

How to Have a Home Garden! Problems and Solutions.

Qatif Case Study

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Abstract: Removing home gardens from most of the current houses, meanwhile, converting farms or parts of them into residential. This is a big problem that this study aims to explore the causes that residents face and push them to remove home gardens, and to find solutions to help them preserve them. A questioner was published, and 180 responses were received. The responses varied between those who inhabit different types of housing (apartment or house), (owned or rented). The reasons were divided into four main problems (living in an apartment, less agricultural knowledge, difficulty in cleaning garden and preferring artificial garden). Which indicated that housing in an apartment is one of the most important reasons, with an average of 3.57 on the five-point Likert scale. Likewise, the artificial garden is preferred, with an average of 3.43, due to the other activities and time of interest required by cultivation. To solve these problems, the research suggested allocating a common garden sometimes, as well as providing a table for plants suitable for growth in Qatif, which includes the name of the plant, the type of fertilizer, the time of fertilization, and the amount of sunlight needed. The preference for owning artificial home gardens was puzzling, as the results were counter-productive, and despite their preference for them because of their busyness, they do not prefer to own them instead of natural gardens.

Keywords: Agriculture, home gardens, healthy home, Al-Qatif city.

كيف تحصل على حديقة منزلية! المشاكل والحلول.

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الملخص: إزالة الحدائق المنزلية من أغلب المنازل الحالية وفي الوقت نفسه تحويل المزارع او جزء منها الى مخططات سكنية. هذه مشكلة كبيرة تهدف هذه الدراسة إلى استكشاف الأسباب التي يواجهها السكان وتدفعهم إلى إزالة الحدائق المنزلية. وأيضاً إيجاد حلول لمساعدتهم في الحفاظ عليها. تم نشر استطلاع للرأي والحصول على 180 مشارك من مدينة القطيف حيث تعتبر من أكثر المدن ذات تربة خصبة صالحة للزراعة ومع ذلك عدد الحدائق المنزلية محدود، تنوعت الردود بين من يسكنون أنواع مختلفة من المساكن (شقة أو بيت)، و (ملك أو إيجار)، فهم من مستويات اقتصادية مختلفة. وقسمت الأسباب إلى أربع مشاكل رئيسية: (السكن في شقة، وقلة الثقافة الزراعية، والصعوبة في تنظيف الحديقة، وتفضيل الحديقة الصناعية). والتي أوضحت أن السكن في شقة من أهم الأسباب وذلك

بمتوسط 3.57 بمقياس ليكرت الخماسي. كذلك تفضيل الحديقة الصناعية بمتوسط 3.43 وذلك للانشغال بأعمال أخرى ووقت الاهتمام الذي تتطلبه الزراعة. ولحل هذه المشاكل قام البحث باقتراح تخصيص حديقة مشتركة أحيانا وكذلك توفير جدول للنباتات المناسبة للنمو في القطيف، والذي يحتوي على اسم النبات، ونوع السماد ووقت التسميد، وكمية ضوء الشمس اللازمة. وباعتبار صعوبة تنظيف الحديقة المنزلية سبب ثانوي حيث إن النتيجة محايدة بمتوسط 3.07 كذلك توفر المعلومات الزراعية اللازمة بمتوسط 3.18 مما يوحي بأن هذان السببان يمكن التغلب عليهما إذا ما توفر المكان المناسب. كذلك النباتات التي تنمو في القطيف قليلا ما تتساقط أوراقها، فتفضيل اقتناء الحدائق المنزلية الصناعية كان محيرا حيث النتائج كانت عكسية وعلى الرغم من تفضيلهم لها لانشغالهم إلا أنهم لا يفضلون اقتناءها عوضا عن الحدائق الطبيعية.

الكلمات المفتاحية: الزراعة، الحدائق المنزلية، منزل صحي، مدينة القطيف

Introduction:

Qatif city is surround by low beach waters overlooking the Arabian Gulf which is having irregular height exceeding three meters above high tide waters, which comes twice a month. The oasis lands begin to rise gradually inland until it reaches a height of ten to twenty meters above the sea level. The sea lands full of mud turn into a farm full of plants and rocky reef which is spread out into the sea for sixteen kilometers. Some freshwater springs spring from its bottom and some still active. In west and north, it is surrounded by yellow sandy hills called Dahna desert which reaching 10m in height and taking the form of a horse's horseshoe. This effect the temperature which increases starting from May until August. Then, it decrees until it reaches the lowest temperature in December and January. Humidity increases to significantly in July to highest amount and it starts to decrease by December to reach the lowest amount in February and June. Raining get few chances in December until April (Darwish et al., 2014).

The soil is great for having gardens as lots of the houses were big farms which is divided to be residential building and selling farm. Residential buildings spread all over the city, due to the behavior of the population of staying to live inside the city, even if they live outside for long time, due to job or studying, then they come back. Populations are from different levels, rich, middle, and low class, which affect the type of home they have, whether it is a house or an apartment, also whether they own or rent it.

Residents' limited knowledge in specific majors left farming experience only for farmers. As well they want to have clean houses as they believe that having a garden inside the house will not keep it clean and neighbors visit each other without prior schedule. In addition, Orientation to artificial gardening as decoration grown up, also, roof gardening becomes as a trend with having sitting area in roofs, but citizens do not have enough knowledge about where and why it is used.

In the United States, City Grower Association have farming training to educate society to have home gardening, (Mohd Hussain et al., 2020). In addition, having home gardening improve the knowledge around planting and it encourages children to learn more about relationship between human and nature as well as they allow to touch and feel it every day, (Lal, 2020a) (Raymond et al., 2019). However, plants need mixture of fertilizers such as peatmoss which increase soil's ability to maintain water and nutrients. Animal manures retain soil moisture, and it increases soil carbon. Compost is material

mixture like cow dung mix with soil. The best time to use is before or after planting. It is high of nutrients. Also, there is organic and chemical types of fertilizers. For containers, to be used, it should have openings in the bottom to lose unneeded water, so roots will not be rotten. In addition, when fertilizer will be used the soil should be wet, so the fertilizer will not kill the plant. When plant is sick should not use any fertilizer and the suitable time is early morning and evening to use it (McDougall et al., 2019).

In Pune, India, in middle class having home gardening for social, cultural and environmental effects which improve aesthetic quality, increase recreational value, preserving biodiversity, providing food or decreases the cost, improving the urban house in different types of home gardening which is considered as effective in establishing network, equity capital, and improve the social cohesion, (Zasada et al., 2020). Eco-friendly sustainable agricultural practice home garden improves food security, which enhance economic growth as it effects socially, environmentally and economically in case of increasing cost as promoting local ecosystem (Galhena et al., 2013a).

In addition, the environmental or tangible benefits which attract animals through wildflowers and creating it by colors and biodiversity which 62 percent of interviews agreed that home gardening supported the connection to nature. It causes joyful views and excited birds and butterflies (Lal, 2020b) (Raymond et al., 2019). It creates relaxing environment that reduces stress to 48 percent in daily life, as 45 percent agreed that gardening makes them feel happier and braver (Christian et al., 2014) (Raymond et al., 2019). It improves healthy eating behavior as 14 percent planted their fruits and vegetables (Castro et al., 2013) (Block et al., 2012).

Artificial planting is fresh without the need of watering or care such as monstera leaf, faux Cycas, spiral tree and ext. (Wu et al., 2010) (Zasada et al., 2020) Which is used nowadays for decorative purposes instead of natural plants or because people argue that they do not have plenty of time to look after plants. This type of plants is made of plastics. It is originally from petroleum derivatives and it is carbon and hydrogen. It effects people who have respiratory system issues known as asthma. Some of them designed in shapes which allow dust to swell in it. When children touch these plants, they effect their digestive system. In addition, if this type of plant is abandoned, it produces Sulphur that increases combustion and diffusion, which may lead to more suffocation than normal (Wu et al., 2010) (Pérez-Calderón et al., 2017).

The Qatif City future plan aligns with the UN-Habitat sustainable development framework and the Saudi Vision 2030. It performs as a thinking tool that constitutes together an assessment tool and guidance for the current and future planning of the city, whilst defining a clear strategy for sustainable development (Kecerdasan & Ikep, 2019) (Ambrose et al., 2020) (Galhena et al., 2013b). The city vision is to increase the quality of life and enhance the environmental sustainability, and this could be achieved through residents' interest in landscaping which includes having home gardens as a helping agent.

Owning a garden causes a healthy lifestyle as it encourages people to do exercising and to have less stress as well as it provides more oxygen and decrease carbon dioxide (Zasada et al., 2020) (Algert et

al., 2016)(Corkery, 2004). In Qatif, some home gardens and farms turned to be residential regardless the gardens' benefits. As well as in house gardens people think that they will struggle in cleaning, so they stop making home gardens or they use artificial gardening. While artificial planting is one of the issues which does not give any economical or environmental impact (van Lier et al., 2017)(Berman et al., 2012)so it could be considered as decoration only. Hence, the paper main goal is to find out how to encourage people to have a house garden. In addition, to study the behavior of population in home gardening and finding solutions to the problems they face, while including needed agricultural knowledge.

Research problem and objectives:

People do realize the importance of natural home gardening, but at the same time they practice gardening differently. The orientation towards using artificial planting is increasing immensely regardless its disadvantages. The research aim is to find the reasons and solutions of simplifying having home gardens, especially when the climate conditions are suitable.

Methodology.

Study area:

The study was carried out in Qatif city in the kingdom of Saudi Arabia, where home gardening is limited despite having suitable farming conditions. The area has freshwater springs spring with farm soil. Precipitation of 10 mm; air temperature in summer and winter ranges between 45–45 °C and 22–30 °C (Kecerdasan & Ikep, 2019)(Darwish et al., 2014). Qatif population are 474,000 people as of 2010 census(Kecerdasan & Ikep, 2019) scattered over distinct villages inhabited by farmers. The sample was selected with 95% confidence level and the confidence interval is 1.45.

Data collection:

The target was to find out how people behave in gardening, how much of them are having home gardens, and the factors affecting their decisions. The questioner was designed and sent via WhatsApp messages. The message is passed out to random phone numbers, putting into account to target Qatif residents only by the first question. 180 respondents who live in Qatif and live-in different types of buildings; rented apartment, owning apartment, rented house, and owning house, were received. The data then was analyzed using SPSS to find the main reasons behind the existence of few gardens. For instance, if they got garden in home or not. Knowing if home gardening is important according to their believes. How much living in an apartment effects in gardening? Neglecting Qatif population to gardening due to less knowledge in gardening and how much knowledge they know about gardening. Is Cleaning the garden one of the reasons not to have a home gardening. How much preoccupied to planting case

changing to artificial gardening. According to residents believes whether they like home gardening or roof gardening and if is it natural or artificial.

Interviews:

Having personal interview with two farmers Aldarweesh Hasheem and Alfaraj Saeed. Asking them about the best plants which grow up in Qatif and how much sunlight they need. Also, asking them about suitable fertilizer for those plants. How many times plant needs vaccination and when?

Price data:

Collecting price of natural trees to make it easy for residents to know.

Data analysis:

Descriptive statistics of the data was processed by Excel and SPSS. Monitoring data by asking two questions for the same issue as following:

- You know the types of plant which is suitable to grow in Qatif - Neglecting Qatif population to gardening due to less knowledge in gardening.
- Going to artificial gardening as result of being busy - preoccupied to planting case changing to artificial gardening.

Letting them choose the type of gardening they prefer. Analyzing the percentage of four issues in the questioner which they answered by standard scale. Analyzing data using Anova test to find the differences between groups. Then finding suitable solutions for each of them.

Sorting the information getting from interviews and dividing them by type. Then putting them is schedule. Monitoring data by asking two farmers from different neighborhoods in Qatif.

Analysis and Discussion.

Respondents' basic characteristics:

This case study is done in 180 of Qatif population in October 2020 through survey. The respondents were from different economic levels and that was revealed by the type of home they live in. as 50 percent live in their own house; 27.8 percent own an apartment 21.1 percent rented an apartment. 55 percent of all surveyed population have a garden, while 45 percent do not have garden which might be for different reasons. 4.52 out of 5 at the Likert scale believes that having a home garden is too important, where 58.9 percent strongly agree, 34.4 percent agree, and only 6.7 percent are neutral that having a home garden is important while no one of them think that having a garden is not important. This means that, by nature human believes in the connection between human and gardening even if they do not have it for some different reasons. As shown in table 1, most of population who have home garden are the one

who are owning houses with 80% of all residents having gardens, while most of population who lives in an apartment do not have garden with 67% of all residents without having a home garden. The reasons could be living in an apartment, agriculture knowledge, difficulty in cleaning or orientation to artificial gardening.

Table (1) The number of participants who have or do not have home gardening with type of living place.

Owning apartment		Rent apartment		Owning house		Rent house	
Having garden	Do not have garden	Having garden	Do not have garden	Having garden	Do not have garden	Having garden	Do not have garden
16	34	5	33	58	32	2	0

First reason, living in apartments versus houses:

Residing in an apartment could be one of the important reasons, the null hypotheses is that there is no relation between living in an apartment and having a garden, but the results reveal that P value is significant with 0.04, so reject the null hypotheses and being sure by using Pearson test that there is a strong relation between the two factors. The results show that a mean of 3.57 out of five believes that this the main reason. 27.8 percent strongly agreed, and 27.2 percent agreed on the relation between living in an apartment and having a home garden. 20.6 percent disagreed on this relation. In addition, 28.40 percent from population who lives in an apartment agreed and 34 percent strongly agreed which means that they are struggling in having a home gardening as they think that to have a home garden, it should be by having big land area on the ground floor. However, 26.08 percent from population who lives in a house agreed, which means that they perceive the issue, while 25 percent from them disagreed which is close percentage. Disagreed house inhabitants are not perceiving this issue or thought about it as it is not the primary issue for them.

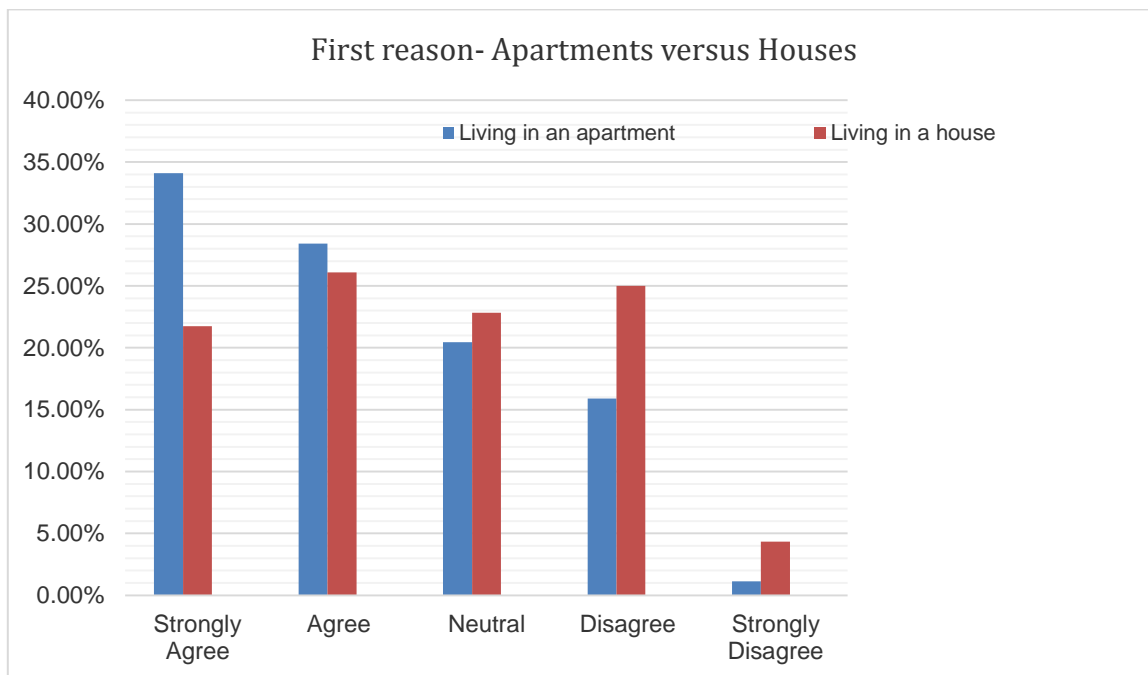


Figure (2) Living in an Apartment as a reason of not Having a Garden.

Second reason, growing up any plant:

Growing up any plant they like, this could be one of the reasons as not all the plants are suitable to grow up. They think that no plants will grow up in their houses and how to take care of them. When asking residents if they know the suitable plants which can grow up in Qatif climate, the results revealed that 35 percent know the suitable plants which can grow up in Qatif climate, while 28.9 percent do not know. In addition, 56.79 percent population who have garden know more information about plants while 45.45 percent of population who do not have home garden are not sure about the plants' types, 37.37 percent of them do not know any type at all.

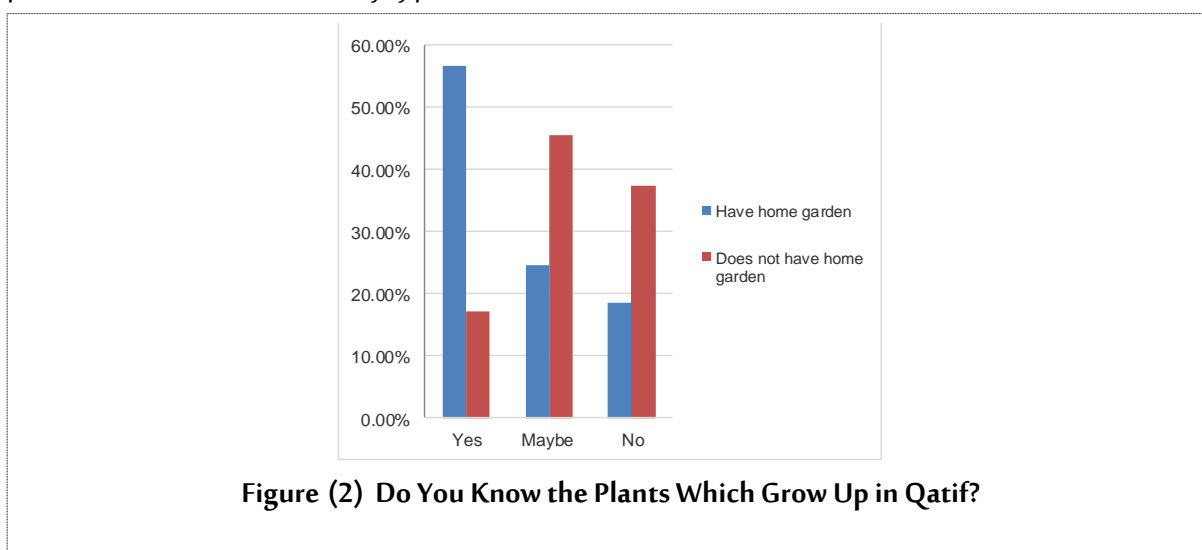
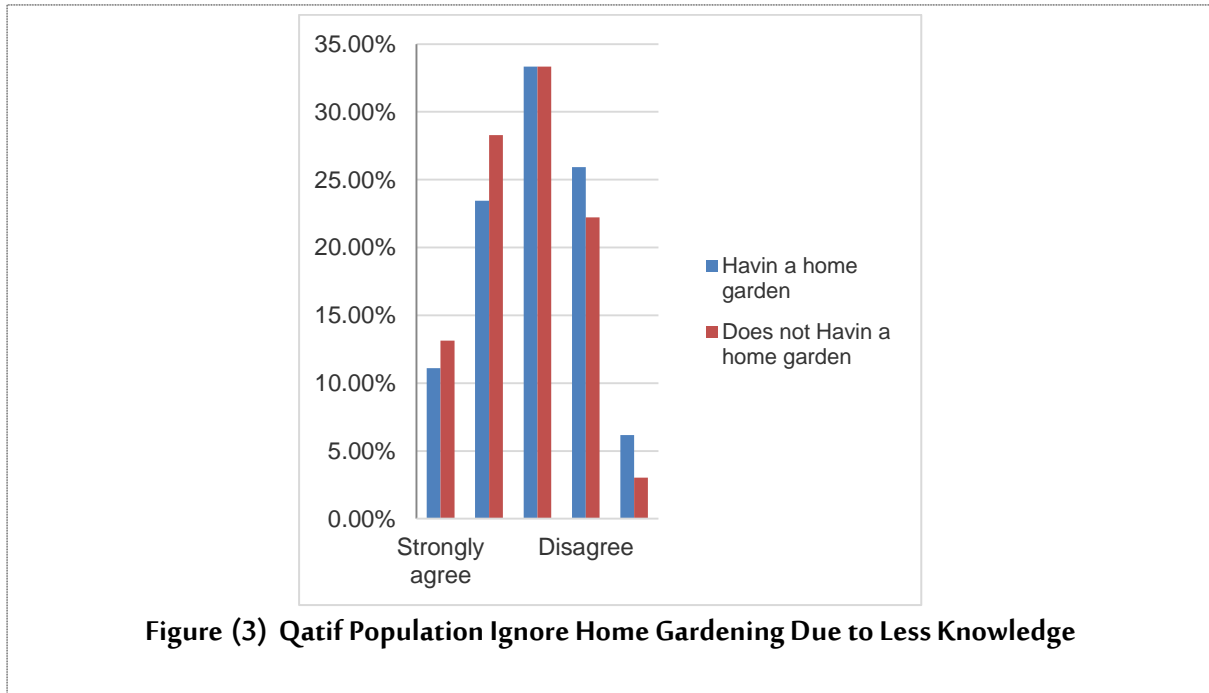


Figure (2) Do You Know the Plants Which Grow Up in Qatif?

The two questions concerning first, the Qatif residents disregard or neglect home gardening because of knowledge lacking about farming in general, and that they are oriented to artificial gardening due to their expectation that gardening and taking care of it will consume time, were having strong relation with high reliability factor according to the composite reliability test with 0.695 and 0.699, respectively. The mean was 3.18 out of five which is neutral agreement, this indicates that having the needed information is not a real obstacle faces residents to have a home garden. Despite their agreement on being busy with an average of 3.43 out of five.



However, 26.1 percent believes not having home gardening is due to less knowledge they know about the type of plants which can grow in Qatif and other farming knowledge such as fertilizer, sunlight, vaccination, and plant diseases. When comparing the results between both populations, their answers are close to each other. However, 28.28 percent of them think that less knowledge has effect on having home garden, while 37.37 percent do not know about so, the differences are noticeable, 9.09 percent, which means that even who have knowledge is thinking that it has effects. 22.22 percent of population who disagree that ignore home gardening is due to less knowledge which is strange as the percentage of population how have knowledge is 17.17 percent. 33.33 percent of population who does not have home garden think that it could be the reason.

Third reason facing difficulty in cleaning home garden.

According to the city culture, neighbors visit each other without call or appointment especially during important events as wedding, new baby, or Eid. This requires the home to be clean and tidy. Some leaves fell and sometimes plants died and need to clean the garden repeatedly. Most people are busy depending in their lifestyle which causes difficulty in cleaning home garden. 34.56 percent of population

who have gardens are facing difficulty with close percentage of 32.32 percent of population who does not have garden thinking the same. In the other hand, population who think that cleaning is not a reason is 29.62 percent for the people how have home garden and close percentage of 28.28 percent for people who does not have a home garden. they might think in this way, as the leaves falling is less if the suitable plants are used, they will not have this issue due to this percentage this is not one on of main reasons. The mean is 3.08 out of five which is neutral, as they do not experience the level of difficulty of cleaning the home garden.

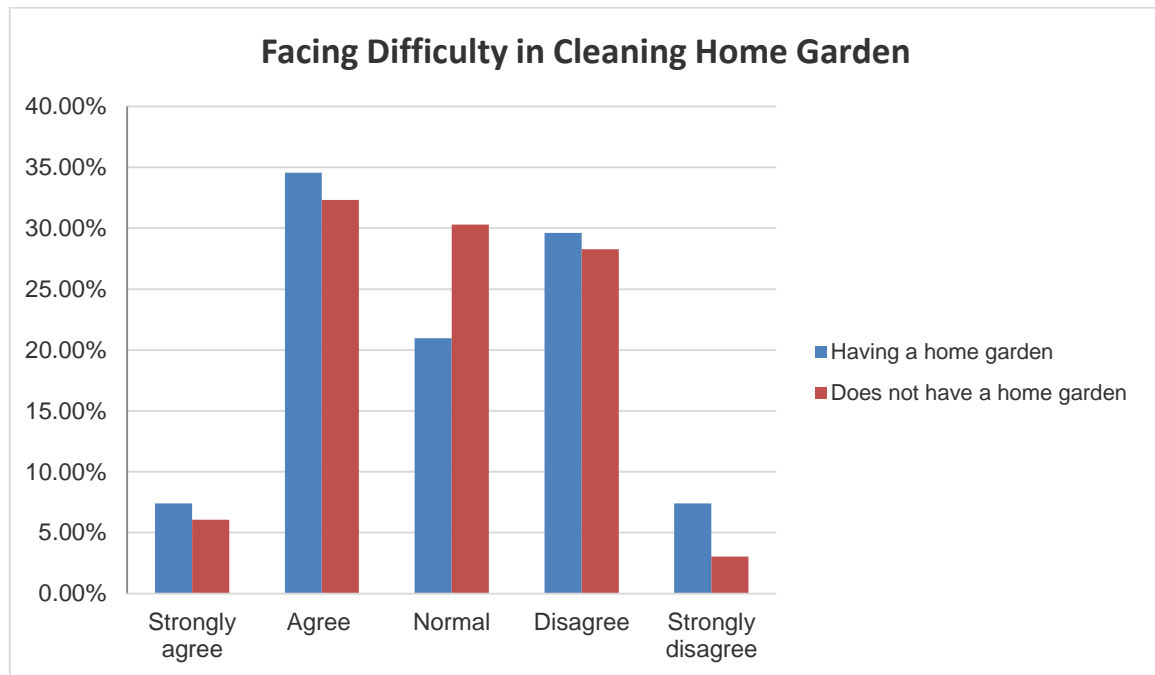


Figure (4) Facing Difficulty in Cleaning Home Garden

Fourth reason orientation to artificial gardening

Orientation to artificial gardening which affect natural gardening could be one of the reasons. An average of 2.47 out of 5 which implies the whole sample disagreed that artificial gardening is preferred rather than natural gardening. 34.40 percent strongly agree that natural gardening is better than artificial garden while 19.40 percent of them are disagree. However, they agreed that they are oriented to the artificial plants because of being busy and afraid of taking care of natural plants. 15.6 percent prefer having natural garden while 23.9 percent prefer having artificial garden.

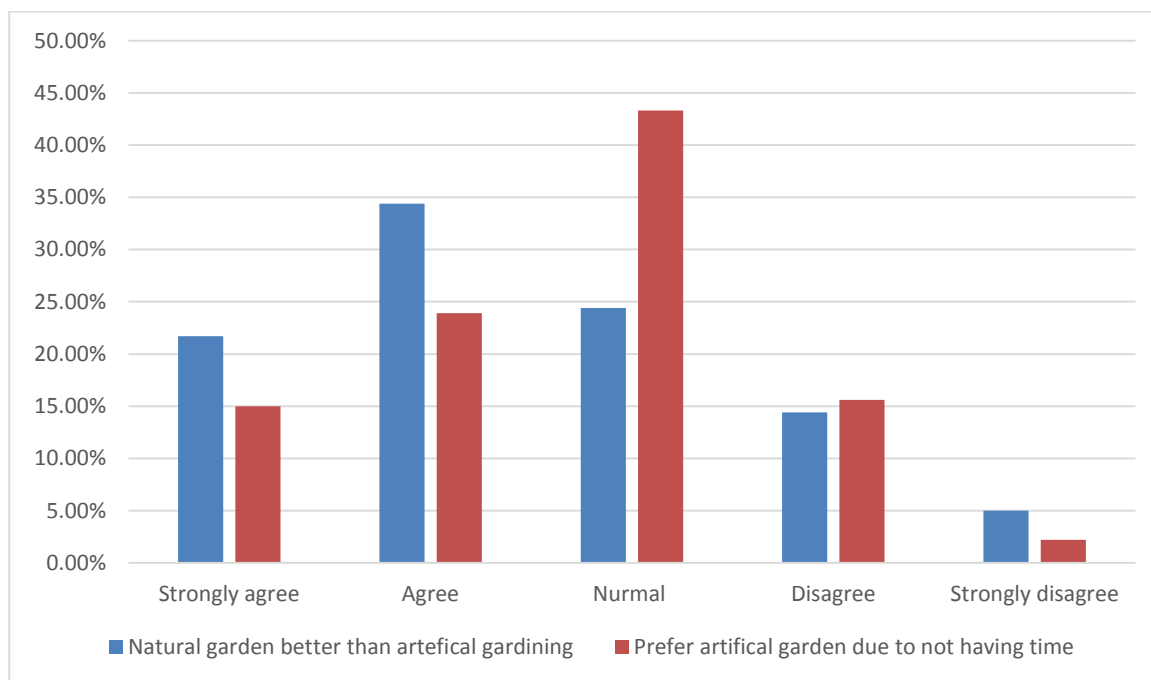


Figure (5) comparing two questions about artificial gardening and natural gardening.

Results and Recommendations

To solve the above issues, firstly, for people live in apartments, as results show strong relationship and evident effect, using the windows to place some plant pots which called containerized or pressed. Also, while designing apartments to consider home gardening as a part of elements that should be in each apartment, or having a communal gardening shared between all who live in the same building. This could be as divided area between residents or one same area for all to use and take care of.

To solve the second concern with relation to plants types, the table below provides the plants which grow up in Qatif with suitable fertilization and need to sunlight. This information is obtained through the interviews with specialized farmers in the city.

Table (2) plants which grow up in Qatif with its information by researcher.

Tree name	Sunlight	Vaccinations	Fertilization type	Fertilization time	Watering	Tree price
Palm	High	-	Black cow compost	Once in winter	In summer, every day or once in 2 day In winter once in 2-3 days	200-600 SAR
Lemon	High	Once in its life in February	Black cow compost	Once in winter	In summer, every day or once in 2 day In winter once in 2-3 days	45 SAR
Tangerine	High	Once in its life in February	Black cow compost	Once in winter	In summer, every day or once in 2 day In winter once in 2-3 days	85 SAR
Basil	Low	-	Black cow	Once or	In summer, every day	5SAR

Tree name	Sunlight	Vaccinations	Fertilization type	Fertilization time	Watering	Tree price
			compost	twice in winter	In winter once in 2-3 days	
Mint	Low	-	Black cow compost	Once or twice in winter	In summer, every day In winter once in 2-3 days	10 SAR
Indian Almonds	High	Once in its life in February	Black cow compost	Once in winter	In summer once in 3 days In winter once in 7 days	45SAR
Aloe Vera	Middle	-	Black cow compost	Once every year	In summer everyday In winter once in 2 days	30SAR
Tomato	Low	-	Black cow compost	In March and October	In summer, every day	15 SAR
Eggplant	Low	-	Black cow compost	In March and October	In summer, every day	
Ziziphus spina Christi	High	Once in its life in February	Black cow compost	Once in winter	In summer once in 3 days In winter once in 7 days	

To solve the third concern with relation to the cleaning difficulty that residents might face, the results show that this issue is having neutral perception by the users which can be maintained through choosing the appropriate and recommended types in the aforementioned table 2.

For the last issue with relation to artificial planting and the citizens preferences, the residents prefer effortless results. They prefer to have artificial plants to save effort, meanwhile, this affects health and their entire lives (Geisel & Seaver, 2009) (Quandt et al., 1994). The results show that more than 90% prefer having a natural garden which agrees with (Christian et al., 2014) (Gaia's Garden: A Guide to Home-Scale Permaculture, 2nd Edition - Toby Hemenway - Google Books, n.d.). This indicates the significance of the study and give a guidance on the value of raising the people awareness on the importance of having home gardens as a way for sustainable development.

Conclusion.

Human is linked with natural gardens even if they do not have in their homes for reasons which are discussed in this research. Those reasons got different results. First, living in apartments is one of the reasons as the majority agreed, and it was clear by the number of participants who have garden. A resolution by having shared garden in the building or using windows could help in limiting this concern. Second issue, less knowledge in plants types and gardening which is cracked by preparing a schedule

summarizing suitable plants, residents can compare other varieties with those plants to pick suitable types. In addition, cleaning gardens is not one of the main reasons of not having a home garden, it could be a secondary reason which might be controlled simply. Forth issue, artificial grading where the result was totally opposed which could not know the real behavior of participants as it depends on their responsibilities.

The paper demonstrated the population behavior in relation to home gardening by conducting interviews and surveys and have shown how to rectify the root causes and provide practical solutions for the four issues in home gardening to improve the trend of having home gardening. The result indicated that living in an apartment and less knowledge in planting are reasons behind residents' behavior while difficulty in cleaning could be a secondary reason, but using artificial planting compared to natural planting was confusing for residents. They prefer natural farming, but they do not have enough time to take care of it. This is the main reason behind having artificial plants instead.

Although, home gardening is few, residents can have more. we encourage Qatif population to start having home gardens and follow the solutions provided.

Recommendations

The paper discussed four main elements affecting people orientation to have home gardens. The results revealed that having a home garden is essential through users' feedback as well as the percentage existing at the selected city despite all barriers.

Raising users' awareness of the gardening importance and facilitating the farming ways that can be learned easily will have an added value to the concerned city and all the other areas that might adopt the same techniques.

Some solutions were addressed in the paper with relation to having shared garden in the building or using windows which can help in achieving the research goal and will facilitate having a home garden in each single residential unit.

Limitation

Hurdles that were encountered in the research is to compare artificial gardening and natural gardens properties. Also, to compare the city with other different national and international cities for subsequent studies.

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