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An assortment of aromatic plants in India: AESOP Algorithm

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ABSTRACT

Healing is a gentle process in which certain amounts of wear and tear are cured through the orchestration and management of processes that apply science and technology in liberal amounts for example application of oils, powders, potions, creams, ointments, etc. Aroma is a quintessential attribute of plants and their parts like flowers, leaves, stem, stalk, fruits, and root. Healing and Aromatic plants are gaining in research and development as they offer an economic alternative to various kinds of therapeutic and healing processes. The Indian Government has been stressing the development of aromatic plants as a substitute means of livelihood for poor people living in rural areas. Also, there has been a substantial amount of inquiry into the application of Healing and Aromatic plants (HAPs) to financial processes such that a certain amount of diversification can be achieved. This research article describes a process called TIARA (Infinite Attributes) that applies a method named HAT (Heap of aromatic plants) to achieve an algorithm aptly titled AESOP (An assortment of aromatic plants).

Keywords: *HAPs, TIARA, HAT, AESOP.*

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INTRODUCTION

According to the World Wildlife Fund (WWF), Earth is home to approximately 50,000 to 80,000 species of healing plants, and a medicinal plant usually consists of components such as (1) flowers, (2) leaves, (3) stems, (4) roots, (5) nodes, (6) buds, (7) primary roots, (8) secondary roots, and (9) fruits. The various products that can be derived from a healing and aromatic plant (HAP) are one of the following:(1) Plant Extract (2) Essential Oils (3) Fatty Acids (4) Protein (5) Vitamins (6) Amino Acids (7) Tar (8) Resin (9) Agar (10) Phytochemicals (11) Nutrients (12) Bio-herbicides (13) Fertilizer and, (14) Pesticide. The Government of India has made a substantial push to incentivize the rural populace in the country for the cultivation, harvesting, production, trade, sales, and management of Healing and Aromatic plants (HAPs). Healing and Aromatic plants find their use in treatments for disorders including the following (1) Hypertension (2) Diabetes mellitus (3)Stress and,(4) Trauma. Aromatherapy has a mention in ancient cures and is now an active area of research where it can substitute synthetics as an alternative form of treatment based on natural, organic, and contemporary cures. Healing and Aromatic plants can offer the following benefits as compared to new-fashioned healing treatments and processes (1) Economical Acceptable (2) Environment-friendly (3) Suitable for all ages and,(4) Non-invasive. To develop Healing and Aromatic plants, at first, a process called TIARA (Infinite Attributes) is developed that helps in defining a large number of attributes. Later, a method called HAT (Heap of aromatic plants) is formulated so that attributes are converted to a heap of plants. As HAT and TIARA are applied together, an algorithm called AESOP (Assortment of aromatic plants) evolves which leads to a healthy collection of aromatic plants.

RELATED WORK

The author [1] discusses healing aromatic plants. Aroma therapy is making a comeback and an aromatic ambrosia is wading throughout the globe. The aromatic products of this day stand for security and safeguarding as compared to earlier days when they were insecure and not appropriate. The general populace is returning to the age-old practice of aroma therapy instead of the new-age synthetics. Aroma generally stands for the flavor and smell characteristics of an aromatic plant. Spices are one such species that are utilized for enhancing the taste and substance of various agro products. Also, inclement oils are produced from certain parts of aromatic plants. Clove is good for essential oils, basil is a medicinal plant, and pepper is a spice. The phrase Healing and Aromatic Plants (HAP) has been uttered in a very general way thus separating the perfume-inducing (effervescent) from the healing. The team of scientists [2]

explain the preservation and maintainable applications of healing and effervescent plants for the welfare of people all around the world. Plants have been instrumental in healing and have had therapeutic and medicinal usage throughout the history of mankind. As per the World Health Organization (WHO), healing and effervescent plants have been part and parcel of various kinds of medicinal treatments for mankind. Since there is growing interest in healing and effervescent plants, new frontiers in finance have opened up for populations in villages. As a large number of HAPs (Healing and Aromatic Plants) are not domestic, the sales of HAPs are supplementing the incomes of rural households. However, there is quite a bit of pressure on the plant population as a result of urban growth, commercialization, and trade. Increased size of information base in botanicals (volume, architecture, input sets, products, traded amounts, and source) is critical for ascertaining the effect of trade on botanical samples while at the same time, it is essentially needed for preservation systems and policies which have to be met for the production and maintenance of plant species. The technologists [3] look at the growth and production of healing and effervescent plants as the process of diversification in farming. A study began in a certain number of states to take a closer look at the economics of healing and effervescent crops as compared to ancient crops. It is a matter of fine observation that in certain areas the healing and effervescent crops have replaced the traditional crops. The study was conducted by the Agricultural Development and Rural Transformation Centre (ADRTC), Bangalore. Also, the required Performa as well as the method of analysis were prepared by ADRTC. The crops that were considered for this study in Karnataka were Anise and Rosemary, as representative of the healing and effervescent plants in the two districts. These plants are emerging as a lifesaver to the economies of the district and fare way better economically as compared to traditional crops. The study brings out the relative economic importance of these crops as compared to rice and tomato – the two traditional crops harvested in the two districts. The scholars [5] explore the role of healing and effervescent plants as an emerging origin of bioherbicides. Weeds can lead to a decrease in crop yield as compared to other anomalies and yet their role is not studied well in the past. Controlling the population of weeds in cropland is not an easy task. Synthetic bioherbicides have led to an adverse effect on the health of people and the agrarian environment. Natural ingredients such as critical oils, plant extracts, and agrochemicals are being explored as an alternative treatment of weeds. As they offer a reprieve to the environment, they are preferred over artificial herbicides. In this research work, the use of healing and effervescent plants in the production of bioherbicides for maintainable agrarian output is studied. The collaborators [6] look at the role in forest systems played by healing and effervescent plants. A large populace has depended on forest-related produce for treating the ailments of humanity and livestock. Healing and aromatic plants (HAPs) are popular for homegrown and commercial remedies. Around 14% of the 500,000 botanical species chronicled globally have healing properties but only some have been cultivated. As a result of increasing worldwide demand, HAPs will have to be cultivated and maintained. As a large number of HAPs find traditional ecosystems in forests, they will have to be made part of agroforestry. The several strategies that have to be in place are:

1. Plant MAPs with traditional crops
2. Cultivate healing trees as shade givers.
3. Apply soil conservation architectures

Forest administration with cultivators and contract-based cultivation along with pharma majors having support prices can harness the active growth of healing plants.

The researchers[7] look at advances in research in certain chosen healing and effervescent plants that are local to Africa. Healing and effervescent plants hold reservoirs of resources that can help cure diseases like cancer, dengue, schizophrenia, cardiac disorders, HIV, and diabetes mellitus. These plants exhibit ecologically safe, affordable, and widely accepted traits. The active compositional elements of various essential oils and bio-active compounds can be found in the various parts like leaves, roots, stems, and flowers of these plants. For medicinal compounds that may be extracted from the HAPs, effective screening for phytochemicals has to be performed. Also, at the same time, the side effects of these plants have to be taken into account so that a holistic view may be adopted in the development and cultivation of these wonderful species. The technician [8] looks at Healing and Aromatic Plants for the various gains, critical and challenges to be offered. A healing plant is a botanical species that contains certain essential ingredients for the design and development of compounds to be utilized in therapeutic processes. An effervescent plant is another type of species that is utilized for its pallet and fragrance. A large number of effervescent plants are utilized in the processed food industry like Food and Beverages. Herbs can be used to cure scars and wounds. MAPs are the common ingredients of various therapeutic cures for various common ailments. MAPps are well known for their expectorant attributes.

The usage of local MAPs has been emphasized as of critical importance by the World Health Organization. Companies like Dabar, Himalaya, etc. continuously do research and development on the design of new products while at the same time they offer a plethora of employment opportunities. The scientists [9]

discuss the cultivation of healing and effervescent plants as a goal towards diversification in agriculture. The growth and harvesting of healing and effervescent crops provide a means of livelihood for people in the food, pharma, cosmetic, and agrarian businesses. There is a growth of approximately 10-15% in the cultivation of these kinds of plants. Though these crops have been known since ancient times to have high medicinal value, in recent times there has been strong technological gain and validation of archaic knowledge in the cultivation of these crops, leading to a high valuation of the related produced commodities. The state of Madhya Pradesh is a leading producer of bio-products fueled by the cultivation of healing and effervescent plants. Based on incentives by the Indian Government, there is a major push towards diversification in agriculture in the state of Madhya Pradesh through careful development and growth of healing and effervescent plants. The scholars [10] describe the production of Healing and Aromatic plants (HAPs) which would inculcate financial stability in the lives of farm women. Healing and Aromatic plants (HAPs) play a multifaceted role, positively impacting rural economies by offering livelihood options, contributing to biodiversity preservation, improving the environment through sustainable cultivation, and enhancing spirituality through their cultural and medicinal significance. These HAPs are a natural source of the following commodities – bio resins, plant extract, dyes, essential oils, fatty acids, amino acids, fibrous extract, etc. Also, these plants produce pharmacological substances for use in modern medicine. These plants are a boon for poor people in rural areas. As per the research carried out by IDRC, HAPs can lead to the eradication of inequity in society while also leading to gender-balanced livelihoods. The researchers [11] explore the role of Healing and Aromatic plants (HAPs) in the development of therapeutic processes. There is a massive push in various healing arenas for people to live in close harmony with nature where ailments like heart disorders, diabetes, trauma, and stress can be properly diagnosed and treated. These research works have led to the establishment of therapeutic gardens in child care, hospitals, maternity centers, hospices, medical units, health centers, etc. This research article focuses on the development of Healing and Aromatic plants in therapeutic gardens. A therapeutic garden is a well-maintained garden in outdoor spaces that caters to the overall well-being of an individual along with healing and gentle care. It can be concluded from this research that Healing and Aromatic plants not only achieve greater enhanced beauty of a therapeutic garden but at the same time they provide the essential ingredients that a necessary for the maintenance of such a garden.

MATERIAL AND METHODS

The study employs the TIARA (Infinite Attributes) process, incorporating the HAT (Heap of aromatic plants) method to create the AESOP (An assortment of aromatic plants) algorithm. AESOP is rigorously analyzed and validated through the utilization of a randomized dataset, ensuring a thorough and in-depth exploration of the economic and therapeutic potential of Healing and Aromatic plants (HAPs). The TIARA (*Infinite Attributes*) process isolates a list of 12 alphabets and plant names starting from those names which are the following:1. A - Anise2. B – Basil 3. C – Chamomile 4. D – Daisu 5. E – Edelweiss 6. F – Fennel 7. G – Gerbera 8. H – Hollyhock 9. I – Isoplexis 10. J – Jasmine 11. K – Kentan 12. L – Lavender. Further, a list of five plants (starting alphabet and plant name) is obtained as follows

1. A Fibonacci number is chosen at random from the first 10 Fibonacci numbers
2. A Prime number is chosen at random from the first 10 prime numbers
3. An Arithmetic is chosen at random from the first 10 natural numbers

Now the sum of the three numbers chosen above is computed.
A modulus of the numbers is taken by taking the modulo 14 of the sum of the number calculated above.
The process above is repeated 6 times to get a list of plant starting alphabet and plant names.
This list obtained above is the result of the TIARA process.
For the HAT (Heap of aromatic plants) method, the following is done,

1. A list of aromas is computed for each plant name string obtained from TIARA
2. The list of aromas, if computed as follows
a. For the first 5 alphabets of a particular plant name

- A random number is chosen between

1. Ordinal number of alphabets
2. 10 times the Ordinal number of the alphabet

- The random number is added to the list as an aromatic number
- A marginal error is computed between each aromatic number list and a plant name by calculating the sum of the differences between the ordinal number of the characters and the corresponding aromatic number.

The AESOP (Assortment of Aromatic Plants) algorithm, then, proceeds as follows

1. For each of the five plants, a moving average is calculated

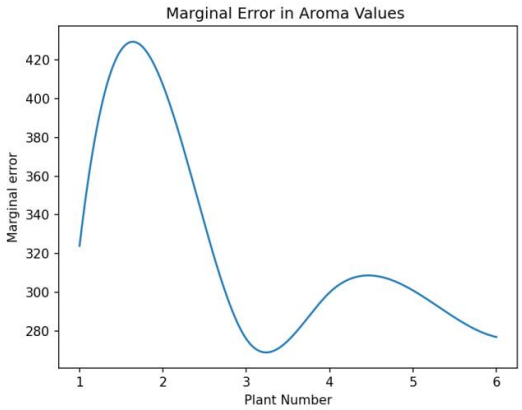
2. For each ordinal number of the alphabet, an average is taken with the ordinal number and the corresponding number in the aroma list
3. It is then observed that with each iteration of the moving average, the marginal error is reduced.

RESULT

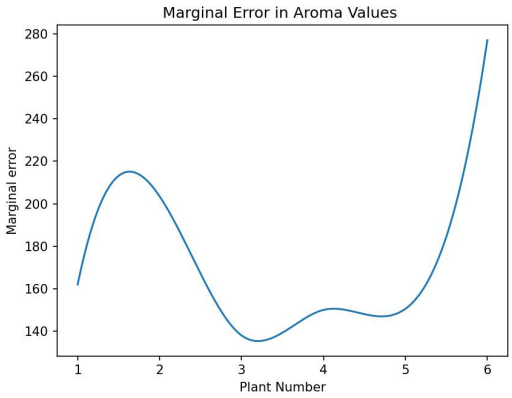
The following is the output of the Aesop program

```
/***** Aesop Begin ********/
Init Aesop
Init Hat
Init Tiara
Init Named Plants
Printing TIARA plant name and alphabet list:
['l', 'lavender']
['d', 'daisy']
['h', 'hollyhock']
['h', 'hollyhock']
['i', 'isoplexis']
['i', 'isoplexis']
Printing Hat
['l', 'lavender', [34, 31, 62, 128, 211]]
['d', 'daisy', [62, 90, 120, 252, 331]]
['h', 'hollyhock', [71, 54, 41, 175, 69]]
['h', 'hollyhock', [91, 205, 31, 179, 76]]
['i', 'isoplexis', [29, 58, 29, 150, 60]]
['i', 'isoplexis', [45, 46, 29, 74, 136]]
```

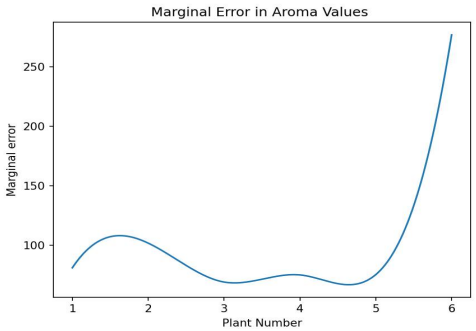
The following are the seven plots, in which plot 1 is the plot of the original marginal error. Plot 2 – Plot 7 are the plots of the marginal error when the moving average is applied as per the Aesop algorithm.



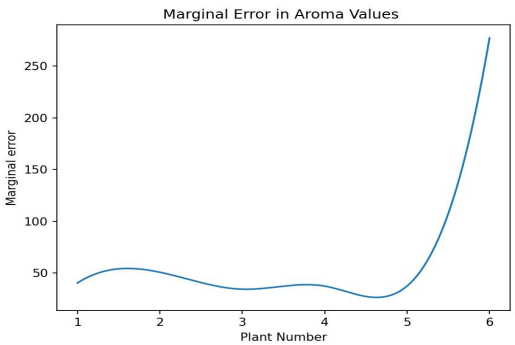
Plot 1. Original Marginal Error



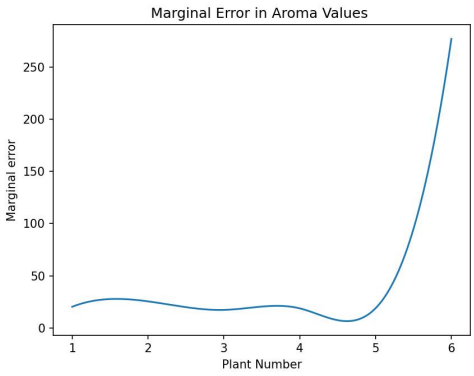
Plot 2. Marginal Error (Iteration 1)



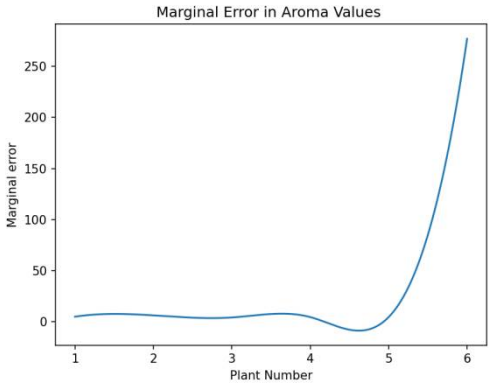
Plot 3. Marginal Error (Iteration Two)



Plot 4. Marginal Error (Iteration Three)



Plot 5. Marginal Error (Iteration Four)



Plot 6. Marginal Error (Iteration Six)

/***** Aesop End ********/.

DISCUSSION

The AESOP (Assortment of aromatic plants) relies on the HAT (Heap of aromatic plants) and the TIARA (Infinite Attributes)

The TIARA process gives a list of aromatic plants.

The HAT method adds an aromatic number and creates a heap of aromatic plants.

Finally, the AESOP algorithm creates an assortment of aromatic plants by looking at the heap and correcting the marginal error in the aromatic values by applying a moving average.

CONCLUSION

In this research article, relevant research work on aromatic plants is discussed in the required amount of detail. Also, an algorithm called AESOP is put forward that relies on a method named HAT and a process titled TIARA.

It is observed that the AESOP algorithm can reach lower and yet lower values of marginal errors in an assortment of aromatic plants.

It can be concluded that with the application of the AESOP algorithm, the process of cultivation of aromatic plants in India can be improved.

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