** Aswagandha churna, Aswagandha arishtam.



2. TULASI

- **Botanical name:** *Ocimum tenuiflorum* L.
- **Description:** An under shrub, erect, much branched, aromatic. Leaves elliptic-oblongate. Flowers purple cream in racemes. Calyx purplish. Corolla white, purplish within. Stamens-4, didynamous. Commonly found in all areas.
- **Properties and Action:** Bitter and Pungent taste, hot potency, pungent vipaka, action-14 alleviates kapha vata, appetizer.
- **Pharmacological principle:** Antifungal, Anti-viral, Anti-bacterial, adaptogenic, Hypoglycaemic, Anti spasmodic.
- **Dosage:** Fresh juice 10-20 ml, root decoction 50-100 ml, seed powder 3-6 gm
- **Important Formulations:** Surasadigana kashayam, tumburvadi yoga.



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3. CINNAMOMUM

- **Botanical name:** *Cinnamomum verum* Presl
- **Description:** Small tree with pale brownish, smooth, aromatic bark. Flowers foetid in panicles, yellowish-white. Fruit dark purple, single seeded berry.
- **Properties and Action:** Pungent bitter and astringent in taste, hot potency, pungent vipaka, action-alleviates vata pitta, improves strength.
- **Pharmacological principle:** Anti complement activity, anti-allergic activity.
- **Dosage:** Powder 1-3 gm
- **Important Formulations:** Eladi rasayanam, sitopaladi choorna, samasarkara choorna.



4. GINGER

- **Botanical name:** *Zingiber officinale* Roscoe
- **Description:** An erect, slender and herbaceous plant, grow up to 1.8 m high. Shoots extend above ground, arising from buds on the underground rhizomes, which are thickened, branched, somewhat resembling a swollen hand.
- **Properties and Action:** Pungent taste, hot potency, sweet vipaka, action-alleviates vata kapha, improves digestion.
- **Pharmacological principle:** Hypoglycaemic, Anti histaminic, Anti-oxidant, Anti-bacterial, Anti-inflammatory, Bio availability enhancer, Hypolipidemic.
- **Dosage:** Fresh juice 5-10 ml; powder 1 -2 gm
- **Important Formulations:** Ardhraka rasayana, ardhraka khandavalehya, nagaradi kashaya.



5. TURMERIC

- **Botanical name:** *Curcuma longa* L.
- **Description:** Rhizomatous herb, with sessile cylindrical tubers. Leaves in tufts, large. Flowers in spikes. Bracts pink.



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- **Properties and Action:** Bitter and pungent taste, hot potency, pungent vipaka, action alleviates kapha vata.
- **Pharmacological principle:** Anti-bacterial, Anti-oxidant, Anti-inflammatory, Anti histamine, Anti septic, hypocholesterolenic, hydrochologogue
- **Parts used:** Rhizome
- **Therapeutic Uses:** Bronchitis, Respiratory illness, Bronchial asthma, tropical eosinophilia, diabetes, Anaemia, jaundice, skin disease, relieves toxicity
- **Dosage:** Powder 1-3 gm
- **Important Formulations:** Haridrakhanda, Nisamalaki Chooranam

6. AMALA

- **Botanical name:** *Phyllanthus emblica* L.
- **Description:** A small deciduous tree, 8-12m high. Leaves oblong, 1 - 1.5×0.2 -0.4cm; stipules minute, linear. Flowers in axillary fascicles; bisexual flowers mixed, or more usually the upper male; tepals 6, oblanceolate; stamens-3, connate; styles broadly imbricate, recurved, stigmatiferous. Drupe indehiscent, depressed-globose, fleshy, juicy, 3cm across. Seeds 3-gonous.



- **Properties and Action:** Predominantly sour, in taste, cold in potency, sweet vipaka, action - alleviates all three dosas, promotes longevity, Rejuvenative, aphrodisiac.
- **Pharmacological principle:** Anti-inflammatory, Anti-bacterial, Anti-microbial, Anti-oxidant, Hepatoprotective, Hypolipidemic, Anti atherosclerotic, Hypoglycaemic.
- **Dosage:** Fresh juice- 10 -20 ml; powder 3 - 6 gm
- **Important Formulations:** Chyavanaprasha avalehyam, amalakadi churna.

7. LIQUORICE

- **Botanical name:** *Glycyrrhiza glabra* L.
- **Description:** Licorice root has been widely used around the world to treat cough since ancient times. It is also known as licorice, is herbaceous perennial that has been used as a flavoring agent in foods and medicinal remedies.
- **Properties and Action:** cold potency, Sweet in taste, sweet vipaka, action-alleviates all three 28 doshas, Rejuvenative, aphrodisiac.



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- **Pharmacological principle:** Anti pyretic, Anti-inflammatory, and Anti-arthritis, Anti diuretic.
- **Dosage:** Powder 3-5 gm
- **Important Formulations:** Yastyadi churna, Madhuyastyadi tailam

8. NEEM

- **Botanical name:** *Azadirachta indica* A. Juss
- **Description:** Trees with dark brown barks. Leaves compound, imparipinnate, leaflets obliquely lanceolate, acuminate. Flowers fragrant in axillary panicles, sepals-5, lobed, petals-5, poly petalous, stamens-10, staminal tube apically 10- lobed. Commonly found in human settlements and also in uninhabited areas.
- **Properties and Action:** Bitter and astringent taste, cold in potency, pungent in vipaka, 30 action-alleviates kapha and pitta
- **Pharmacological principle:** Anti-microbial, Immuno stimulant, Anti-inflammatory, Anti arthritic, Antidiabetic, improves cardio vascular activity.
- **Dosage:** Fresh juice 10 -20 ml, Bark powder 2 -4gm
- **Important Formulations:** Nimba haridrakhandana, Nimbadi churna, Pancha nimba churna.



9. ADULSA

- **Botanical name:** *Justicia adhatoda* Medick.
- **Description:** Shrub leaves oblanceolate. Flowers in spikes. Calyx lobes - 5, equal, shortly connate. Corolla white, lobes-5, blipped. Stamens-2. Almost found in fallow fields and waste lands.
- **Properties and Action:** Astringent and Bitter taste, pungent in vipaka, cold in potency, action-alleviates kapha and pitta, cardiotoxic.
- **Pharmacological principle:** Brochodilator activity, Haemostatic, advantages in attenuating the critical inflammatory stages of Covid 19
- **Important Formulations:** Vasarishtam, Vasavalehya.



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10. LAUNG

- **Botanical name:** *Syzygium aromaticum* (L.) Merr. & L.M.Perry Date 2021-12-15 Words 334 Characters 2695
- **Description:** Medium-Small sized evergreen tree, 8 - 30 m tall, dried, brown, unopened flower buds are called cloves.
- **Properties and Action:** Bitter and pungent taste, cold potency, improves taste, appetizer, digestive
- **Pharmacological principle:** Anti-viral, bactericidal, fungicidal, Anti-inflammatory, Anti carcinogenic
- **Dosage:** Powder 1-2gm
- **Important Formulations:** Lavangadi vati, Lavangadi churna, Devakasuma arka

**SUMMARY**

India has always been known for its rich biodiversity and wide variety of plants, from the Himalayas to the oceans and deserts to the rainforests. In addition to being a primary food source, plants serve as a very important source of medicine. For the development of drugs, a thorough understanding of their culturing status, ecology and genetic plants, along with their secondary metabolic pathways, is important. To focus on this aspect, medicinal plants produce many important chemical compounds through their secondary metabolism, acting as self-protection from environmental triggers and stress induced by pathogens. From the use of raw herbs to the extraction of vital compounds, medicinal plants have been the source of centuries-old sources in various traditional herbal medicine systems. For example, their importance lies in the fact that the WHO concludes that 80% of the world's population depends on them for treatment. It has been shown that there are a number of medicinal plants that are already working against respiratory toxins. Therefore, it is not surprising that medicinal plants can be used as a powerful weapon against Covid-19. The traditional herbal medicine derived from these herbs can work on a variety of fronts, including reducing the symptoms of Covid-19 patients as well as providing raw materials for powerful antiviral drugs. Therefore, the current research for the treatment of covid-19 should include a large number of medicinal plants as an important area of research.

The present study reveals the condition of medicinal plants and herbs in India and their various therapeutic benefits. The use of herbal medicines is not only safe and beneficial but also free from side effects. The AYUSH pharmaceutical system emphasizes simple natural remedies for improving and developing a strong immune system. Efforts should be made to



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discover and propagate the knowledge of treatment through such herbs. Proper use of herbicides against covid-19 can save many lives and reduce the risk of infection, which in turn reduces mortality. SARS-CoV-2 poses a threat to the human population due to the lack of approved vaccines or drugs for its treatment. Many medicinal plants need to be tested against COVID-19 to increase immunity against other viral infections and to maintain anti-allergic / inflammatory activity. The Ministry of AYUSH, Government of India has issued a number of suggestions from time to time, considering the strength and evidence of these systems of medicine and has made great efforts to encourage researchers to search for herbal products for COVID-19.

Interventions from various AYUSH systems and herbal formulations are the basis of evidence for their immunosuppressive, anti-inflammatory and anti-viral effects. Therefore, these herbal remedies may provide some relief until a tested drug or vaccine is available to reduce the risk of covid-19.

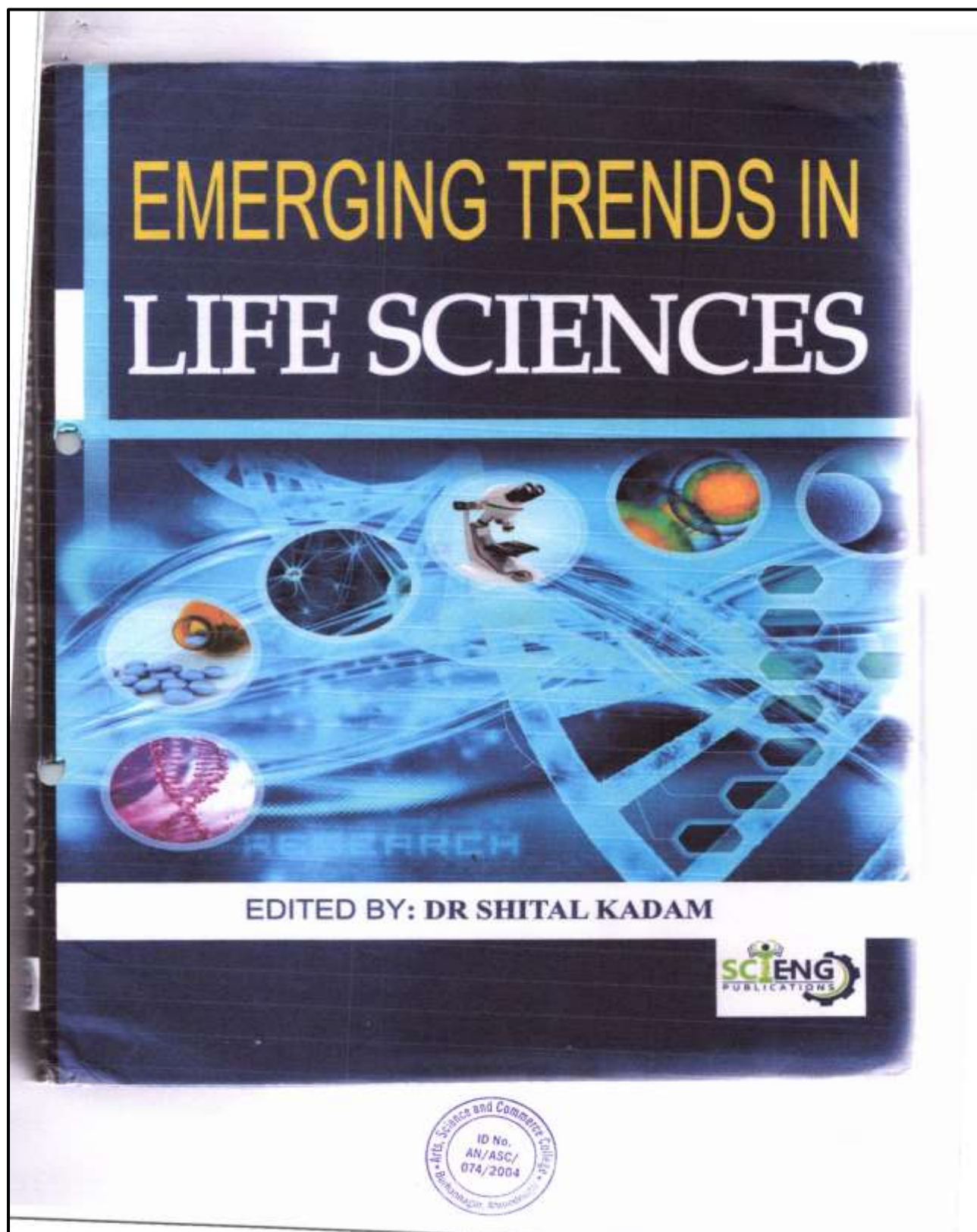
Given the potential of AYUSH medicines and medicinal plants in India, herbal medicine manufacturers and national and global research institutes should develop the necessary strategies to carry out preclinical and clinical research on these promising therapeutic leads.

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Chapter

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SOIL AND WATER ANALYSIS

DEEPAK AMBADAS SHINDE, SWATI GORAKSHNATH WAGH

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ABSTRACT

Some insensible farmers are increasing amounts of fertilizers and pesticides for high crop yield that causes soil infertility and soil pollution. The various nutrients are required for healthy growth of crop. Most of the nutrients are absorbed through the soil by crop. Availability of these nutrients in soil is determined by soil analysis. A soil analysis is performed on the basis of various parameters such as available nitrogen, Phosphorus, potassium, soil pH, electrical conductivity, organic carbon & lime requirement. The analysis report of soil gives idea which nutrient is deficient, and which is excess in soil, so farmer can decide how much fertilizer to add in the soil for maintaining soil health and get maximum yield.

Utilization, of water in excessive amounts or impure quality of water for irrigation creates problems during the crop production. So, in the study area water sample analyzed by using simple techniques in laboratories. Water analysis is mainly carried out to check the quality of water it provides information about suitability of water for irrigation. A water quality is determined using TSS, SAR, ESP, RSC etc values.

KEYWORDS: soil infertility, soil analysis, soil parameter, water analysis.

INTRODUCTION

Considering the growing population of 21st century, Food, Clothing and Shelter are emerging as basic component. In order to overcome from food shortage, it is necessary to increase the area under agriculture as well as increase the productivity of the land. For that soil and water analysis is boon for the farmers. It will help for planning of cultivate right crop according to soil nature and schedule of fertilizer use. It also helps to avoid overdose of chemical fertilizers. From data received in analysis report farmers will moving to increase the fertility of land. The various nutrients are required for healthy growth of crop. Most of the nutrients are absorbed through the soil by crop. Availability of these nutrients in soil is



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determined by soil analysis. The analysis report of soil gives idea which nutrient is deficient, and which is excess in soil, so farmer can decide how much fertilizer to add in the soil for maintaining soil health and get maximum yield.

Poor quality of water for irrigation creates problems during the crop production. In the study area, water sample analyzed by using simple techniques in laboratories.

Definition: Soil is a mixture of organic matter, minerals, gases, liquids, and organisms that together support life.

SOIL ANALYSIS

A soil analysis is performed on basis of various parameters such as

- a) Available Nitrogen (N), Phosphorous(P) and Potassium (K)
- b) Soil pH
- c) Electrical Conductivity (EC)
- d) Organic Carbon
- e) Lime requirement

Analysis is performing using a good sample.

Soil Sample Preparation

A. Soil Sampling

A 'V' shape 15-20cm vertical cut is taken in four corners and centre of a field using Spade or Auger. Five representative samples are collected in clean bucket from these spots.

Pour this soil on a clean paper or cloth sheet. Mixed soil uniformly and spread evenly.

Divide it into four quarters. Reject two opposite quarter and mix the rest soil again.

Repeat this process till left with about half kilogram soil. Collect it in clean cloth bag and tag the bag for identification.



Fig.1: V shaped method of soil sampling



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Fig. 2: Quarter method of soil sampling

B. Drying

The soil sample is air-dried at well ventilated condition. Wet sample must spread on paper sheet at a less than 1cm in thickness. After drying soil remove foreign material such as organic matter, charcoal, shells and plant seeds.

C. Sieving

Grind the air-dried soil sample in mortar and sieve the grinded soil through a 0.5mm to 2mm mesh screen.

Precautions while sampling

- Samples should not be taken unevenly from manure, wetlands, old roads, old dams, tree areas, old compost heaps and other unsuitable places.
- For soft and moist soil, tube auger or spade is considered satisfactory. For hard soils, screw auger may be more convenient.
- Where crops are planted in rows, collect samples in the middle of the rows to avoid composting.
- Soil samples should never be stored with fertilizer and detergent.
- Soil samples should be checked for cleanliness and strength before placing them in bags.

Available N, P & K

Nitrogen- Available nitrogen in soil is determined by The Kjeldahl digestion method. This method works on digestion of organic Nitrogen to ammonium-Nitrogen. Ammonia is determined by capturing with a known concentration of sulphuric acid and remaining sulphuric acid after distillation was titrated with alkali solution.

Phosphate- Phosphorus is a most important element present in every living cell. It is one of the most important micronutrients essential for plant growth. Phosphorus most often limits nutrients remains present in plant cells and act as energy storage. Soil containing phosphate



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can be determined by Bray-1 method or Truog method. For the determination of Phosphate both methods use spectrophotometer

Potassium- Potassium has important role in different physiological processes of plants; it is one of the essential elements for the growth of the plant. It is participated in many plant metabolism reactions, ranging from lignin and cellulose used for the formation of cellular structural components, for regulation of photosynthesis and production of glucose and fructose that are used for various plant metabolic needs. Available potassium in soil is determined by using flame photometer. Potassium is extracted from dried soil samples by shaking with 0.5 M acetic acid /ammonium acetate solution for 30 minutes. This effectively displaces the potentially available potassium ions.

Table 1: Classification Chart for N, P & K nutrients.

Nutrient	Nitrogen (kg/ha)	Phosphorous (kg/ha)	Potassium (kg/ha)
Low	< 250	< 10	< 125
Medium	250 - 500	10 - 25	125 - 210
High	> 500	> 25	> 210

Soil pH

Soil pH plays an important role in selection of suitable crop for the soil. Generally, pH is controlled by use of lime. Soil pH is decreases due to the heavy rainfall because, due to heavy rain calcium carbonate from the soil is leached out. Acidic soils are less fertile. Soil pH also increased by addition of lime. Exchangeable acidity also determines the pH of soil.

Table 2: Classification Chart for Soil pH

Sr. No.	pH Range	Rating
1	Soil pH < 6.0	Acidic Soil
2	Soil pH 6.0 – 8.5	Good Soil
3	Soil pH > 8.5	Alkaline Soil



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Electrical Conductivity (EC)

Electrical conductivity is also one of the important properties of soil. Through the measurement of electrical conductivity quality of soil is measured. Conductivity of soil is a measure of ions present in soil solution. It goes increases with increased concentration of ions. Electrical conductivity is a very simple, quick and inexpensive method to check health of soils.

Table 3: Classification Chart for Electrical Conductivity of Soil

Sr. No.	EC Range	Rating
1	<1 mmho/cm	Good Soil
2	1-2 mmho/cm	Poor seed emergence
3	2-3 mmho/cm	Harmful for some crops.
4	>3 mmho/cm	Harmful for most of the crop

Organic Carbon

Soil fertility basically depends on the presence of organic carbon. Organic carbon release nutrient for plant growth, promotes the structure, biological and physical health of soil, and it act as buffer against harmful substances. Greater presence of soil organic carbon has two benefits- as well as helping to mitigate climate change, it improves soil fertility and health. Many management practices that increase soil organic carbon also improve crop quality and yields

Table 4: Classification Chart for Organic Carbon

Sr. No.	Organic Carbon	Rating
1	< 0.50	Less
2	0.50 – 0.75	Medium
3	> 0.75	High

Lime requirement

Generally, soil contains calcium carbonate and magnesium carbonate. This compound decreases the acidity of soil and increases soil pH. Even though, calcium and magnesium



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are also essential for healthy growth of crop. Main role this compound is to control the pH of soil, which improves the availability of nutrients for healthy growth. In the alkaline soil crops like lemon and Orange are avoided.

WATER ANALYSIS-

Water analysis is mainly carried out to check the quality of water. It provides information about suitability of water for irrigation. Water has unique ability to dissolve so many chemical compounds. The main source of water is rainfall. It polluted easily at the time of flowing and drenching. When water is leach out through the soil it gets contaminated by soil content. Water analysis is performing on small quantity of water sample. The water sampling process is as given below

Sampling

Common sampling tool for water sampling is transparent plastic or glass bottle of 500ml to 1000ml capacity. If the irrigation water source is a river, canal or tank the sample is collected from the middle stream. If the source is tube well or hand pump, then is run for about 10-15 minutes and after that sample is collected. For open well source five to six bucket are thrown out and then sample is collected. After collecting sample, the bottle is marked using a pen for future identification.

Analysis of irrigation water

Turbidity, pH, Hardness, Specific gravity, Electrical Conductivity is determined to study the quality of irrigation water. Dissolved constituents in irrigation water are classify in two classes as

- Major constituent- the cations Mg, Na, Ca, K and anions carbonate, sulphate, bicarbonate, nitrates and chloride.
- Minor constituents- Silica, Sulphide, Fluoride, Boron and Nitriles etc.

Water quality standards-

a. TSS (total Soluble salts)

All water-soluble salts measured as TSS.

b. SAR (sodium adsorption ratio)

SAR is calculated using formula given below

$$SAR = \frac{Na^+}{\left[\frac{Ca^{2+} + Mg^{2+}}{2}\right]^{1/2}}$$

c. ESP (exchangeable sodium percentage)

ESP is determined by relative amount of the sodium ion present in water. It also calculated using SAR value by given equation:

$$ESP = [100 (-0.0126 + 0.01475 \times SAR)] / [1 + (-0.0126 + 0.01475 \times SAR)].$$



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d. RSC (residual sodium carbonate)

Residual sodium carbonate is calculated as given below:

$$\text{RSC (me/liter)} = (\text{CO}_3^{2-} + \text{HCO}_3^-) - (\text{Ca}^{2+} + \text{Mg}^{2+})$$

Quality of irrigation water had to must qualify the guidelines of CPCB (Central Pollution Control Board) and SPCB (State Pollution Control Board). This type of water used for irrigation purpose gives good crop yield. Water is classified in five categories by its chemical properties.

Table 5: Quality water for irrigation.

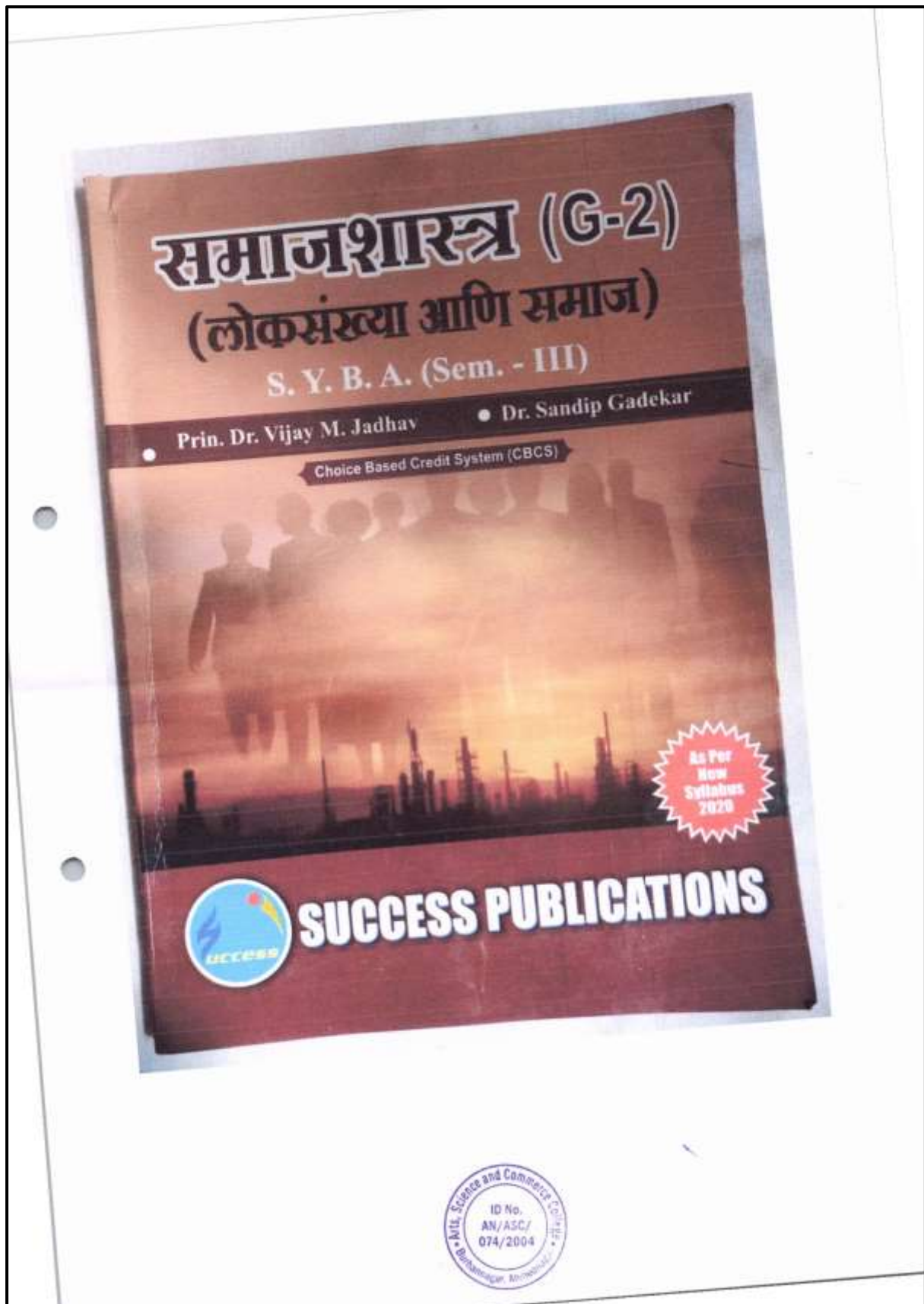
Water Class	Sodium %	E.C. ms/cm	SAR	RSC
Excellent	< 20	< 250	< 10	< 1.25
Good	20 - 40	250 - 750	10 - 18	1.25 – 2.00
Medium	40 - 60	750 - 2250	18 - 26	2.00 - 2.50
Bad	60 - 80	2250 - 4000	> 26	2.50 – 3.00
Very Bad	> 80	> 4000	> 26	> 3.00

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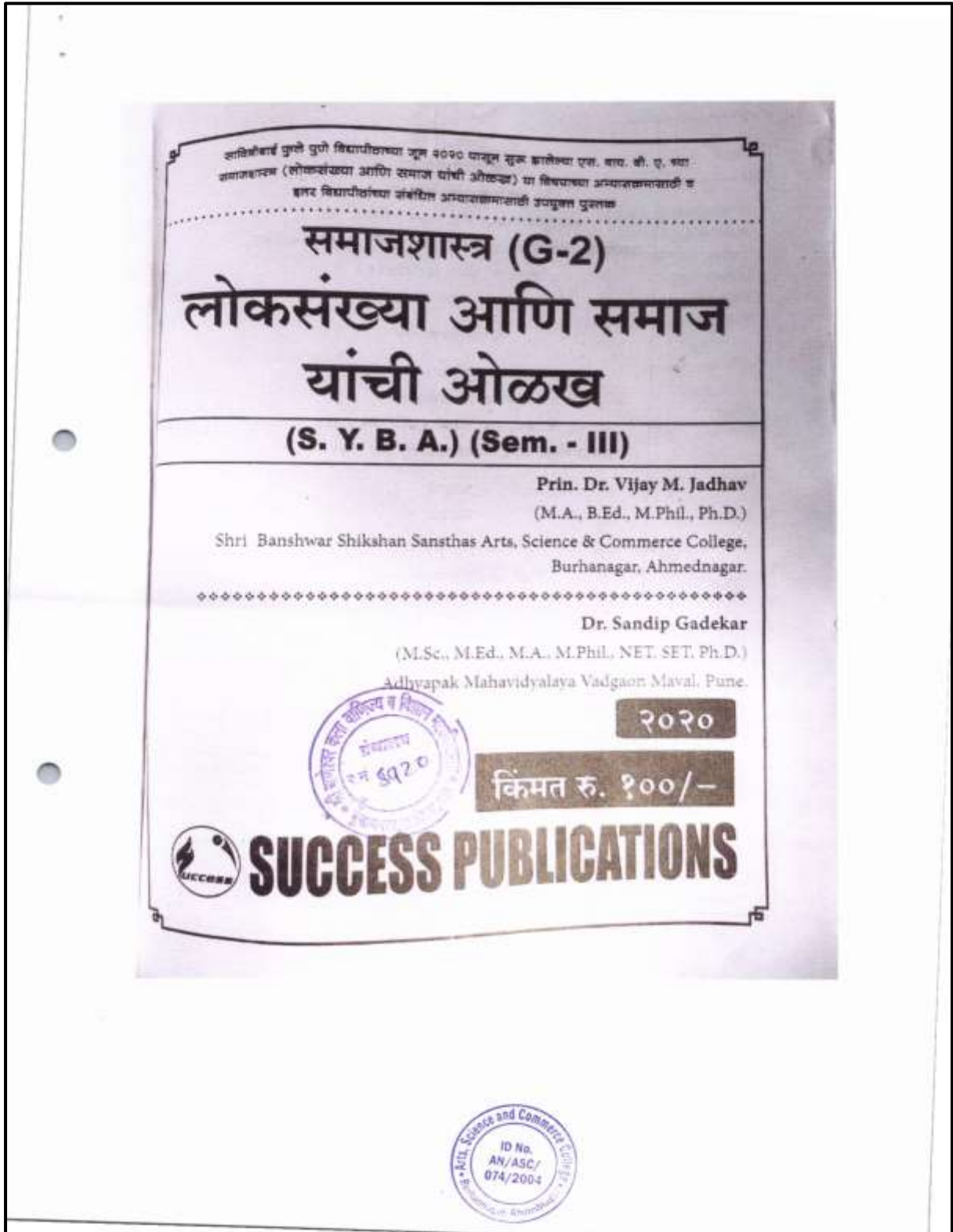
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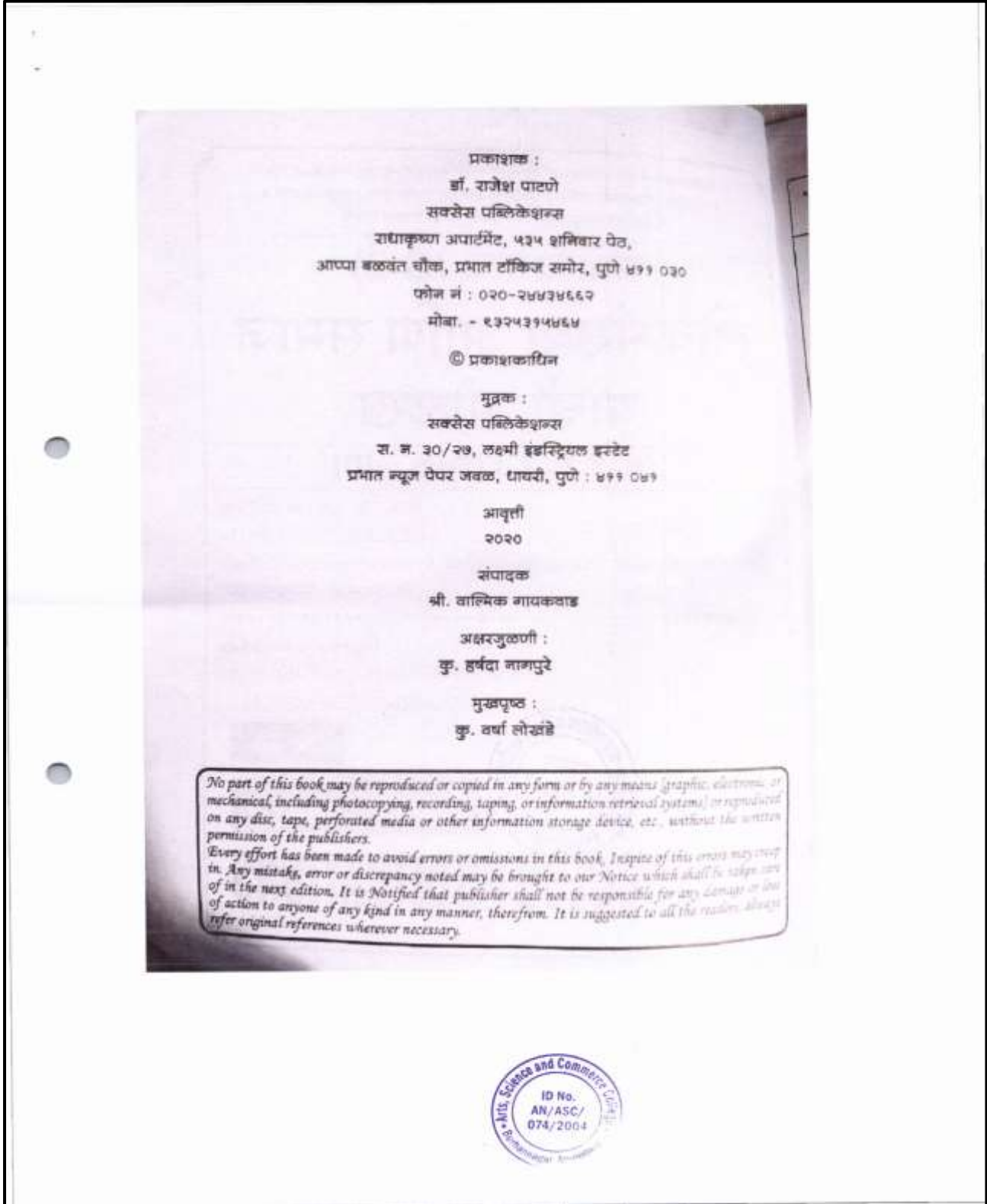
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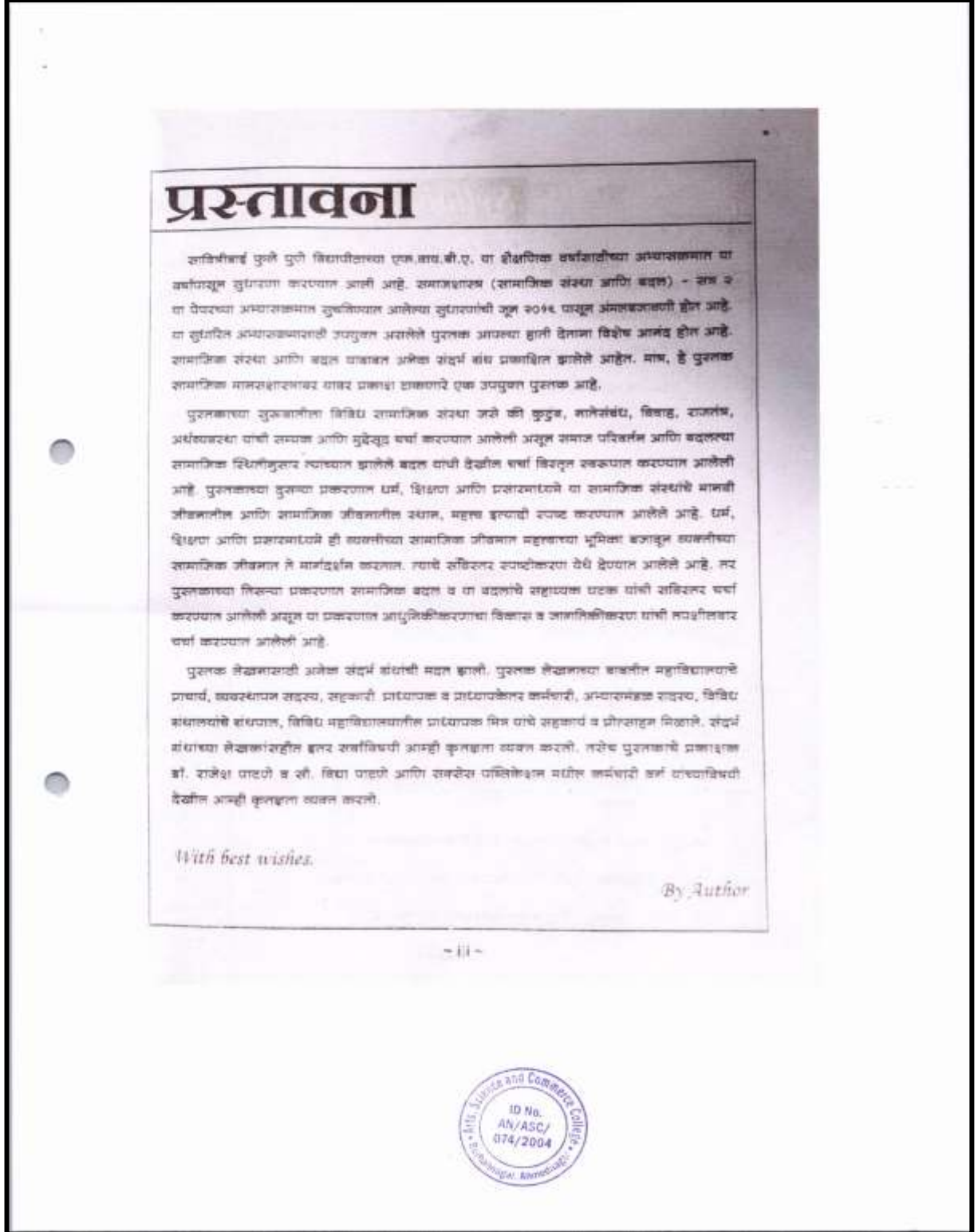
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Syllabus-Sociology(G2)- Introduction To Population & Society

Syllabus

Sociology (G-2)
Introduction to Population and Society
S.Y.B.A. (Sem. - III)

Unit No.	Topic	Period
1	Introduction, theories and perspectives related to population studies A) Introduction: 1. Population Studies – Meaning, Scope and Importance 2. Evolution of Population Studies - Micro Demography to Macro Demography. B) Theories and Perspectives: 1. Malthusian theory 2. Demographic Transition theory 3. Marxist Thoughts on Population 4. Feminist perspective on demography (it was there in earlier version)	20
2	Sources Of Population Data 1. Census – definition and importance 2. Registration of vital events (birth, death, marriage, adoption, divorce)- meaning and importance 3. Recent trends in collection of population data – Adhar (Unique Identification Data), NPR, NRC and CAA and the debate around them	15
3	Population and Development 1. Population as a constraint on and a resource for development 2. Relationship between population and poverty	10

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**Syllabus-Sociology(G2)-
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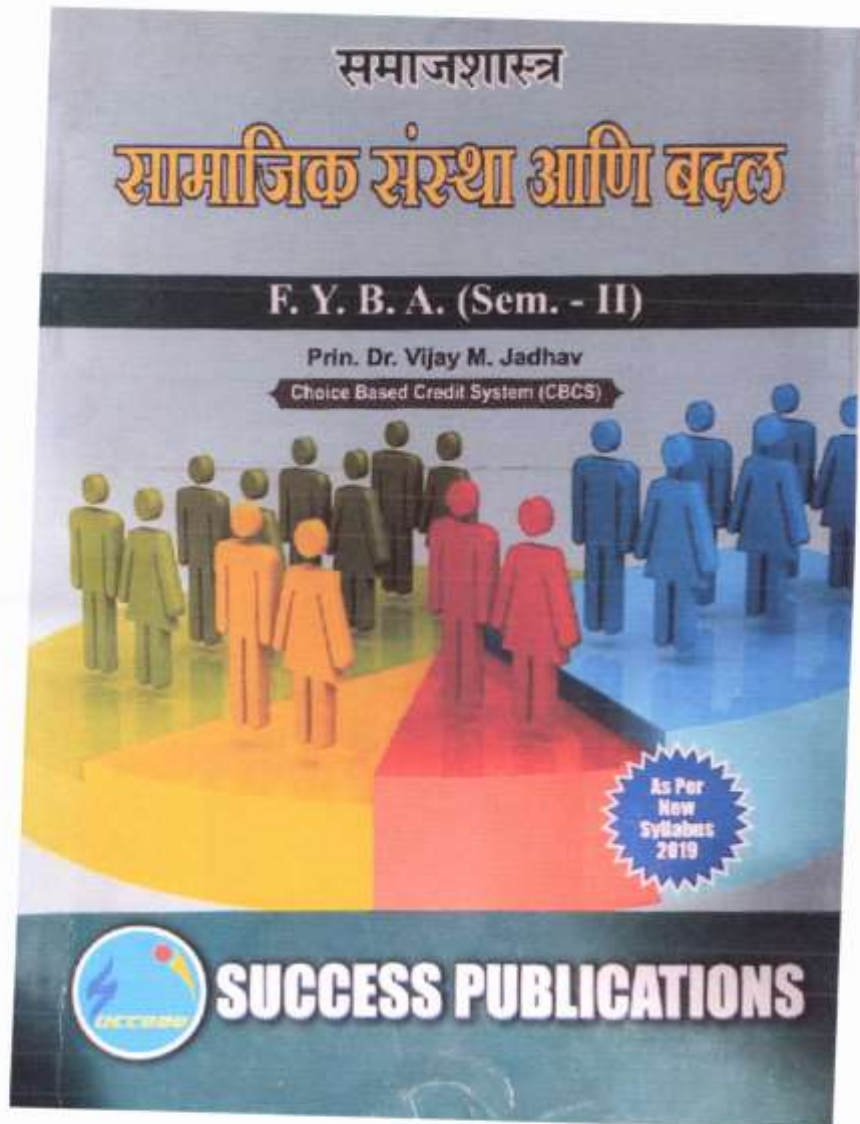
❖ अनुक्रमणिका ❖				
१.	लोकसंख्या अभ्यासाची ओळख आणि सिद्धांत व वृद्धिकोन	१.१	ते	१.१३
	▷ १.१ लोकसंख्याशास्त्र			
	▷ १.२ लोकसंख्या अध्ययन			
	▷ १.३ लोकसंख्या अध्ययनाचे सिद्धांत व वृद्धिकोन			
२.	लोकसंख्या माहितीचे स्रोत	२.१	ते	२.२८
	▷ २.१ जनगणना			
	▷ २.२ महत्वाच्या घटनांची नोंदणी			
	▷ २.३ आधार कार्ड			
	▷ २.४ एन.पी.आर., एन.आर.सी. आणि सी.ए.ए.			
३.	लोकसंख्या आणि विकास	३.१	ते	३.१
	▷ ३.१ लोकसंख्या-आर्थिक विकासाचे साधन			
	▷ ३.२ लोकसंख्या-आर्थिक विकासामागील अडथळा			
	▷ ३.३ लोकसंख्या आणि दारिद्र्य पातळी परस्परसंबंध			
	▷ ३.४ लोकसंख्या वाढ आणि आर्थिक विकास			



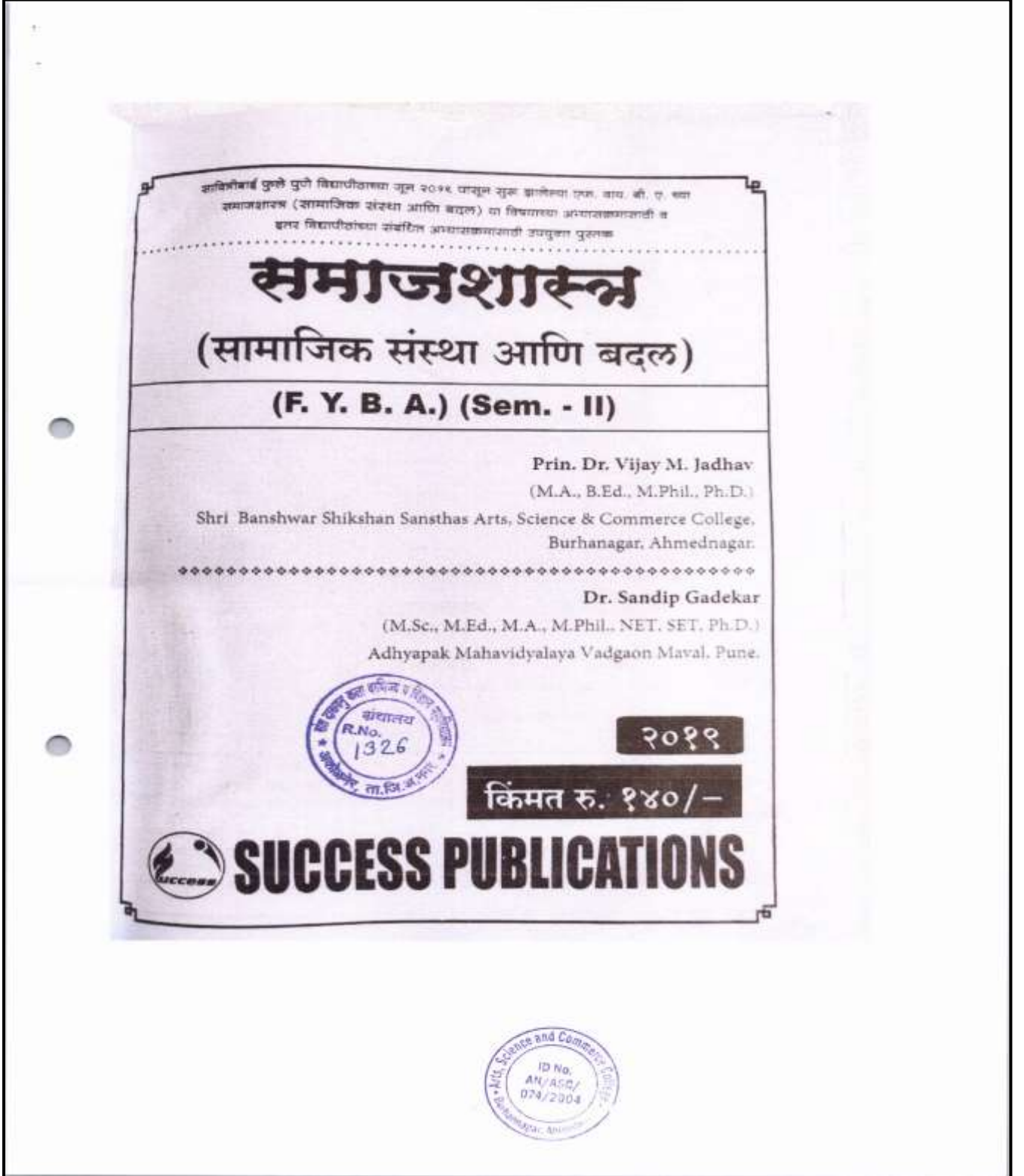
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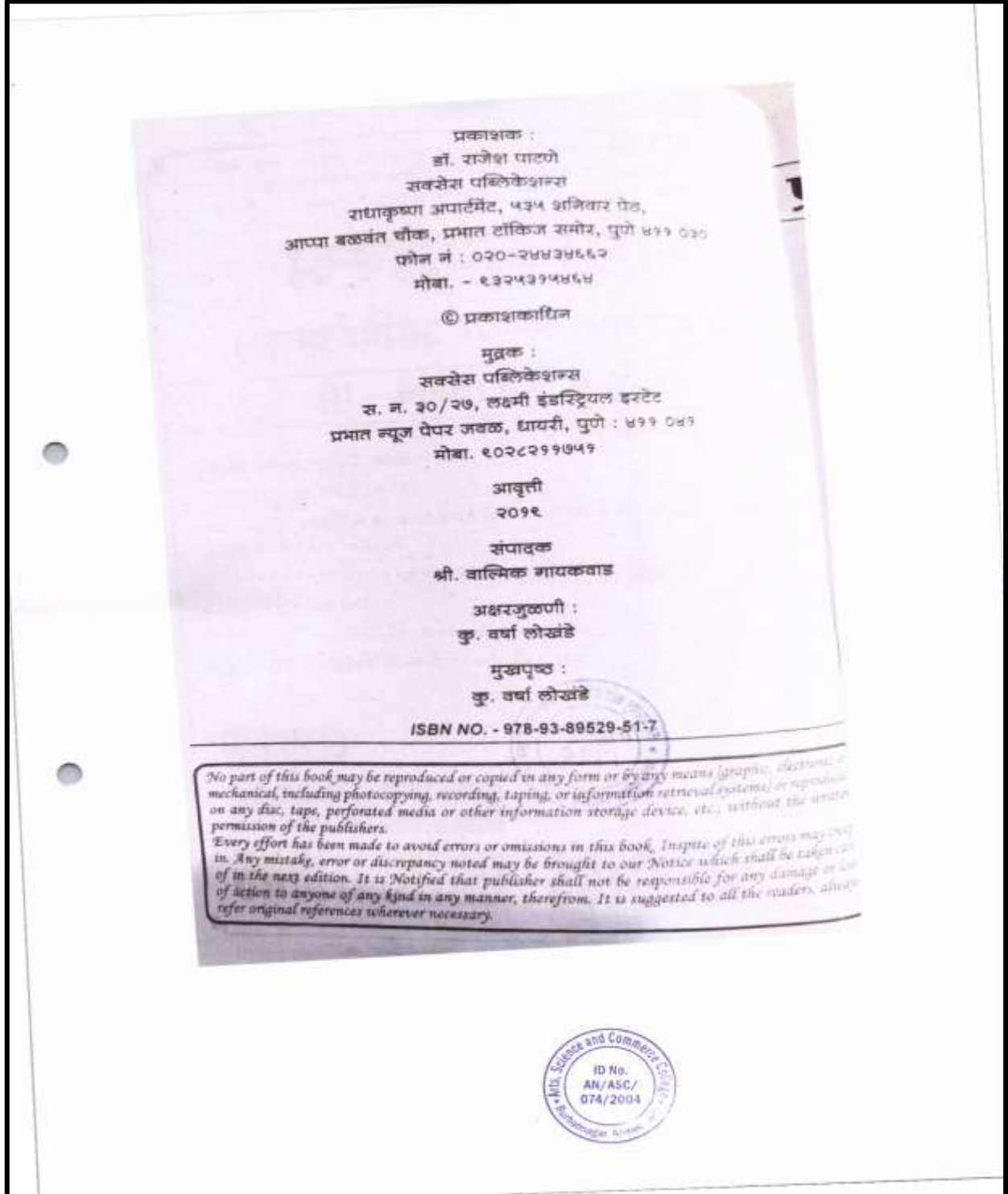
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Book Introduction/Preface-Sociology(G2)- Social Institution & Change

प्रस्तावना

सावित्रीबाई फुले पुणे विद्यापीठाच्या एम.बि.सी.ए. या शैक्षणिक वर्गसाठीच्या अभ्यासक्रमाला या वर्षापासून सुधारणा करण्यात आली आहे. समाजशास्त्र (सामाजिक संस्था आणि बदल) - सध्या ० या वेपारच्या अभ्यासक्रमाला सुधारणा आलेल्या सुधारणांची जून २०१६ पासून अंमलबजावणी होत आहे. या सुधारित अभ्यासक्रमासाठी उपयुक्त असलेले पुस्तक आपल्या हार्ती वेळाला विशेष आनंद होत आहे. सामाजिक संस्था आणि बदल याबाबत अनेक संदर्भ ग्रंथ प्रकाशित झालेले आहेत. मात्र, हे पुस्तक सामाजिक मानसशास्त्रावर यावर प्रकाश टाकणारे एक उपयुक्त पुस्तक आहे.

पुरतकाच्या सुरुवातीला विविध सामाजिक संस्था जसे की कुटुंब, जातेसंबंध, विवाह, राजकारण, अर्थव्यवस्था यांची संघर्ष आणि मुद्देसुद्ध घर्षा करण्यात आलेली असून समाज परिवर्तन आणि बदलत्या सामाजिक स्थितीनुसार त्यांच्यात झालेले बदल यांची देखील घर्षा विस्तृत स्वरूपात करण्यात आलेली आहे. पुस्तकाच्या पुस्तका प्रकरणात धर्म, शिक्षण आणि प्रसारमाध्यमे या सामाजिक संस्थांचे मानवी जीवनातील आणि सामाजिक जीवनातील स्थान, महत्त्व इत्यादी स्पष्ट करण्यात आलेले आहे. धर्म, शिक्षण आणि प्रसारमाध्यमे ही व्यक्तीच्या सामाजिक जीवनात महत्त्वाच्या भूमिका बजावून व्यक्तीच्या सामाजिक जीवनात ते मार्गदर्शन करतात. त्याचे सविस्तर स्पष्टीकरण येथे देण्यात आलेले आहे. तर पुरतकाच्या तिसऱ्या प्रकरणात सामाजिक बदल व या बदलांचे सहाय्यक घटक यांची सविस्तर घर्षा करण्यात आलेली असून या प्रकरणात आधुनिकीकरणाचा विकास व जागतिकीकरण यांची तपशीलवार घर्षा करण्यात आलेली आहे.

पुरतक लेखनासाठी अनेक संदर्भ ग्रंथांची मदत झाली. पुरतक लेखनाच्या बाबतीत महाविद्यालयाचे प्राचार्य, व्यवस्थापन सहाय्यक, सहकारी प्राध्यापक व प्राध्यापकेतर कर्मचारी, अभ्यासमंडळ सहाय्यक, विविध संघालयांचे सहाय्यक, विविध महाविद्यालयातील प्राध्यापक मित्र यांचे सहकार्य व प्रोत्साहन मिळाले. संदर्भ ग्रंथांच्या लेखकांसहून इतर सर्वांसहून आम्ही कृतज्ञता व्यक्त करतो. तसेच पुरतकाचे प्रकाशक डॉ. राजेश पाटणे व सौ. विद्या पाटणे आणि सफरीस पब्लिकेशन मधील कर्मचारी वरन बांध्याविषयी देखील आम्ही कृतज्ञता व्यक्त करतो.

With best wishes.

By Author

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Syllabus-Sociology(G2)- Social Institution & Change

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F.Y.B.A. (Sem. - II)		
Sociology (Social Institutions and Change)		
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II	Social Institutions - II a. Religion : Meaning, Forms, Secularization b. Education—Meaning, Forms (Formal, Non-formal and Role), Challenges in Higher Education c. Media—Meaning, Types (Print, Electronic, Social Media and Role) Relevance of Mass Media in Contemporary Society	18
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**Syllabus-Sociology(G2)-
Social Institution & Change**

❖ अनुक्रमणिका ❖	
१. सामाजिक संस्था (भाग - १)	१.१ ते १.६३
▷ १.१ सामाजिक संस्था	
▷ १.२ कुटुंब	
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▷ १.४ विवाह	
▷ १.५ राज्यसंस्था (राज्यव्यवस्था)	
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२. सामाजिक संस्था (भाग - २)	२.१ ते २.३६
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▷ २.३ प्रसारमाध्यमे	
३. सामाजिक संस्था आणि बदल	३.१ ते ३.२३
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▷ ३.२ सामाजिक बदलाचे घटक	
▷ ३.३ आधुनिकीकरण	
▷ ३.४ सामाजिक विकास	
▷ ३.५ जागतिकीकरण	



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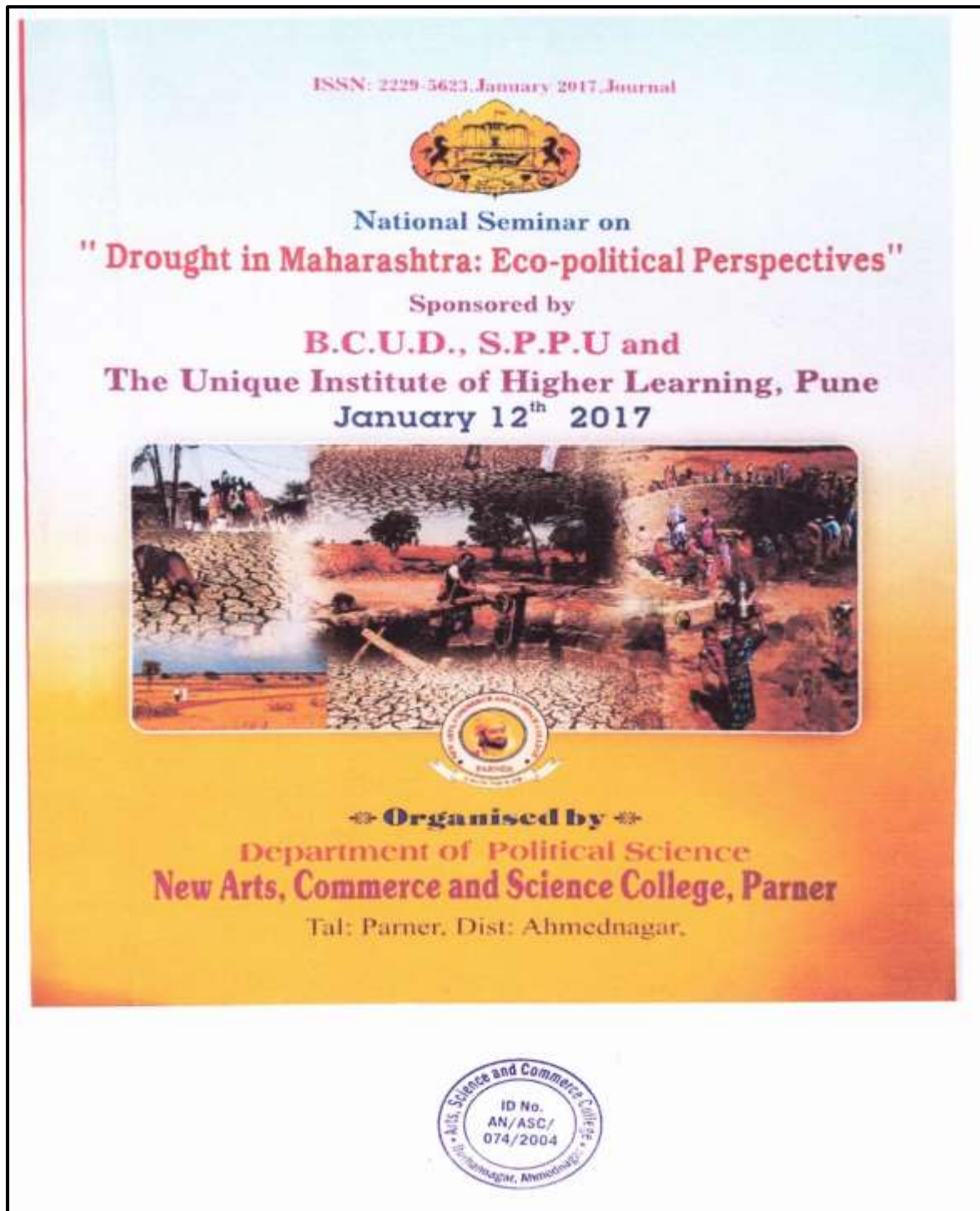
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DROUGHT



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Drought & Difficulties in Water Distribution

Drought and Difficulties in Water Distribution

Dr. Jadhav Vijay Machindra

Introduction :-

Despite water being an existential need for humans, it's also one of the most under prioritized but over abused commodity. Water is central to our lives but has not been the central point of focus in our planning while we rapidly evolve into an urban society.

Through time, early societies understood the importance and need for water and planned their lives around it. Civilizations were born and lost on account of water. Today, we have the advantage of this knowledge and we still fail to value it and plan our societies around it.

Let's focus on India. The world's oldest civilization grew around the Indus and the Ganges and is still thriving. But not for long. Post-independence, due importance was given to harnessing the power of water by way of controlling and storing of water through large Dams. That was the need of the hour. However, our cities and towns have subsequently grown without planning for water need vs water availability. In 1951, the per capita water availability was about 5177 m³. This has now reduced to about 1545 m³ in 2011 (Source: Water Resources Division, TERI)

Reasons behind water scarcity in India

The water scarcity is mostly man made due to excess population growth and mismanagement of water resources. Some of the major reasons for water scarcity are:

- Inefficient use of water for agriculture. India is among the top growers of agricultural produce in the world and therefore the consumption of water for irrigation is amongst the highest. Traditional techniques of irrigation causes maximum water loss due to evaporation, drainage, percolation, water conveyance, and excess use of groundwater. As more areas come under traditional irrigation techniques, the stress for water available for other purposes will continue. The solution lies in extensive use of micro-irrigation techniques such as drip and sprinkler irrigation.
- Reduction in traditional water recharging areas. Rapid construction is ignoring traditional water bodies that have also acted as ground water recharging mechanism. We need to urgently revive traditional aquifers while implementing new ones.
- Sewage and wastewater drainage into traditional water bodies. Government intervention at the source is urgently required if this problem is to be tackled.
- Release of chemicals and effluents into rivers, streams and ponds. Strict monitoring and implementation of laws by the government, NGOs and social activists is required.
- Lack of on-time de-silting operations in large water bodies that can enhance water storage capacity during monsoon. It is surprising that the governments at state levels has not taken this up on priority as an annual practice. This act alone can significantly add to the water storage levels.



Drought & Difficulties in Water Distribution

- Lack of efficient water management and distribution of water between urban consumers, the agriculture sector and industry. The government needs to enhance its investment in technology and include all stakeholders at the planning level to ensure optimization of existing resources.

Urban nightmare

The problem has been compounded with increased concretization due to urban development that has choked ground water resources. Water is neither being recharged nor stored in ways that optimizes its use while retaining the natural ingredients of water. In addition, the entry of sewage and industrial waste into water bodies is severely shrinking the availability of potable water. Marine life is mostly lost in these areas already. This is the genesis of a very serious emerging crisis. If we do not understand the source of the problem we will never be able to find sustainable solutions.

As an example, take Hyderabad. This city of Nizams had several water aquifers and water bodies through time. Osmansagar and Himayatsagar lakes were built and have been providing drinking water to the city for well over a hundred years. Excess migration of population to the city coupled with unplanned construction in all directions, resulted in traditional aquifers, which existed in and around the city, being blocked.

There are over 50,000 bore wells operated by the state owned HMWS&SB and private owners that have been drawing ground water. The levels have now fallen significantly. If the ground water cannot recharge, the supply will get only get worse. The demand for water continues to grow while the collection, storage, regeneration and distribution has become over stressed. The story repeats itself across urban centers in India.

Solutions to overcome water scarcity problems

Absolutely!

- A simple addition of a 'water free' male urinal in our homes can save well over 25,000 liters of water, per home per year. The traditional flush dispenses around six liters of water per flush. If all male members including boys of the house use the 'water free urinal' instead of pulling the traditional flush, the collective impact on the demand for water will reduce significantly. This must be made mandatory by law and followed up by education and awareness both at home and school.
- The amount of water that is wasted during dish washing at home is significant. We need to change our dish washing methods and minimize the habit of keeping the water running. A small step here can make a significant saving in water consumption.
- Every independent home/flat and group housing colony must have rain water harvesting facility. If efficiently designed and properly managed, this alone can reduce the water demand significantly.



Drought & Difficulties in Water Distribution

- Waste water treatment and recycling for non-drinking purposes. Several low cost technologies are available that can be implemented in group housing areas.
- Very often, we see water leaking in our homes, in public areas and colonies. A small steady water leak can cause a loss of 226,800 liters of water per year! Unless we are aware and conscious of water wastage we will not be able to avail the basic quantity of water that we need to carry on with our normal lives.

Water Policy of Government of Maharashtra

Government of Maharashtra declared 'Water Policy of the State' in July 2003. Water Policy of

Maharashtra is recognized to be one of the progressive water policies.

Integrated

Development and Management of Water Resources is the focal point of this policy. It also

includes provision for review of the policy every five years or if necessary less than five

years. Some of the important provisions of this policy would be helpful in strategic thinking

about regional imbalance. These are as follows:

1. Mandatory public participation in planning, construction and management of water use.

2. Supply of water to the users on gross volumetric basis.

3. Delegation of irrigation management system to legally entitled Water User Associations (WUA).

4. Development and dissemination of new technology for improving productivity.

5. Preparation of a perspective plan for eradication of poverty and elimination of regional imbalance.

6. Transfer of water from 'water-abundant' regions to 'water-deficit' regions.

water scarcity has led to health problems such as stomach infection, dysentery, diarrhoea, kidney stone and body pain among villagers in Beed and Latur. "The increase in demand has led to shortage of paracetamol. In Shirsala PHC, there are no paracetamols, no syrups for children. Additional stock has not yet arrived

There is no water to conduct surgeries unless it is a critical case. Most patients are being referred to tertiary centers where water supply is better than rural hospitals and PHCs

Grand ambitions

The current crisis has led the Indian government to announce that it hopes to resurrect an ambitious plan to try and link the major river basins of the country, under the Interlinking of Rivers (ILR) Project. The scale and magnitude of this exercise, both financial (it is estimated to cost more than ₹100 billion) and in engineering terms



Drought & Difficulties in Water Distribution

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(involving the transfer of 174 billion cubic metres of water annually) is unprecedented.

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Critics suggest that it is unlikely to work and is likely to create further ecological and social disruption, especially due to the uncertainties in weather and precipitation patterns due to climate change. There is a risk that other alternatives, perhaps less dramatic in their scope, might be neglected in the rush for the big headline-grabbing schemes.

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A specific way forward might be to work more directly with natural processes to secure the regeneration of water sources at the local level. In the dry plains, this involves the revitalisation of aquifers and the replenishment of groundwater through recharge during the monsoon, as has been attempted already in some regions. In the hilly areas, there is considerable scope for investment in spring recharge and source sustainability, as has been undertaken on a significant scale in the Himalayan state of Sikkim.

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Our current research is examining the need to invest in source protection and sustainability in detail, especially in the Himalayas, which have been described as the "Water Towers of Asia". Urbanisation trends in the region suggest that there will be a growing number of small towns and settlements that will need water infrastructure to meet their needs – and there is a critical need to secure these water sources.

Deforestation, land conversion and degradation, as well as urban encroachment due to illegal construction, pose major threats to the water bearing capacity of the Himalayan landscape. There is an urgent need to invest in the identification, protection and restoration of these "critical water zones".

Potential for conflict

The Himalayan context also demonstrates the transboundary nature of the water issue. The Hindu Kush Himalayan region extends across eight countries, from Afghanistan to Myanmar, and supports ten major river systems, potentially affecting the lives of more than 1.5 billion people. Cooperation across political boundaries is vital to manage these fragile resources, further threatened by the uncertain impacts of climate change.

There is some hope, despite three major wars since independence, that India and Pakistan have managed to maintain some semblance of cooperation under the Indus Waters Treaty, which was negotiated in 1960. However, analysts suggest that regional conflict over water is going to worsen – and much depends on the role of China, which is the dominant upstream water controller in the region.

The other key response is managing water demand – and making explicit choices over alternative uses. This year, the shifting of Indian Premier League cricket matches away from water-scarce Maharashtra was a high-profile, though somewhat symbolic, example of an explicit prioritisation of water use.

More generally, though, managing water demands has rarely been prioritised. Water-thirsty crops – sugarcane, for example – dominate the landscape in the dry regions of

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Drought & Difficulties in Water Distribution

Marathwada and Vidarbha in Maharashtra. Farmers receive subsidies on energy, which allow them to pump dry the already-depleted aquifers in other parts of the country. And, there are important issues of distributional equity – the poor in many urban contexts pay significantly more per litre for erratic and unreliable water, while their richer neighbours luxuriate in swimming pools and spend weekends on plush golf greens.

Water is an issue that cuts across all aspects of social and economic life in India. Compartmentalised responses are unlikely to be adequate to address the current crises. There is a need for an integrated approach, which addresses source sustainability, land use management, agricultural strategies, demand management and the distribution and pricing of water. With growing pressures due to climate change, migration and population growth, creative and imaginative governance is needed to manage this precious resource

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Drought & Difficulties in Water Distribution

Drought and Women:

Prof. Varsha Avinash Kale

Introduction :- Drought is caused by not only lack of precipitation and high temperatures but by overuse and overpopulation.

categories of drought:-

There are four main categories of drought.

- 1) **Meteorological drought** is specific to different regions. For example, 20 inches (51 centimeters) of rainfall in a year is normal in West Texas, but the same amount would be less than half the yearly average in Virginia.
- 2) **Agricultural drought** accounts for the water needs of crops during different growing stages. For instance, not enough moisture at planting may hinder germination, leading to low plant populations and a reduction in yield.
- 3) **Hydrological drought** refers to persistently low water volumes in streams, rivers and reservoirs. Human activities, such as drawdown of reservoirs, can worsen hydrological droughts. Hydrological drought is often linked with meteorological droughts.
- 4) **Socioeconomic drought** occurs when the demand for water exceeds the supply. Examples of this kind of drought include too much irrigation or when low river flow forces hydroelectric power plant operators to reduce energy production.

Impact of drought on Women:-

Drought can have economic, social, health, and environmental effects on women in developing countries. Drought contributes to decreased household food supply and little or no crop surplus for sale. When stocks are used up, few resources are available for the purchase of food. Male labor migration increases during drought and may become permanent. Prostitution in urban areas and forced marriages increase. The work load of women increases. Drought can deplete pastures and reduce livestock counts. Women are left to till the fields by hand and must reduce the area cultivated. Aid programs can offer food or money in exchange for work. Drought reinforces the sexual division of labor and leaves the population malnourished, hungry, and with a reduced physical ability to perform work. Child labor may be reduced, but mothers must compensate and fetch water and firewood or wash dishes. Diets are supplemented by the harvesting of wild fruits and tubers. Caterpillar collection may lead to the felling of slow growing trees. Fruit trees may be cut down without regard to future harvests, because the fruit was not reachable. Water tables can be reduced and force collection of water from more remote areas. Programs should help people meet immediate food needs, strengthen women's role, and introduce environmentally sustainable longterm solutions to food deficits. These suggestions empower women to be able to adapt better to future drought conditions. Women must have the means to provide for food self-sufficiency through access to agricultural credit and services and to equal control of agricultural produce and income. Ecologically sound projects, such as controlled grazing schemes, reforestation, construction of silt traps, and construction of dams for irrigation purposes, can help prevent drought. Drought is recurrent, however, and national governments must have contingency plans and programs such as food banks and an effective food distribution and storage system. Women should not be assumed to have an unlimited capacity to sustain this burden.

case Studies:-



Drought & Difficulties in Water Distribution

In Marathwada's worst-hit districts of Beed, Osmanabad and Latur, households now have an uncompromising priority list of expenses as an economy hit by years of near-total crop failure goes into a tailspin. And, as rural doctors are finding to their dismay, women's health, and certainly reproductive health, lies at the bottom of the pyramid, along with women's nutrition, equal pay for labour and higher education for girls.

"Whether it's the physical stress of collecting water from the tanker in dozens of pots daily, or the emotional stress of putting out a decent meal for the family when there's no money at home, whether it's maintaining menstrual hygiene in times of acute water scarcity or dealing with an increasingly violent or alcoholic husband, it's always women who have to bear the brunt of a disaster," says Godavari Kshirsagar, 44, of Gandora village in Tuljapur, Osmanabad. A women's right activist who has been working in the drought affected areas of Maharashtra, women have been the biggest sufferers in the current water crisis. "Traditionally, women are seen as nurturers. So the duty of bringing water falls on them. More often than not, they walk miles to get it. Not only does it take a physical toll on them, but it also affects them mentally. To add to that, young girls, as small as 6-years-old, are being kept away from school so that they can manage their siblings when their mother has gone to look for water. Some are being trafficked because their families have no other choice.

As the drought worsens in Maharashtra, its effects become more pronounced on women and girls. Water scarcity compromises hygiene especially for girls and women as the little water available is prioritised for drinking and cooking. Women and girls have to walk longer distances fetch water, either on their backs or weak donkeys - in some areas they walk for eight to ten hours to the closest water source. Girls are being withdrawn from school to support their mothers in taking care of young siblings or fetching water.

Since men have migrated away with the livestock in search of pasture and water, women have been left behind with all family responsibilities and very little in terms of resources such as livestock. They are therefore forced to engage in petty trade to put food on the table. For those close to big towns prostitution is an option for women and girls, exposing them to the risk of contracting HIV/AIDS. As women and girls walk in the bushes in search of water, they are also exposed to the possibility of rape by marauding bandits. Culturally women also cannot make any decision to sell or even slaughter small livestock for food, and they have to wait for the men who have moved far away with the rest of the livestock and therefore hard to reach.

ActionAid's planned response includes diversified livelihood support for women, water trucking, relief supply, and cash for assets among others. This is in addition to food and water supplies, and fuel and parts for boreholes. To help communities get back on their feet as soon as possible we'll also be providing seeds and farm tools so people can plant in anticipation of the next rainy season.

Author - Prof. Varsha Avinash Kale, Shri Baneshwar Art's Com. & Sci. College, Burhannagar, Ahmednagar.

Drought & Women

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4) **Socioeconomic drought** occurs when the demand for water exceeds the supply. Examples of this kind of drought include too much irrigation or when low river flow forces hydroelectric power plant operators to reduce energy production.

Impact of drought on Women:-

Drought can have economic, social, health, and environmental effects on women in developing countries. Drought contributes to decreased household food supply and little or no crop surplus for sale. When stocks are used up, few resources are available for the purchase of food. Male labor migration increases during drought and may become permanent. Prostitution in urban areas and forced marriages increase. The work load of women increases. Drought can deplete pastures and reduce livestock counts. Women are left to till the fields by hand and must reduce the area cultivated. Aid programs can offer food or money in exchange for work. Drought reinforces the sexual division of labor and leaves the population malnourished, hungry, and with a reduced physical ability to perform work. Child labor may be reduced, but mothers must compensate and fetch water and firewood or wash dishes. Diets are supplemented by the harvesting of wild fruits and tubers. Caterpillar collection may lead to the felling of slow growing trees. Fruit trees may be cut down without regard to future harvests, because the fruit was not reachable. Water tables can be reduced and force collection of water from more remote areas. Programs should help people meet immediate food needs, strengthen women's role, and introduce environmentally sustainable longterm solutions to food deficits. These suggestions empower women to be able to adapt better to future drought conditions. Women must have the means to provide for food self-sufficiency through access to agricultural credit and services and to equal control of agricultural produce and income. Ecologically sound projects, such as controlled grazing schemes, reforestation, construction of silt traps, and construction of dams for irrigation purposes, can help prevent drought. Drought is recurrent, however, and national governments must have contingency plans and programs such as food banks and an effective food distribution and storage system. Women should not be assumed to have an unlimited capacity to sustain this burden.

case Studies:-



Drought & Women

In Marathwada's worst-hit districts of Beed, Osmanabad and Latur, households now have an uncompromising priority list of expenses as an economy hit by years of near-total crop failure goes into a tailspin. And, as rural doctors are finding to their dismay, women's health, and certainly reproductive health, lies at the bottom of the list, along with women's nutrition, equal pay for labour and higher education.

"Whether it's the physical stress of collecting water from the tanks daily, or the emotional stress of putting out a decent meal for the family when there's no money at home, whether it's maintaining menstrual hygiene in times of acute water scarcity or dealing with an increasingly violent or alcoholic husband, it's always women who have to bear the brunt of a disaster," says Godavari Kshirsagar, 44, of Gandora village in Tuljapur, Osmanabad, a women's right activist who has been working in the drought affected areas of Maharashtra, women have been the biggest sufferers in the current water crisis. "Traditionally, women are seen as nurturers. So the duty of bringing water falls on them. More often than not, they walk miles to get it. Not only does it take a physical toll on them, but it also affects them mentally. To add to that, young girls, as small as 6-years-old, are being kept away from school so that they can manage their siblings when their mother has gone to look for water. Some are being trafficked because their families have no other choice.

As the drought worsens in Maharashtra, its effects become more pronounced on women and girls. Water scarcity compromises hygiene especially for girls and women as the little water available is prioritised for drinking and cooking. Women and girls have to walk longer distances fetch water, either on their backs or weak donkeys - in some areas they walk for eight to ten hours to the closest water source. Girls are being withdrawn from school to support their mothers in taking care of young siblings or fetching water.

Since men have migrated away with the livestock in search of pasture and water, women have been left behind with all family responsibilities and very little in terms of resources such as livestock. They are therefore forced to engage in petty trade to put food on the table. For those close to big towns prostitution is an option for women and girls, exposing them to the risk of contracting HIV/AIDS. As women and girls walk in the bushes in search of water, they are also exposed to the possibility of rape by marauding bandits. Culturally women also cannot make any decision to sell or even slaughter small livestock for food, and they have to wait for the men who have moved far away with the rest of the livestock and therefore hard to reach.

ActionAid's planned response includes diversified livelihood support for women, water trucking, relief supply, and cash for assets among others. This is in addition to food and water supplies, and fuel and parts for boreholes. To help communities get back on their feet as soon as possible we'll also be providing seeds and farm tools so people can plant in anticipation of the next rainy season.

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Drought in Maharashtra

Drought in Maharashtra

Prof. Manisha Narayan Punde

Introduction:-

Drought is a continuous period of dry weather, when an area gets less than its normal amount of rain, over months or even years. Crops and other plants need water to grow, and land animals need it to live. It can become dangerous to people and other animals; causing famine and even creating deserts.

A drought is a natural event, caused by other weather events like El Niño and high-pressure systems. Drought can also be triggered by deforestation (people cutting down forests), by global warming, and by diverting rivers or emptying lakes.

Drought is a disaster which usually takes place slowly. It is often difficult to decide when a drought started and sometimes when it ends too. Its effects often build up slowly over a long period of time and may last from months to years after rain resumes.

Reasons of drought:-

Drought has many causes. It can be caused by not receiving rain or snow over a period of time. We learned in the discussions about the water cycle and weather that changes in the wind patterns that move clouds and moisture through the atmosphere can cause a place to not receive its normal amount of rain or snow over a long period of time.

If you live in a place where most of the water you use comes from a river, a drought in your area can be caused by places upstream from you not receiving enough moisture. There would be less water in the river for you and other people who live along the river to use.

People can also play a big role in drought. If we use too much water during times of normal rainfall, we might not have enough water when a drought happens.

When we have a drought, it can affect our communities and our environment in many different ways. Everything in the environment is connected, just like everything in our communities is connected. Each different way that drought affects us is what we call an impact of drought

Effect of drought:-

Drought affects our lives in many different ways because water is such an important part of so many of our activities. We need water to live, and animals and plants do too. We need water to grow the food we eat. We also use water for many different things in our lives, like washing dishes, cooking, bathing, and swimming or river rafting. Water is also used to help make the electricity we use to run the lights in our houses and the video games you may like to play. When we don't have enough water



Drought in Maharashtra

for these activities because of a drought, many people and many different things will be affected in many different ways.

We often talk about drought's impacts as either "direct" or "indirect." What does that mean? Well, to find out, let's think about dominoes. If you set up a long line of dominoes on the floor and knock the first domino in the line over, it will cause the second domino in the line to fall and hit the third, which will fall and hit the fourth, and so on.

If those dominoes were drought impacts, the first domino you knock over might be farmers' corn crops dying. The second domino might be that the farmers would not have money to buy a new tractor from the dealer in town. The dealer would then lose money, which would be the third domino. If enough farmers lose their corn crops, the dealership might not be able to employ as many people or may even have to close down—the fourth domino. The dealership closing would cause many more impacts in the community.

The farmers' crops dying would be the "direct" impact of drought. The dealer losing money and all of the other impacts would be the "indirect" impacts of drought.

All of the impacts in the example above would be "negative" impacts. But the impacts of drought aren't always all negative. How can this be? Well, let's think about the example of the farmers we talked about earlier. The farmers who have lost their corn crops might use the money they didn't spend to buy a new tractor to hire a person to drill irrigation wells. The well-drilling business would make more money, so for them the drought might actually have a "positive" or good impact. However, the overall impact of drought in an area is almost always negative.

case studies:-

In 2011, the year preceding the drought, Maharashtra recorded an above-average rainfall and most of the dams were full (even today, Maharashtra has the highest number of dams in the country). In fact, a report by South Asia Network on Dams, Rivers and People (SANDRP) in 2013 quoted the then State Agriculture Minister, who said, "The good distribution of rain has resulted in good quality of crops. The above-average rainfall has filled up nearly all dams, which will help replenish the soil in the run-up to the Rabi season." Then why did the 'worst' of the droughts hit the State the very next year?

In 2013, with 3,712 major, minor and medium projects, Maharashtra had the highest number of dams in the country exclusively for irrigation; yet its irrigation coverage was 17.9 percent in 2009-10. In 2013, it was reported that these projects were plagued with delays and cost overruns, and a special team headed by Madhav Chitale, former Secretary of Ministry of Water Resources (1989-1992), was appointed to investigate these irregularities.

The Maharashtra Economic Survey of 2012-13 did not give any figure determining the extent of irrigated area, saying it was not available. In 2012, the figure had increased by a mere 0.1 percent after a decade-long expenditure of nearly Rs 70,000 crore. It looked like a horrifying scam was about to emerge. In a 2014 report, Chitale

Drought in Maharashtra

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confirmed that indeed a scam involving irregularities in irrigation development had been unearthed. While many political figures faced the Anti-Corruption Bureau, post interrogation, they went scot-free and Maharashtra went back to doing business as usual.

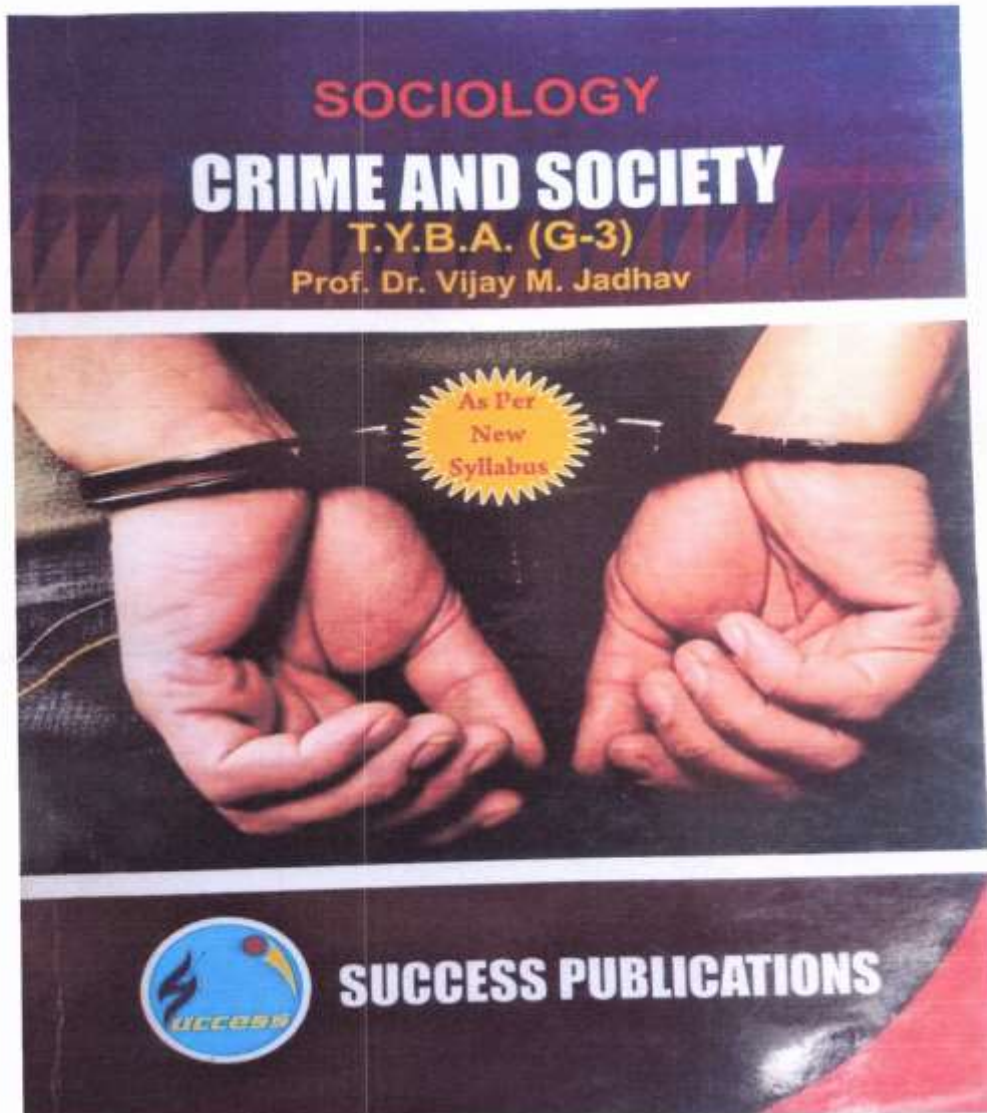
protect ourself from drought:-

- Understanding Drought and the Environment
- Water Conservation
- Pollution Prevention
- Storing and Moving Water

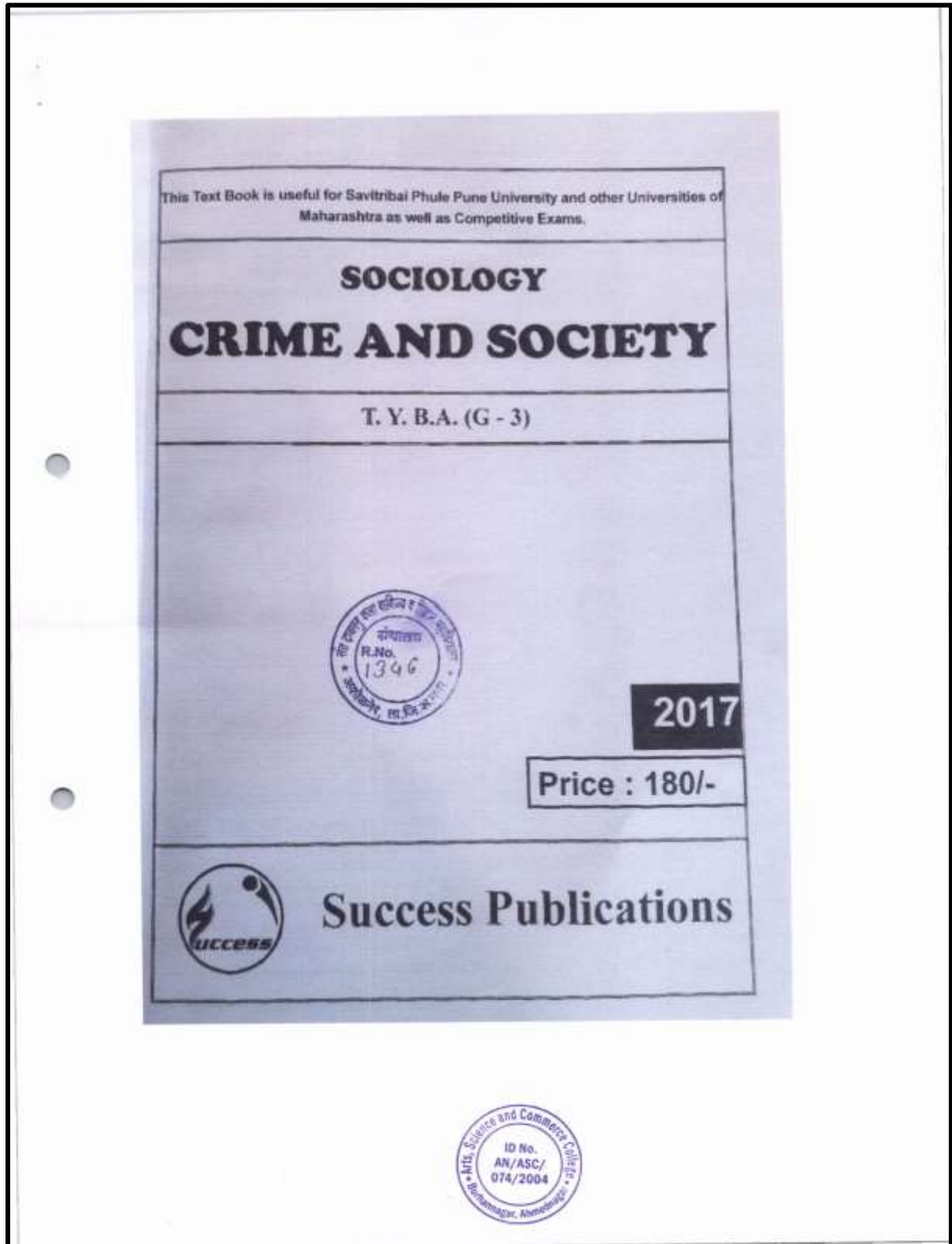
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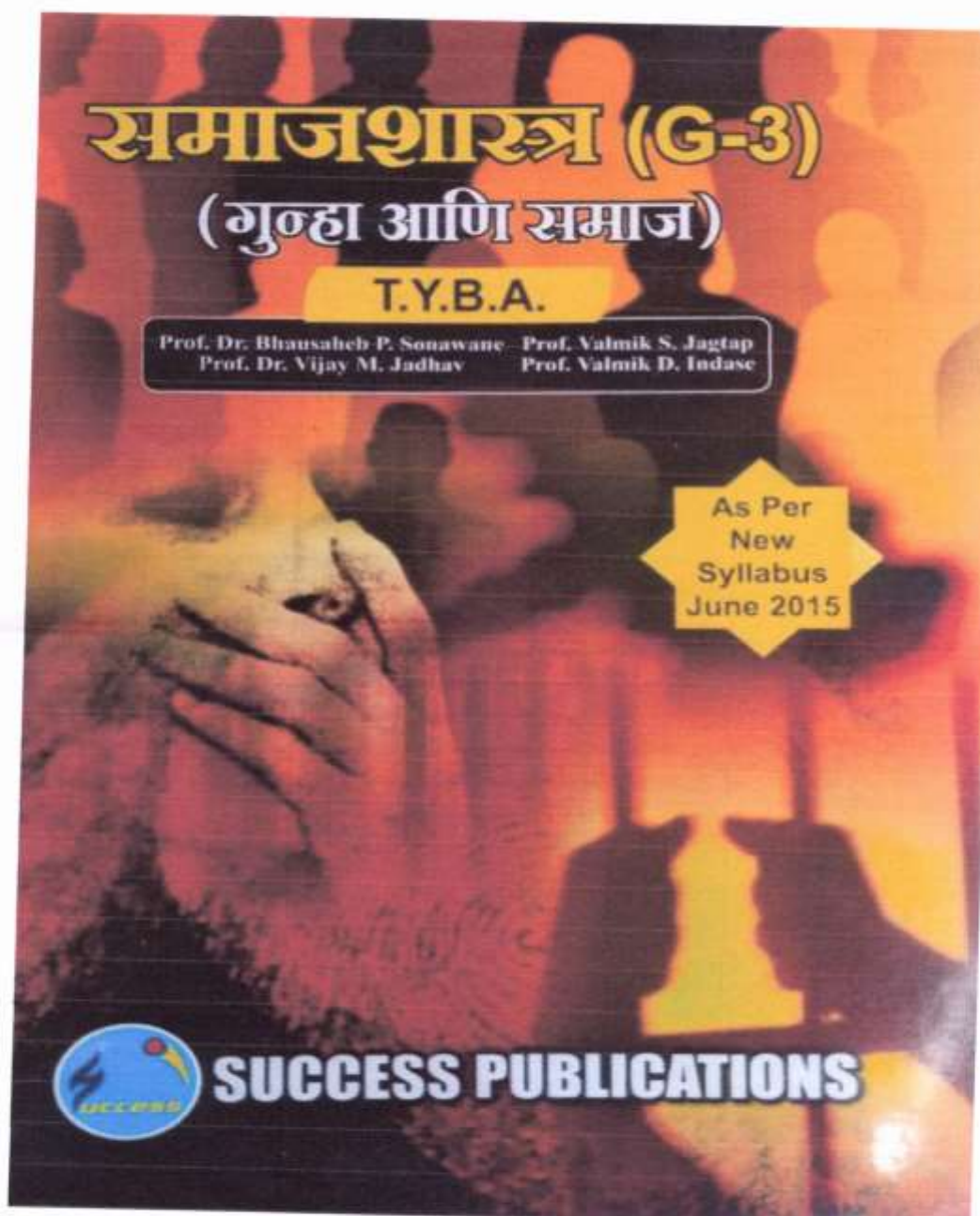


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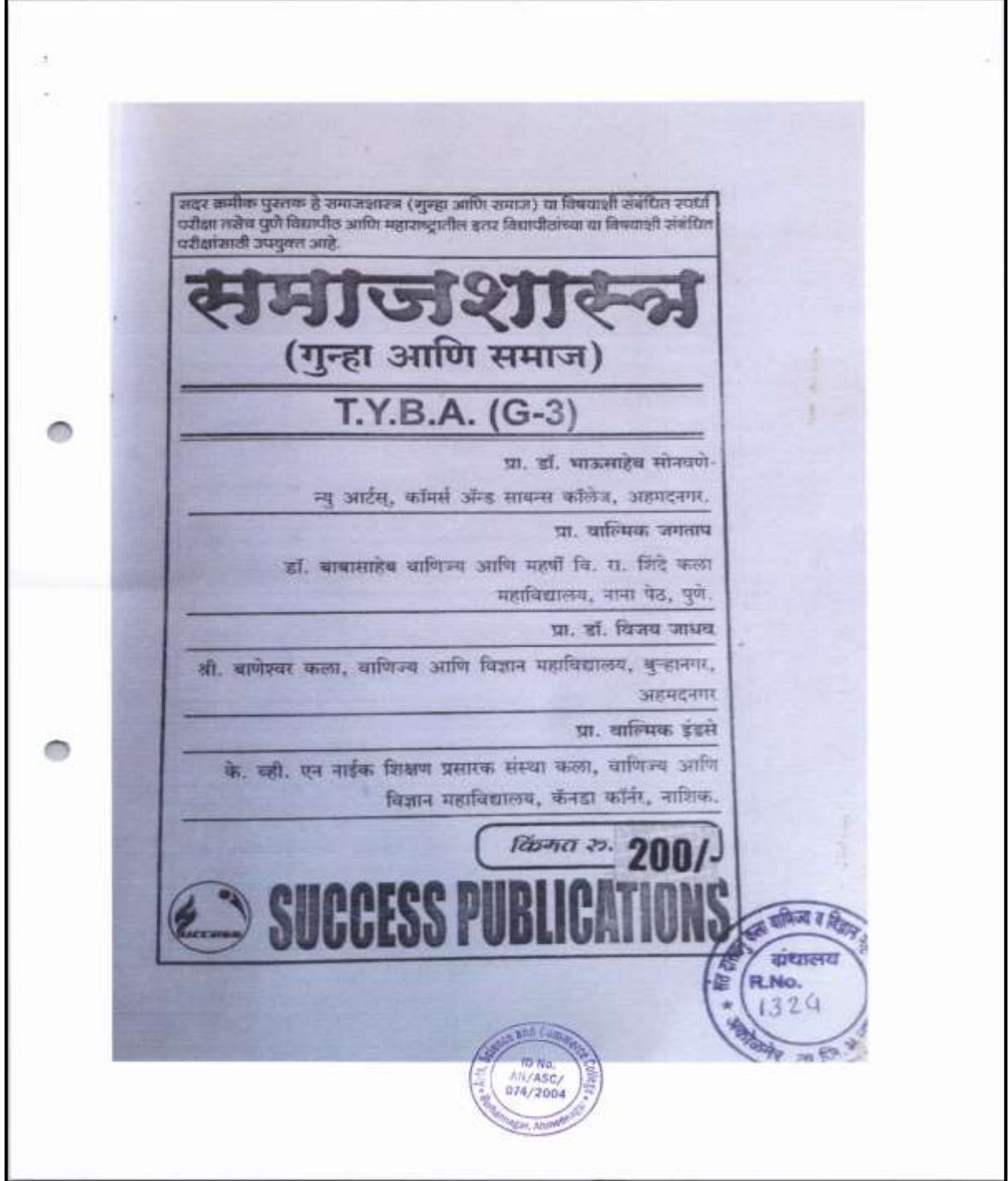
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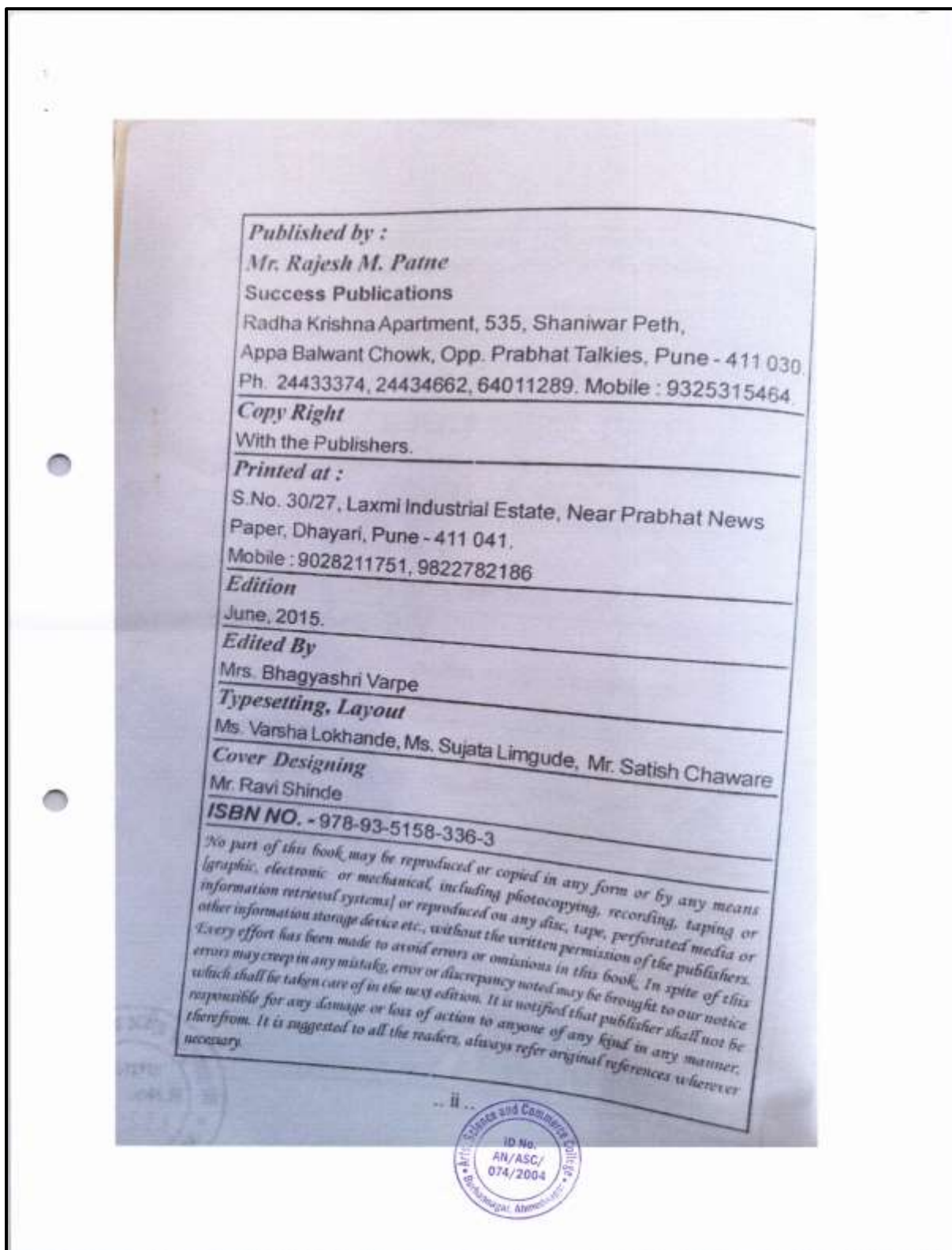
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