

Communication

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Communication

Plant Obliviousness to Plant Consciousness through Knowledge Gap Bridging

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Abstract: Plant consciousness is a scenario where people imbibe the culture of engaging plants as a constant part of their day to day activity. The earth supports both plants and animals, but , plants unlike animals are unable to express themselves by shouting, nagging or crying, e.t.c. They are only able to response saliently thus making them oblivious and constantly neglected. Unfortunately, plants play just as much major roles in sustaining the earth as much as people and animals do. The proper handling of plants is much reliant on the "Plant consciousness or obliviousness" of people including both the young and the old. Are people well aware of plants, how important they are to the earth, the environment and it sustenance?, the answer is not enough. There is a need for plant knowledge bridges to create more and adequate awareness about plants, their importance, how they should be handled, how they should be cared for, and an understanding that they are partners for the sustaining our dying world. We seek to change this obvious lack of appreciation and understanding of plants, but how can this be done? We discuss methodologies that have and can been used for bridging this knowledge gap to ensure that our world is safe by protecting and caring for plants.

Keywords: Plant knowledge; Plant oblivion; Sustainability; Plant perception; Plant consciousness

1. Introduction

The term Plant awareness disparity/plant blindness (Wandersee and Schussler, 1999; 2001; Parsley, 2020) has been described as the ability of people to notice the importance and usefulness of plants for our daily activities (Barrutia; 2022), these may be by lack of individual recognition of plant or placing more importance or value on animals rather than plants with less appreciation and positive attitudes towards plants (Kinchin, 1999; Lindemann-Matthies, 2005; Prokop and Fančovičová, 2023). It is constantly overlooked that both humans and other animals are dependent on plants for survival for oxygen, food, shelter, clothing, medicine and so many more (Schussler and Olzak, 2008; Amprazis and Papadopoulou, 2020; Pany *et al.*, 2022). Plants contribute more than 50% to the sustenance of the earth (Figure 1.) while the remain 50% comes from animals including humans e.t.c (Burke, 2022). it is a false notion that humans are the apex of the earth where humans place themselves above plants neglecting them and forgetting that they are much more important hence the rapid destruction of our environment. Plants are the key if we are to restore our dilapidating ecosystem but are we aware about this and the actions we need to take to ensure the restoration of balance in the ecosystem.

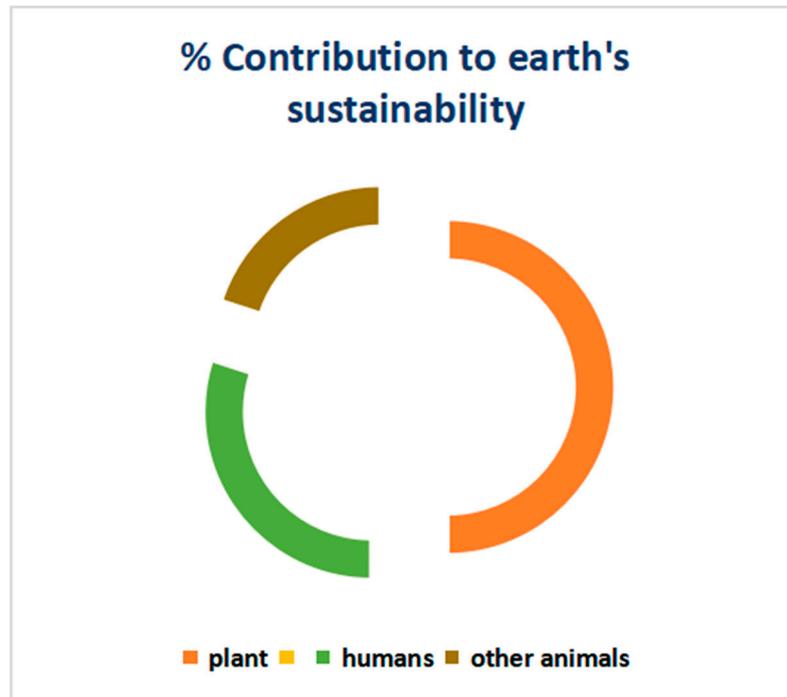


Figure 1. Plant's contribution to sustenance of the earth and environment.

Humans have more tendencies to remember things that are in motion especially predators like lions, bears, tigers e.t.c are more likely to place more relevance on animals which are much similar to us because they are more than on plants (New *et al.*, 2007), but yet require plants for their utmost survival. Keeping natural habitats helps to benefit people both mentally physical, and health-wise. Studies have shown that people working in environments where plants are grown are more likely to perform better with more productivity (Figure 2) but the connection between plant consciousness and a healthy planet is still a long way from being properly established.

The progressive developments along side urbanization has also allowed for less contact with the natural environments and ecosystem, resulting in little or no knowledge about plants, food production and the importance of plants to life at large. Also, the rapid technological changes and enormous reduction in the rural populations (DeFries *et al.*, 2010; Krishnan *et al.*, 2019) has reduced the daily crop cultivation activities reducing regular human contacts with nature, with increased progressive losses of human–nature interactions (Pyle, 1993; Louv, 2005; Soga and Gaston, 2018). Thus there is a need for conscious efforts to reiterate the importance of plants to allow for a plant knowledge bridge by using various methods to create plant consciousness and eliminate plant obliviousness where nurturing plants become a part of our subconsciousness and every day to day life culture.

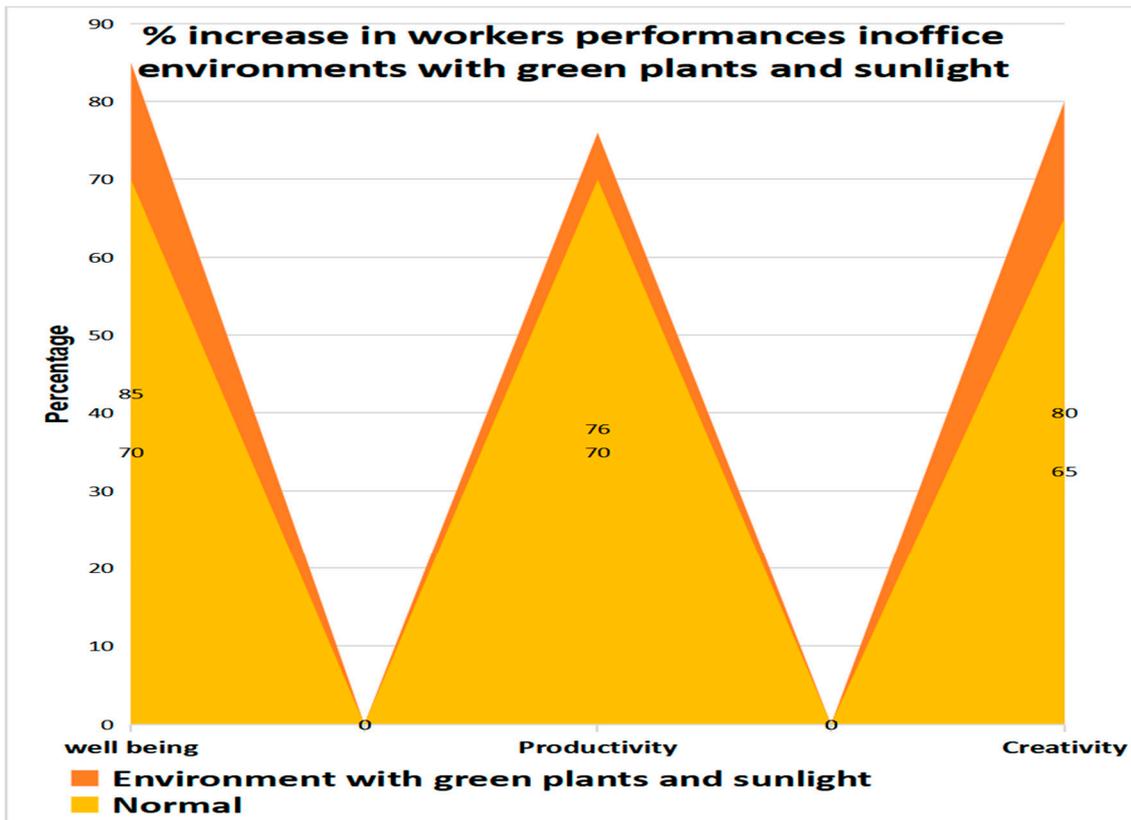


Figure 2. Influence of plants on human performance.

2. Plant Consciousness and Obliviousness

Although plants may appear silent and passive, they are highly social elements, communicating through their leaves, roots, stems and rhizospheric they respond to sounds and environmental changes including biotic and abiotic factors and conditions playing major roles in the sustenance of the environment, yet they are largely neglected by the very same environment especially humans (Parsley *et al.*, 2022; Zoni *et al.*, 2022). This can be described as Plant obliviousness where although we have heard and know about plant we ignore their importance and therefore belittle their importance to the environment. There is a dare need to re awaken this knowledge about plant, to change the general poor attitudes, and responses to the way plants are perceived by humans ensuring that plants are constantly appreciated, accepted, nurtured, conserved and cared for by humans thereby creating a plant consciousness in people (Parsley, 2022; Prokop and Fančovičová, 2023). In the light of the awaking evident awareness of global warming much noise and efforts were placed on creation of awareness among people to ensure that more trees were planted but people have began to rest on their oars forgetting all about plant we therefore need to continually create this awareness until it becomes a daily part of our lives and a culture e.g. plant sustenance culture for people starting especially from the younger generation (Lindemann-Matthies *et al.*, 2010; Stagg and Dillon, 2022).

To achieve this, more policies can be made to ensure that more parks with plants and trees are built in every area or street, and also educational policies to implement plant studies as a course of its own particularly for young school children allowing them to imbibe the plant consciousness culture at a tender age. For example in Africa, we rarely have parks or areas designed for plants or trees, most commercial area and urban centres have been cleared with little or no trees or plants resulting in more pollution. Although some houses do have ornamental plants which are used to beautify the house, these are rarely cared for and usually end up dying. The use of social media platforms, television shows, pod-casts/ plant-casts, and competitions with plant-themed titles are also other numerous ways by which plant consciousness can be stimulated among people (Figure 3). There is also a need to bridge the gender bias where it has been observed that females are more attentive than

males to plants (Schussler, 2008; Kubiato *et al.*, 2021; Gatt *et al.*, 2007; Lindemann-Matthies *et al.*, 2010; Stagg and Dillon, 2022) and therefore more willing to nurture and protect plants.

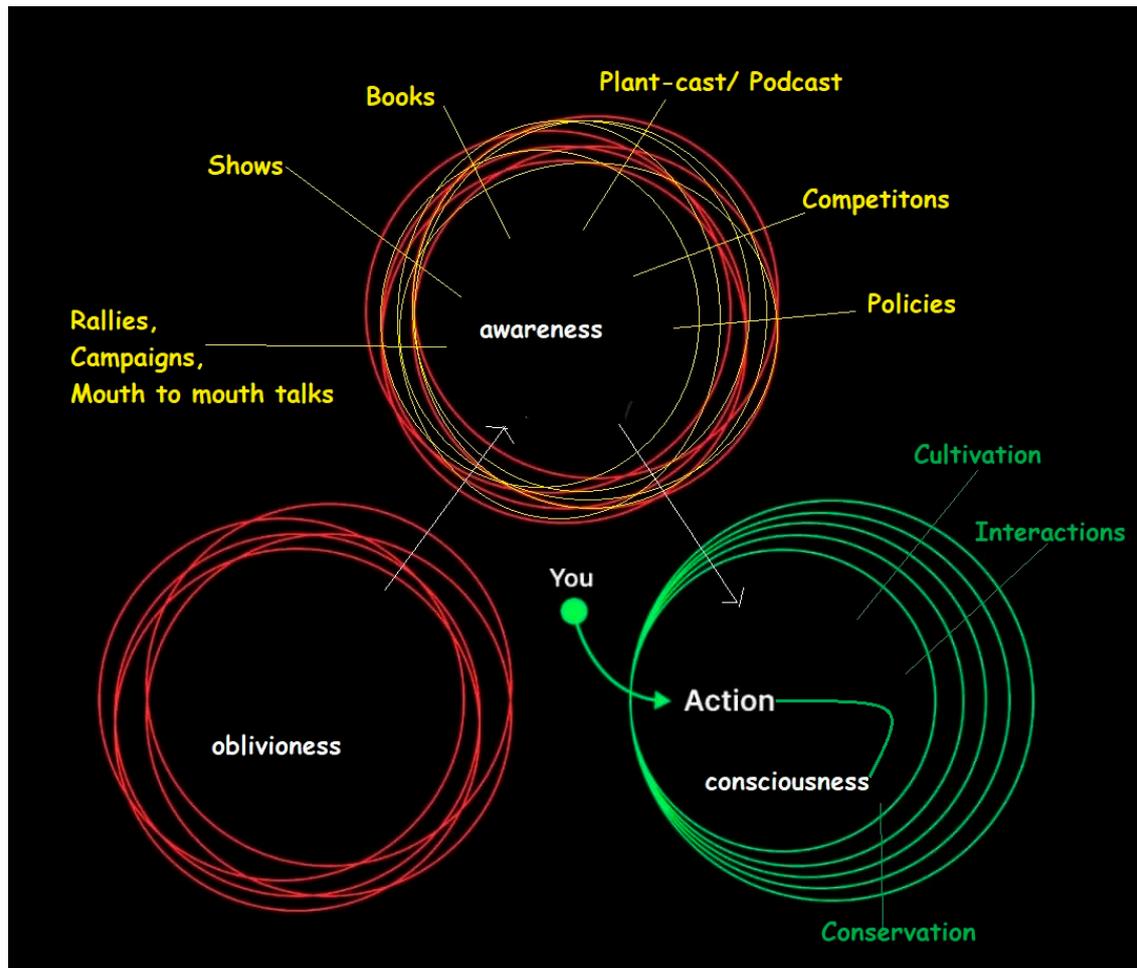


Figure 3. Plant obliviousness, plant awareness and plant consciousness.

3. Creating Plant Perception and Understanding

With the emerging environmental challenges which is becoming more of a concern, the plant consciousness and awareness needs be taught from early childhood ultimately resulting in a positive impact globally. To sufficiently create the desired plant perception and understanding, the AARK approach (Figure 4) (Parsley, 2022; parsley *et al.*, 2022) which addresses four major things can be used. These includes the:

1. Attitude (the views, values and felling about plants)
2. Attention (how do people attend to plants)
3. Relative stake (this describes people's increased interest for plants as against animals and willingness to protect and nurture them as a part of our environment)
4. Knowledge (understanding their role in nature.) (Parsley, 2022; Parsley *et al.*, 2022)

Attitude, attention, and relative stake, predominantly are more visible and affective of domains, and knowledge is considered to be purely cognitive in the role they play for the preservation of nature (Martín-López *et al.*, 2007; Jacobs and Harms, 2014; Prokop and Fančovičová, 2013; 2017) .

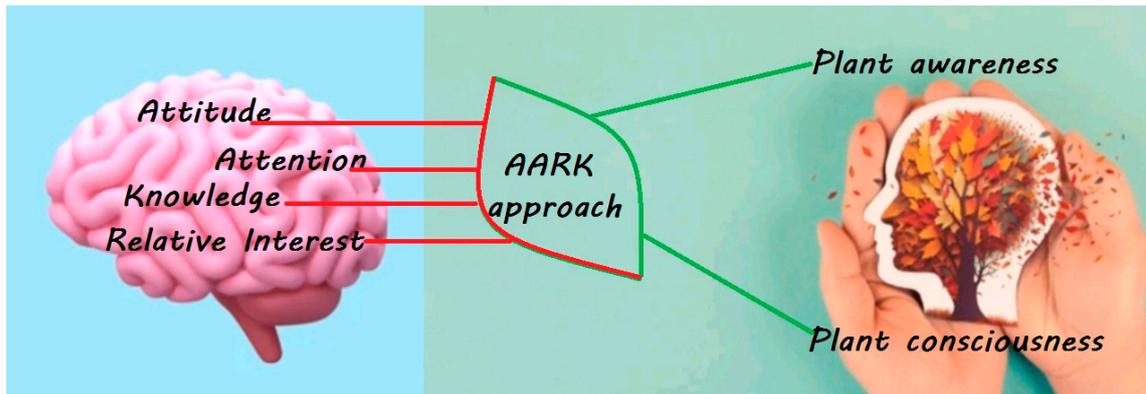


Figure 4. The AARK approach for building plant awareness and consciousness.

Generally colourful objects tend to attract the attention of humans increasing their instinct to protect them, rather than one coloured green plant (Gunnthorsdottir, 2001; Prokop and Fančovičová, 2013; Landová, 2018) which may make them more willing to support their conservation (Martín-López *et al.*, 2007; Ren *et al.*, 2022). Apart from building awareness and consciousness, there is a dire need to encourage the implementation of the knowledge gained cultivating the right perspective and preparedness to engage in planting of crops to ensure the sustainability of our environment. Several methods and approaches can be used to create awareness and plant consciousness among different age groups and also ensure the implementation of the knowledge gained.

3.1. Children

Early education of children about plant and environmental protection is a major way of greatly influencing their attitude and interest making them aware early in life of their duties in conserving nature. Wandersee (1986) and Amprazis *et al.* 2021 in their study observed that middle school students showed more interest in studying animals rather than plants, and suggested the use of outdoor education programmes where students are able to handle plants with their hands and interact directly with plant (Fančovičová & Prokop, 2011). Students can also be encouraged to plant indoor plants or little gardens at home which will earn them extra marks to encourage them cultivate the habit of nurturing and caring for plant. Another way to quip their interest is to take them on regular visits to plant hives such as a botanical garden, herbarium, or plant museums where they are able to touch see and experience life plants (Balas and Momsen, 2014; Kanske *et al.*, 2013; Zoni *et al.*, 2022).

Teachers may also encourage their students by providing seeds of simple house plants and garden plants for students to take home and experiment with. Students could also be encouraged to each have a plant in a school garden or guild where they are required to go and care for the plants at specific intervals during the week and are graded on the performance of the plants. Strgar (2007), also suggest that plant specialist can be invited by the teacher as students tend to pay more attention, are more enthusiastic and gain more knowledge gains, greatly influencing the students interests and attitude to plants nurturing. The use of plant based cartoons, movies and songs, may also be a great way to influence the knowledge of children towards plant, shaping and creating a plant consciousness in them. They should be made to understand that plants' importance is not only limited to food and timber but much more, and how the earth will be unable to survive without the presence of plants on earth (Zoni *et al.*, 2022).

3.2. Young Adults

Young adults including teenagers and youth can be enlightened using methods such as Podcasts, TV shows, course outline, engaging in competitions, interactive sessions e.t.c. Balas and Momsen (2014) in their study showed that university students had longer attention span when pictures were used during their study about plants and animals, thus the use of pictures to describe the importance of plants should be highly encouraged. Also the use of short but engaging novels and

story-lines may be enlightening for teenagers and young adults as they are more engaged with reading at this age. The use of picture posters that promote plant culture around the school environment can also be a very good way to remind students of the importance of plant and subtly creating a plant consciousness without much teaching.

3.3. Middle Aged and Older Citizens

For older citizens and working class people they should be enlighten about the benefits of plants through work seminars, brief short talk during programmes and conferences, mouth to mouth discussions by educated individuals and they can also be encouraged to grow plant to grow indoor plants particularly (Fadiji, 2005). Growing plants particularly for the elderly can be a form of exercise that keeps their mind and body active and keeps their environment clean and the air refreshing. Communities can be encouraged to build guilds at designated places in their area. A guild is a collection of different plants, that work together supporting, protecting and nourishing each other. It's the smartest way to gardening helping to save time and effort and requires little space.

3.4. Farmers

Transitioning from the hunting to farming about 10,000 years ago (Diamond and Bellwood, 2003), has increased our dependence on plants, requiring more plant cultivation and selection for their nutritional qualities, and the demand keeps increasing because of the rapid human population growth (Kabir *et al.*, 2018). The knowledge as regards plant cultivations and multiplication are very essential for plant survival which have always been transferred between generations (Cox, 2000; Turner and Turner, 2008). The rapid and new technological changes, enormous reductions in rural populations and major climatic changes (DeFries *et al.*, 2010; Krishnan *et al.*, 2019) has reduced crop productivity and yield calling for the need for new and improved methods of farming and plant cultivation to meet the ever increasing food demands. Training farmers on new and modern technologies for promoting plant health and maximizing plant yield with little or no losses through extension workers, researcher-farmer interactions e.t.c. can be useful ways to create plant health awareness and consciousness among farmers.

3.5. Researchers

The current technologies available for measuring of plant's health or detection and diagnosing of disease are highly invasive, expensive and need to be sent as samples to laboratory facilities for processing, therefore, there is urgent need for developing more simple, cheaper, accurate and precise point of use technologies methodologies and devices for better understanding of plant growth and health monitoring (Roper *et al.*, 2021). Also, the current lab-based methods or techniques available for plant disease diagnostics or point-of-use plant health monitoring are not sufficient or are limited in certain capacities as these devices usually require harvested plant parts and processed plant tissues, thus un-suitable for continuous monitoring. To assist in overcoming these challenges, more technologies and methodologies need to be developed to allow for more in-situ studies of rhizosphere interactions, using specialized plant growth houses/chambers or systems are developed which are able to mimic the natural growth environments for disease detection, stress detection, e.t.c. to determine how best to tackle these problems with minimal destruction of the plants (Mahlein *et al.*, 2016; Farber *et al.*, 2019; Mohammed *et al.*, 2019).

4. Plant Knowledge Bridge

Providing more light about basic knowledge about plants, and their importance is a major way to bridge the knowledge gap about plant. This can be done using cheap, common and simple methods of information dissemination to reach a wider range of people. These methods are often able to pass information quickly and leave a lasting impact in the mind of the targeted audience they intend to reach. This can be achieved can be via the following media or platforms:

4.1. Podcasts or Plantcast

Podcasts have become a decentralized means of for passing scientific information to the public across the globe since 2004 (Weigold, 2001; MacKenzie, 2019; Reincke *et al.*, 2020). They do not require much financial commitments, simple, can reach a larger audience without geographical barriers and has been found to be very attractive for scientific communications with evidence of 65% of podcasts are being hosted by scientist (Weigold, 2001; MacKenzie, 2019). It can be used to get feedback messages from the audience, and can be hosted informally without much fuss. It has been found to be an effective way of disseminating information as it can be listened to while carrying out activities that do not require rapt attention. Using Plant-casts or podcasts are definitely an effective tool for dissemination of information about the importance of plants for the environment and creating plant consciousness among people (Amer 2020; Yuan *et al.*, 2021; Kurdi *et al.*, 2021).

4.2. Radio Programmes and Plant Shows:

The use of radio programmes and TV shows is another popular means for dissemination of information. community broadcasting (Radio) has been proven to be a highly effective means for the dissemination of information particularly among the young and the old (Loviglio, 2002). Also television programmes are just as effective although hosting Tv shows may be more expensive than hosting a radio show.

Over many years, radio communication has had shown considerable influence in political activities, and has the potential of reaching almost everyone where it transmission service is reachable. It reaches both the learned and the illiterate without discrimination (Lubertozzi & Holmsten, 2005). The radio may be more effective as it is much more affordable for everyone as against a television set which are much more expensive and sometime require a subscription plan to be accessible for the viewer. This study by Kankam and Attuh, 2022 showed that the selected community radio stations for the study regularly aired youth-centred programmes which were immensely beneficial for the developing the knowledge gap of the youths who live around communities under the station's total coverage. While the study of Fadji, 2005 showed that farmers had access to radios and were frequent listeners of radio programmes particularly when aired in their local dialects.

4.3. Botanical Gardens, Museums and Herbariums:

Botanical garden is a garden with a well documented collections of live plants mainly for scientific research purposes, conservation, displays, and educational exercises (a living classroom,) for people's awareness of plant conservation (Bramwell *et al.*, 1987; BGCI, 2012). The plants are usually labelled using both scientific and local names and plants range from succulent plants, ornamental plants, herb gardens, plants from different parts of the world, e.t.c; they may sometimes have glasshouses or shade houses. A herbarium on the other hand is a house for a collection of preserved plant samples that are usually dried and pressed and paper mounted for long term scientific studies (Chater, 2016; Vicki, 2016). A Museum is a repository for live or stored historical plants which are displayed for people to view. They can be used for creating educational programs for school children, where children are told about plants and their role in our lives, in industries, from cutting of flowers, perfumes, shampoos, medicines, spices, timber, fruits, and so on. Examples of botanical gardens include:

1. Bogor Botanical Garden, West Java, Indonesia
2. Minnesota Landscape Arboretum
3. The State Botanic Garden of Tennessee
4. Brooklyn Botanic Garden
5. Zilker Garden in the deep heart of Austin in Texas.
6. The botanical garden University of Ibadan, Nigeria
7. The Henry B. Plant Museum (Plant Museum

8. The Mitchell Park Horticultural Conservatory has a total collection of about 1,800 plant which are living plants grown in doors or outdoors, these species come from different places across the globe.
9. California Botanical Garden, houses native California plants,
10. Ford Piquette Avenue Plant Museum is a non-profit organization which is specially for the preserving and celebrating Detroit's rich plant heritage, promoting the spirit for plant innovations and conservation.

4.4. Awareness Projects

Awareness projects are activities that create the opportunity for people to recognize, appreciate and consciously acknowledge the importance of plants and the important roles they play in sustaining the environment, the include competitions and plant based activities examples of which include:

1. The Plant Awareness Project which aims to create opportunities for people of all ages to recognize and further appreciate the plants around them. The project selected 23 plants and mounted the pictures of the plants with descriptions, scientific names, common names and overview signs in 6 different languages. [Ktuhttps://wildsight.ca/branches/golden/plantawareness/](https://wildsight.ca/branches/golden/plantawareness/)
2. STEM knowledge OLATHE – Students are allowed to compete in a plant growing contest (leafy greens growing contest) while helping to bridge their knowledge gap about plants in Greater Kansas City usually held at Kansas State University's in the Olathe campus providing STEM knowledge and an general awareness about the importance of food science as a career. <https://olathe.k-state.edu/about/news/2020/november/k-12-students-compete-in-salad-growing-contest.html>
3. The Willie and the Salad Bonanza Contest it challenges contestant students to grow several different types of common food greens, including Lacinato kale, Space Hybrid spinach and Black-Seeded Simpson lettuce using a container for a duration of about 45 days. It's an annual contest that holds yearly for middle and high school students. The students are allowed to determine how they want to care for their plants and judges are assigned to grade the plants after the 45 day duration.
4. Seed Your Future and Scholastic Contest: it is a contest with the theme: The "Plants to the Rescue! Plant Mash-Up" contest and sweepstakes, it engages middle-school students testing their imagination and illustration. Thousands of middle-school children are selected for a challenge in their community, then described and allowed to design unique plant-based solution that they think can be effective. It aims at educating and inspiring younger people about how powerful plants are and the green-collared career opportunities available. https://www.seedyourfuture.org/plant_mashup_winners
5. Plant Science Contest: it is a contest for students from ages 9-18. they make a presentation in a contest room and then the best presenters are selected to represent California's State 4-H Plant Science team to represent California at the annual National junior horticultural association contest. <https://na.eventscloud.com/website/55508/plant-science-contest/>
6. Plant the Moon and Plant Mars competition: Participants are given an activity kit (Plant the Moon and Plant Mars) which includes a simulant, a guide and a pH detection paper. The Teams can then use the guide to decide what plant growth experiments they like using the provided simulant. <https://www.competitionsscience.org/competitions/plant-the-moon-plant-mars-challenge-spring-2022/>
7. The plant contest: this contest allows people with healthy and lustrous plants to place them up for a contest and the most healthy and thriving plants are selected for their exceptional growth and vibrancy. <https://www.plantcon.org/plant-competitions>.

Plants contests therefore are a very easy and direct way to gain the keen interest and enlighten people both young and old about their relative stake in plant growth and plant preservation

promoting plant consciousness and eradicating the obliviousness about how important plants are for the sustenance and preservation of our environment.

4.5. Social Media Platforms:

Social media platforms are very common among people including both the young and the older generations. They are very effective and useful for passing information to millions of people having a very wide reach within a very short time and very quickly accessible. The social media cuts across all diversities, cultures, religions and professions. A constant reminder is certain to create a strong awareness which helps to change people's perspective, and awareness about plants and how important they are not just as food but also for the sustenance of the environment and the world at large. Several social media platforms are available which include; whatsapp, facebook, instagram, twitter, youtube, etc. Messages can be shared as videos, short reviews, pictures, short charts, voice messages etc. They are able to go a long way in influencing the perception of people to plants.

4.6. Short Hand Books and Flyers:

The use of short, concise, engaging, written books or handbills and flyers, is another way to pass information across to people especially when attractive and clear descriptive illustrations are used alongside. The message is easily passed across with little effort and leaves lasting impressions on the reader which will encourage them to take initiatives as to becoming plant conscious and invest more in nurturing and caring for plants to sustain our environment.

4.7. Plant Clubs and Plant Groups:

Plant clubs and groups which involves a collection of a people who are devoted to and love plants, who come together regularly to promote the awareness about plants, they could do this by spreading the word through social media, by word of mouth to others by organising events that promote awareness about plants, e.t.c. They are able to reach many people especially those who are closer to them in their respective communities and therefore are able to reach a larger crowd as they begin to grow and engage more people from all walks of life.

5. Conclusion

Plants are very important for life as food and water. They give us life directly and indirectly as they produce oxygen, use up Carbon dioxide and are sources of rain creation. We need to understand the importance of plants in our lives, but there is a general neglect and obliviousness about plants, which can only be eradicated by creating an awareness (using the AARK approach) about plants and their importance. This can be done by providing good-quality information for studying plants using appropriate mediums to bridge the knowledge gap and create a Plant consciousness changing the way we interact and relate with plants. By so doing, we can do our best to save plants ultimately saving life, saving the environment and making the world a green earth to saving and shaping our future.

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