



## Perspectives of hotel and tourist village officials on the cultivation of wooden trees for shoreline stabilization on the northwestern coast, Egypt

Noura H.S. Hassan<sup>(1)\*</sup>, Ebtessam E.E. Mohamed<sup>(1)</sup>, Hany Sh.Kh. Soliman<sup>(2)</sup>

<sup>(1)</sup> Shore processes Lab, National Institute of Oceanography and Fisheries, Egypt.

<sup>(2)</sup> Hotel Studies Department, the High Institute for Tourism, Hotels & Computer, Alexandria, Egypt.

\*Corresponding Author: [drnourahassan@gmail.com](mailto:drnourahassan@gmail.com)

### ARTICLE INFO

#### Article History:

Received: March 23, 2022

Accepted: June 19, 2022

Online: Sept. 9, 2022

#### Keywords:

Adopting,  
Perspectives,  
Shoreline stabilization,  
Cultivation of trees,  
Shoreline changes

### ABSTRACT

This study aimed to identify the extent of knowledge and willingness of hotel and tourist village officials to plant wooden trees from Alexandria to Mersa Matrouh, Egypt, to protect beaches from erosion. The data were collected from 41 total respondents through the questionnaire by a personal interview. Results indicate that most respondents do not know anything about the marine environmental concept or the importance of preserving it. Different answers were received on statements related to hearing about the idea of planting trees for stabilization purposes. The answers reveal that there are still some fundamental knowledge gaps in the comprehension of some basic aspects of planting trees on the shoreline. In addition, the respondents' knowledge about adopting the cultivation of trees on the beach was determined. In general, various answers were received with respect to the respondents' updated information, sources of information, reasons for adopting the cultivation of trees on shorelines, reasons for adopting the cultivation of trees to stabilize beaches, reasons for not adopting the idea of planting trees to protect the beaches from erosion and problems faced by the respondents in planting trees and their vision to solve them. In conclusion, more efforts are recommended from those in charge of extension work and more attention should be paid to extension training through conducting awareness campaigns and courses. Additionally, different organizations in Egypt are required to cooperate in spreading the idea under investigation and facilitating procedures.

### INTRODUCTION

Shoreline changes owing to erosion and accretion are natural processes occurring over a range of time scale. They may occur as a result of smaller-scale (short-term) events, such as storms, regular wave actions, tides and winds, or owing to large-scale (long-term) events, viz. glaciation or orogenic cycles, that may significantly alter sea levels (rise/fall) and tectonic activities causing coastal land subsidence or emergence. Hence, most coastlines are naturally dynamic, and cycles of erosion are often an important feature of their ecological character. Wind, waves, and currents are natural

forces that easily move unconsolidated sand and soils in a coastal area, resulting in rapid changes to shoreline position.

Rising seas, expanding coastal development, and increases in the frequency of extreme weather catastrophes are exposing the shoreline communities worldwide to erosion and flooding risks (**Arkema *et al.*, 2017**).

Spurred by a widening awareness of the loss of coastal habitats and the deficiencies of traditional erosion control structures, there has been much progress to advance the science and implement natural-based approaches to coastal protection (**Bilkovic *et al.*, 2017**).

The coasts of Egypt extend over 3500km along the eastern Mediterranean and the Red Seas. The Mediterranean coast of Egypt can be divided into four main sub-regions, (**Frihy & El-Sayed, 2012**); namely, the northwest coastal sector, the Alexandria coastal sector, the Nile Delta coastal sector, and the North Sinai coastal sector. The northwest coastal sector extends from Sallum to Alexandria. The Alexandria coastal sector extends further eastward from Hammam to Abu Qir. While to the East, the Nile Delta coastal sector extends to Port Said. The North Sinai coastal sector, which extends from Port Said to Rafah, is the easternmost sector of the Mediterranean coast of Egypt. This sector comprises large dunes that can reach considerable heights, thereby naturally protecting the coastal area.

In particular, the coastal zone of Egypt is the most vulnerable to the impacts of climate change, owing not only to the impact of sea-level rise but also to the impacts of water, agriculture, human settlements, etc.

Although the northwest coastal sector of Egypt between Sallum and Alexandria (~520 km) has maintained a considerable equilibrium throughout history, developers have built traditional protective structures to form sheltered recreational beaches without considering its geomorphologic characteristics (**Frihy, 2009**). These interventions resulted in major erosion and siltation problems along this zone. Numerous investigators have discussed these coastal problems and have reported the reason to be the insufficient design of coastal structures in this region (**Iskander, 2010**).

In terms of solutions, erosion and sedimentation problems can be overcome by perched beaches. Furthermore, tourist villages can be protected by floating or submerged breakwater, (**Iskander, 2010**). **Rakha (2001)** employed a numerical model to estimate the shoreline changes resulting from the construction of four detached breakwaters along the Marabella Resort to determine the beach nourishment requirements to protect the down-drift beaches.

Interest in the Egyptian coasts grew with the interest in developing the Wady and Delta, which led to an interest in developing coastal tourism throughout the region. The private sector has exploited this development process by building private, for-profit coastal tourist villages without considering their impact on local and regional development. These villages have negatively affected regional development and the environment (**AbdeL-Latif *et al.*, 2012**).

The Egyptian practices were limited to coastal zone planning. In recent decades, coastal zone tourism has significantly grown bringing enormous economic benefits to host communities and causing many environmental and social impacts to the coastal environment. Beach resort developments face problems due to the inability on the part of stakeholders to make sound decisions about sustainable designs, in part to the complexity of the sustainability issues and a lack of comprehensive decision-making to assist them (**AbdeL-Latif *et al.*, 2012**).

The Egyptian government began implementing coastal tourist villages in the 1990s in the following regions: the Mediterranean beaches along the mainline coast from the Suez Canal to Libya and the northern Sinai, the Sinai coast along the Gulf of Aqaba, the Sinai coast along the Gulf of Suez, the southern Sinai region, which opens onto the Red Sea, the Mainland coast along the Gulf of Suez, and the Mainland coast along the Red Sea. The biggest regional differences are between the Mediterranean coast and the regions that connect with the Red Sea. Some of these regions attract extensive tourism, whereas others are mostly void of tourists. On the other hand, some others attract very specific tourists (**AbdeL-Latif *et al.*, 2012**).

Nowadays, the coastal tourist zones in Egypt have been developed into beach resorts. One of the hot spots for tourism development is Egypt's north coast, specifically between Alexandria and Al-Alamein and extends to Marsa Matruh as well. Certainly, this coast section is under great development which presents a moving target to discuss, with new vacation-oriented beaches popping up almost everywhere along the coast. Most new development is like the Ain Sukhna area on the Gulf of Suez, where village-like compounds are the common denominator (**AbdeL-Latif *et al.*, 2012**).

It is noteworthy that, the beach region of Egypt's mainland north coast does not include the East of Greater Alexandria. For the most part, Abu Qir, the East of Alexandria proper, signals the eastern end of Egypt's north coast beaches owing to its marshier Delta coastline.

Most case studies of the Egyptian coast have found that the coastal zones are faced with several problems, primarily depending on one economic sector, which is the development of beaches for tourism while neglecting coastal cities and their integrated

society. Auxiliary problems arising from this situation include limited job opportunities to seasonal labor and resultant temporary migration. This occurs despite the opportunities in the nearby cities, and this theme is evident on the North West Coast.

The cost of installing hard structures for coastal protection are very high, and the strong negative public reaction to rock emplacements along the coast often aggravates the problem (**Bray *et al.*, 1995; Clark, 1995; Black, 1999; Van der Weide, 2001**). This has led to uncertainty among managers and local government authorities on how to treat shoreline erosion, an issue of grave debate for politicians, coastal managers, land and property owners, lawyers, bankers, insurers, and fisherfolk, especially in the areas of intensive use and rapidly rising coastal land value. Many of these stakeholders are resorting to planned retreats where houses or hotels are simply demolished, and the coast is left to erode. However, these planned retreats can be expensive, unnecessary, and sometimes impossible, especially in highly modified environments.

Interest in soft structures (including increased forest cover) and a combination of hard and soft structures for coastal protection is increasing and consonant with advanced knowledge on coastal processes and natural protective functions. There is evidence that coastal forests and trees provide some coastal protection. On the other hand, the clearing of coastal forests and trees increased the vulnerability of coasts to erosion, such as in Indonesia (**Bird & Ongkosongo, 1980; Nurkin, 1994; Tjardana, 1995**), China (**Bilan, 1993**), Malaysia (**Othman, 1994**), Vietnam (**Mazda *et al.* 1997; Cat *et al.* 2006**), Sri Lanka (**Samarayanke, 2003**), India (**Malini & Rao, 2004; Gopinath & Seralathan, 2005**), and Thailand (**Thampanya *et al.* 2006**).

To best protect the shoreline now and in the future, the use of “softer” approaches is recommended. These methods are not only more cost-efficient for both installation and maintenance but also more durable, aesthetically pleasing, and environmentally friendly. These methods will help create a healthy riparian zone on the coastal land and allow the shoreline to blend in with its natural surroundings.

Remarkably, plants and trees provide the best long-term natural protection for shorelines, and by planting them early or leaving existing vegetation alone, potentially costly and irreparable property damage or loss can be avoided. In addition to those aforementioned, the most favorable soft approaches include erosion control fabrics, hydro-seeding, mulching, and top-soiling, though other methods exist as well.

“Living shorelines,” or protected and stabilized shorelines made of natural materials, form a creative and proven approach to protect tidal shorelines from erosion. The technique comprises planting native wetland plants and grasses, shrubs, and trees at various points along the tidal waterlines. Plantings are often coordinated with carefully placed bioengineering materials to protect vegetation and soils.

Living shorelines have multiple benefits that vary with specific site conditions. For example, they can improve water quality by settling sediments and filtering pollution, provide shoreline access to wildlife (nesting turtles, horseshoe crabs, shorebirds, etc.), provide shallow water habitat and a diversity of plant species for aquatic and terrestrial animals, provide shade to keep water temperatures cool, increase water oxygen levels for fish and other aquatic species, provide a natural rather than man-made or artificial appearance, and absorb wave energy to prevent scouring of shallow, sub-tidal zones that hampers the growth of underwater plants. In addition, the construction of living shorelines is often less costly than installing wooden bulkheads and rock walls, also known as “revetments,” (Living shorelines for the Chesapeake bay watershed, [https://www.cbf.org/document-library/cbf-publications-brochures-articles/Living\\_Shorelines011a.pdf](https://www.cbf.org/document-library/cbf-publications-brochures-articles/Living_Shorelines011a.pdf)).

Therefore, this study aimed to examine the perspectives of those managing hotels and tourist villages toward adopting the cultivation of trees along the northwestern coastal shoreline in Egypt. This study was approached by investigating a set of five sub-goals: 1) studying the personal, economic, and social characteristics of hotel and tourist village officials; 2) identifying respondents’ innovative levels and general awareness of environmental issues; 3) identifying respondents’ attitudes toward the cultivation of trees to stabilize the shoreline; 4) identifying reasons to employ or not to employ the cultivation of trees to stabilize shorelines; and 5) identifying the most crucial problems facing the respondents in applying tree planting for shoreline stabilization and their suggestions to overcome them.

## MATERIALS AND METHODS

The data were collected from 41 total respondents through the questionnaire by a personal interview. A questionnaire was designed to obtain information concerning the attitudes and perceptions of officials, and interviews were conducted with hotels and tourist villages’ officials along the shoreline of the northwestern coast of Egypt.

To verify the validity and stability of the sample, a pretest was conducted and subsequently repeated on the same people after a period from January to March in 2021. The same answers were obtained each time.

The sample size was 41 total respondents. The questions prepared were designed to produce responses addressing the research objectives.

## RESULTS & DISCUSSION

### 1) The social and economic characteristics of the respondents

The respondents were categorized according to their age, educational level, monthly income, hotel/village holding capacity, and hotel level (star rating).

More than 70% of respondents were between 38 and 47 years of age, meaning that they belonged to the middle age millennium, whereas 29.3% were above 47 years old. There were 85.4% of respondents that held university qualifications, 9.8% had intermediate education, and only 4.8% held a master's degree. This information indicates that the sample group largely comprised young and educated individuals. Only 29 respondents from the research sample mentioned their monthly income, whereas the remainder of the respondents did not disclose this information, indicating it as a personal and private matter.

The level of the hotels is categorized as follows: two stars (2.44%), three stars (24.4%), four stars (26.83%), and five stars (46.34%). As these hotels (four stars and five stars) are more disciplined and committed to the level of tourism services and environmental requirements.

When inquiring about the area of the property, it was found that only 17 participants mentioned the area of their facility. As most of the tourist establishments that are less than 11900 m were (88.2%) (**Table 1**).

### 2) Update information

To assess the respondents' knowledge of environmental processes and interactions, they were asked to state their level of agreement with the following questions:

- Are you enough with any information you have about anything?
- Do you immediately apply everything that is new?
- What are your sources of information?
- Have you heard about the idea of planting trees to stabilize and protect the beach soil?
- What was your reaction when you heard about this idea?
- Do you want to implement this idea?
- What is the kind of wooden trees?

Most respondents (82.9%) are not satisfied with the information they have and are always looking for new ideas, and 92.7% of them always strive to immediately implement what is new (**Table 2**). Their sources of information are diverse, as reported in **Table 3**, with the internet being their most important source of information (73%). This confirms the importance of the internet in the modern era to communicate with others and broadcast new information and ideas. Other sources of information cited by respondents include the department of engineering and project manager (27%), social media pages (21.6%), television (21.6%), the ministry of tourism (13.5%), and colleagues (13.5%).

**Table (1). Distribution of the respondents based on their social and economic characteristics**

Category	Frequency	%
<b>1- Age:</b>		
Lower category (less than 38)	12	29.3
Middle category (38–47)	17	41.4
Higher category (more than 47)	12	29.3
<b>Total</b>	<b>41</b>	<b>100</b>
<b>2- Education level:</b>		
High qualifications (master's degree)	2	4.8
University qualifications (bachelor's degree)	35	85.4
Intermediate	4	9.8
<b>Total</b>	<b>41</b>	<b>100</b>
<b>3- Monthly income:</b>		
Lower category (less than 7800)	24	82.8
Middle category (7800–13000)	4	13.8
Higher category (more than 13000)	1	3.4
<b>Total</b>	<b>29</b>	<b>100</b>
<b>4- Holding category:</b>		
Lower category (less than 11900 m)	15	88.2
Middle category (11900 m–23500 m)	1	5.9
Higher category (more than 23500 m)	1	5.9
<b>Total</b>	<b>17</b>	<b>100</b>
<b>5- Hotel levels:</b>		
Two Stars	1	2.44
Three Stars	10	24.4
Four Stars	11	26.83
Five Stars	19	46.34
<b>Total</b>	<b>41</b>	<b>100</b>

Source: Computed from sample data

**Table (2). Distribution of the respondents based on their update information**

Agree	Frequency	%
1- I was usually satisfied with the information I had.		
Yes	7	17.1
No	34	82.9
<b>Total</b>	<b>41</b>	<b>100</b>
2- Always striving to apply new information.		
Yes	38	92.7
No	3	7.3
<b>Total</b>	<b>41</b>	<b>100</b>

Source: Computed from sample data.

**Table (3). Distribution of sources of information of the respondents**

Sources	Frequency	%
Department of engineering and project manager	10	27
Internet	27	73
Academic books	1	2.7
Training courses	4	10.8
Magazines	9	24.3
Social media pages	8	21.6
TV	8	21.6
Ministry of agriculture	2	5.4
Ministry of tourism	5	13.5
Colleagues	5	13.5
Conferences, seminars, and meetings	2	5.4

Source: Computed from sample data.

Statements related to hearing about the idea of planting trees for stabilization produced different answers from respondents. Among them, 63.4% had not heard about this idea whereas 36.6% had. Of those, 38% who had heard of it did not implement it in their hotels and villages for several reasons, including lack of space or knowledge of cultivation. Respondents who expressed a desire to implement the idea of planting trees on the shores of their hotels or villages to preserve the coastal environment and protect it from erosion accounted for 52.2%, as presented in **Table (4)**.

**Table (4). Distribution of the respondents based on the level of knowledge about the idea of planting trees**

Idea	Frequency	%
1- Have you heard about planting trees to stabilize beach soil?		
Yes	15	36.6
No	26	63.4
<b>Total</b>	<b>41</b>	<b>100</b>
2- Implementation of the idea		
Implement	3	7.3
Not implement	38	92.7
<b>Total</b>	<b>41</b>	<b>100</b>
3- Desire to implement		
Desire	21	51.2
No desire	20	48.8
<b>Total</b>	<b>41</b>	<b>100</b>

Source: Computed from sample data.

Statements regarding reactions to recommendations for planting trees to stabilize the beach soil yielded the following responses. As for those who expressed their preference to implement the application in the cultivated places first, in order to adopt its cultivation and implementation of the idea called extension fields, they constituted 48.8%.

Another 48.8% of the respondents preference to apply it in a small part of the beach to avoid the negative results before applying it directly to the entire land allocated for agriculture in the tourist facility (**Table (5)**).

The statement regarding the names of tree types and their resistance to water salinity was designed to assess public awareness. The answers provided by respondents comprised names of trees that do not belong to wooden trees such as shrubs and terrestrial plants and others that cannot resist the salinity of sea water, indicating that they had little information about these trees.

**Table (5). Distribution of the respondents based on their actions toward implementing the idea**

Action	Frequency	%
1- Plant it immediately.	30	7.3
2- I see it first in cultivated places (extension fields).	20	48.8
3- I am trying to apply it to a small part of the land to test after the extension field.	20	48.8
4- Wait until most hotels and tourist villages plant it or apply it with success.	10	24.4
5- I do not implement it.	2	4.9

Source: Computed from sample data.

### 3) Attitudes toward adopting the cultivation of trees to stabilize beach soil

To assess respondents' attitudes toward adopting the cultivation of trees to stabilize beach soil, they were asked the following questions:

- Is it difficult to plant wooden trees along the coast?
- Are there obstacles in using modern technology to plant trees along the beach?
- Is it difficult to convince the officials of hotels and tourist village to plant trees?
- Do you prefer to apply the experience of planting trees to stabilize beach soil?
- Is using concrete blocks better than planting trees?
- Is planting trees financially expensive?
- Does planting trees require great effort?

The answers to the aforementioned questions reveal that there are still some fundamental knowledge gaps in the understanding of some basic aspects of planting trees on the shoreline. Approximately 45.2% of respondents responded neutrally, indicating that they did not know if it was difficult to plant trees, and 23.8% disagreed. The respondents who agreed that it was difficult to plant trees were 28.6%. Those who reported that there were no obstacles in using modern technology in planting trees owing to the ease of use of modern agricultural technologies were 47.6%.

Regarding the question about convincing officials, 26.2% agreed that it was difficult to convince officials of hotels and tourist villages to plant trees on the beach whereas 38.1% responded neutrally (do not know) and 33.3% disagreed. The convictions of respondents are linked to numerous factors, such as the availability of space to implement the idea, the availability of implementation requirements, or the approval of the concerned authorities to allow the planting of trees on the shoreline.

48.8% preferred to plant trees on the beach to stabilize beach soil, 14.6% did not prefer this approach, and 36.6% did not know (neutral). As the respondents prefer to see the pilot and experimental fields first and to see the positive results of planting trees in stabilizing the beach soil before planting and applying them in their facilities.

To the question about what is used in soil stabilization, 43.9% stated that they did not know, 29.3% stated a preference for concrete blocks, and 26.8% preferred planting trees.

To the question regarding the cost of planting trees, 48.8% said that it was inexpensive, citing that many tourist villages and hotels plant flowers and ornamental plants and seeing the same economic cost for the cultivation of trees. To the question regarding the required effort, 56.1% reported that it did not require great effort, 31.7% responded that they did not know (neutral), and 12.2% reported that it required great effort (**Table (6)**).

**Table (6). Distribution of the respondents based on their attitudes toward adopting the cultivation of trees to stabilize beach soil**

Phrase	Agree		Do not know		Disagree	
	Freq	%	Freq	%	Freq	%
1- It is difficult to plant trees on the shoreline.	10	23.8	19	45.2	12	28.6
2- There are many obstacles in using modern technology to plant trees along the beach.	4	9.5	17	41.5	20	47.6
3- It is difficult to convince the officials of hotels and tourist villages to plant trees.	11	26.2	16	38.1	14	33.3
4- I prefer to apply the experience of planting trees to stabilize the beach soil.	6	14.6	15	36.6	20	48.8
5- I prefer the use of concrete blocks to planting trees.	12	29.3	18	43.9	11	26.8
6- Planting trees is financially expensive.	2	4.9	19	46.3	20	48.8
7- Planting trees requires great effort.	5	12.2	13	31.7	23	56.1

Source: Computed from sample data.

#### 4) Reasons for adopting the cultivation of trees on shorelines

To assess the respondents' knowledge about adopting the cultivation of trees on the beach, the following questions were asked:

- Does it enhance the beautiful view of the beach, which encourages guests?
- Is it easy to cultivate and service it?
- Does it need fertilizers in its cultivation?
- Does it prevent the environment from pollution?
- Do you desire to renew the shoreline and create an aesthetic view?
- Is tree planting compatible with local conditions, such as area, climate, soil type, plant type, agricultural services?
- Are there individuals in the facility with experience in planting trees?
- Does making a fence of trees prevent the beach from eroding?
- Are there more benefits when planting trees on the beaches of hotels and tourist villages?
- Does increasing income allow us to plant trees?

To the first question, 92.7% of the respondents disagreed that it enhances the beautiful view. To the second question, 51.2% did not know if it is easy or difficult to cultivate trees whereas 19.5% agreed that it is easy, and 29.3% disagreed.

To the question regarding the need for fertilizers, 43.9% did not know (neutral), and 41.5% reported that it needs fertilizers. To the fourth question, 75.6% of the respondents reported that it does not preserve the environment from pollution because the resulting agriculture waste will pollute the beaches whereas 22% did not know. In addition, 73.1% did not agree with having a desire to renew the shoreline and create an aesthetic view.

To the question regarding compatibility with the environment, 43.9% of the respondents did not know, and 48.8% did not agree that it's compatible with local conditions. Furthermore, 46.3% of the respondents did not agree that there are people with experience in the cultivation of trees in their local communities, and 41.5% did not know.

Among the respondents, 63.4% reported that the cultivation of wooden trees does not help in protecting the shore from erosion, and 29.3% did not know. Additionally, 48.8% mentioned that there is no economic benefit to the cultivation of trees whereas 43.9% did not know (neutral).

In general, from the respondents' answers to the aforementioned questions, it is clear that most of them do not know enough about the environment and its protection (**Table (7)**).

**Table (7). Distribution of the respondents based on reasons for adopting the cultivation of trees to stabilize beaches**

Phrase	Agree		Do not know		Disagree	
	Freq	%	Freq	%	Freq	%
1- Enhance the beautiful view of the beach and encourage guests.	0	0	3	7.3	38	92.7
2- It is easy to cultivate it and service.	8	19.5	21	51.2	12	29.3
3- It does not need fertilizers in its cultivation.	6	14.6	18	43.9	17	41.5
4- It preserves the environment from pollution.	1	2.4	9	22	31	75.6
5- The desire to renew and make an aesthetic view.	2	4.9	9	22	30	73.1
6- Planting trees is compatible with local conditions.	3	7.3	18	43.9	20	48.8
7- The presence of individuals with experience in agriculture.	5	12.2	17	41.5	19	46.3
8- Making a fence of trees keeps the beach from eroding.	3	7.3	12	29.3	26	63.4
9- Increasing benefit by planting trees.	3	7.3	18	43.9	20	48.8
10- Increasing income allows us to plant trees.	1	2.4	18	43.9	22	53.7

Source: Computed from sample data.

### 5) Reasons for not adopting the idea of planting trees to protect the beaches from erosion

To assess the respondents' their opinion about Reasons for not adopting the idea of planting trees to protect the beaches from erosion, the following questions were asked:

- Are the costs of implementing the planting of wood trees high?
- Is there a fear of taking risks?
- Do you have a firm belief in the futility of planting woody trees to stabilize the soil?
- Is the planting of wooden trees compatible with the geometric shape of the facility?
- Is there a conviction to plant wooden trees on the beaches?
- Is there a perceived difficulty in implementing the recommendations related to the practice of agriculture?
- Are there brochures on planting wooden trees on the beaches?
- Is it better to put out concrete blocks for guests to use to sit on while hunting and hiking?
- Are the costs of disposing of agricultural waste resulting from it, and planting trees high?
- Are vacant spaces and lands available for cultivation?
- Is it difficult to transport agricultural waste?
- Are there deficiencies in the media guidance and scientific explanation for planting woody trees?
- Is there a refusal by government authorities to plant wood trees along the beach?
- Do planting woody trees increase the growth of many flying insects?
- Is there a lack of production requirements for the cultivation of woody trees?
- Do growing woody trees require special abilities, experience and skills?
- Do planting wooden trees miss the aesthetic view of the beach?
- Do planting wooden trees reduce the fun of enjoying the beach?
- Do guests at the property prefer to sit in a wooden pergola and not sit under wooden trees?
- Is it impossible to plant salt-resistant wood trees?

The respondents were asked about 20 questions regarding the reasons for not adopting the idea of planting trees on the beach. The answers are summarized in the following: 73.1% reported that it is expensive to plant trees, 51.2 % were not afraid of the application of the idea, 43.9% did not know (neutral) if there is a firm belief regarding the futility of planting trees to stabilize beach soils, 43.9% did not know (neutral) if it is compatible with the geometric shape of their facilities, 41.5% were satisfied with the

application of the idea under certain conditions, 51.2% reported that it is not difficult to implement the recommendation of planting trees, and 36.6% did not know. Many see that with the provision of training courses and experienced individuals, the idea becomes easy to implement.

The question related to the availability of brochure and insufficiency of extension information yielded the following responses. Among the respondents, 53.7% did not have explanatory brochures for the cultivation of trees on the beaches. In our modern age, there are many brochures on agriculture on the internet. Regarding the belief that it is better to put concrete blocks for the tourists/resort guests to sit on during hunting and hiking, 36.3% of the respondents did not know (neutral).

The question regarding the high cost of getting rid of agricultural waste disposal yielded the following results. Most respondents (43.9%) did not know (neutral). In addition, when asked about the unavailability of land, 41.5% reported that they did not know (neutral), and 43.9% of the respondents did not know (neutral) about the difficulty of transporting agricultural waste.

Respondents who disagreed accounted for 56.1%; that there were shortcomings in the extension information and scientific explanation for the cultivation of trees. Regarding the refusal of government agencies to plant trees along the beach, 46.3% of the respondents did not know. A total of 51.2% were neutral about planting trees that caused the growth of many flying insects, and 48.8% were neutral about the shortage of production supplies.

Among the respondents, 56.1% disagreed about the cultivation of trees requiring special abilities, experience, and skills. Furthermore, 39% did not know (neutral) about planting trees degrades the aesthetic view of the beach planting trees whereas 56.1% did not know if planting trees reduces the enjoyable beach area. Additionally, 58.5% reported that they did not know about the preference of the guests to sit in wooden pergolas and not to sit under trees. Finally, 56% did not know about the impossibility of planting trees capable of resisting sea salt (**Table 8**).

#### **6) Problems faced by the respondents in planting trees and their vision to solve them**

The problems faced by the respondent include fear of risk owing to high soil salinity, lack of space for planting trees, high financial cost, insufficient guiding and explanatory information, non-approval of the competent authorities, lack of trained manpower, obtaining necessary licenses, laying concrete block, not convinced to plant wooden trees on the beaches, and guests preferring to sit under wooden pergolas. Some respondents listed some solutions to these problems, including providing seedlings at an affordable price, forcibly imposing the policy of cultivating trees onto hotels and tourist villages, providing trained labor, facilitating the procurement of licenses from government agencies, providing periodic bulletins with necessary agricultural information, and Work indicative fields to clarify the experimental results and the success of the idea.

**Table (8). Distribution of the respondents based on reasons for not adopting the idea of planting trees**

Phrase	Agree		Do not know		Disagree	
	Freq	%	Freq	%	Freq	%
1- High costs of implementing the planting of trees.	2	4.9	9	22	30	73.1
2- Fear of risk.	7	17.1	13	31.7	21	51.2
3- The firm belief in the futility of planting trees to stabilize the soil.	7	17.1	18	43.9	16	39
4- The incompatibility of planting trees with the geometric shape of the facility.	9	22	18	43.9	14	34.1
5- Not convinced of planting trees on the beaches.	10	24.4	14	34.1	17	41.5
6- The difficulty of being aware of recommendations for the practice of agriculture.	5	12.2	15	36.6	21	51.2
7- Lack of brochures about planting trees on the beach.	4	9.7	15	36.6	22	53.7
8- It is better to put concrete blocks for the guests to sit on while fishing or hiking.	12	29.3	15	36.6	14	34.1
9- High costs of disposing of agricultural waste generated from planting trees.	8	19.5	18	43.9	15	36.6
10- Lack of space and vacant land for cultivation.	8	19.5	17	41.5	16	39
11- Difficulty in transporting agricultural waste.	10	24.4	18	43.9	13	31.7
12- Shortcomings of the extension information and scientific explanation for the cultivation of trees.	4	9.8	14	34.1	23	56.1
13- Government authorities refuse to plant trees along the beach.	6	14.6	19	46.3	16	39
14- The cultivation of trees leads to increase in many flying insects.	5	12.2	21	51.2	15	36.6
15- Lack of production requirements for planting trees.	5	12.2	20	48.8	16	39
16- Cultivation of trees requires special abilities, experience, and skills.	3	7.3	15	36.6	23	56.1
17- Planting trees degrades the aesthetic view of the beach.	14	34.2	16	39	11	26.8
18- Planting trees reduces the enjoyable area of the beach.	8	19.5	23	56.1	10	24.4
19- Guests in the facility prefer to sit in wooden pergolas, not under trees.	4	9.8	24	58.5	13	31.7
20- The impossibility of planting salt-resistant trees.	9	22	23	56	9	22

Source: Computed from sample data.

## RECOMMENDATIONS

- 1- More efforts are needed from those in charge of extension work at the ministry of agriculture to employ the idea of planting trees to preserve the beaches from erosion.
- 2- Attention should be paid to extension training through conducting awareness campaigns and courses to increase knowledge about the importance of preserving and protecting the coastal environment.
- 3- The internet and social networking pages should be utilized to spread the idea of cultivating trees on the shoreline.
- 4- Informational brochures should be provided.
- 5- Different states within Egypt should cooperate to spread the idea and facilitate procedures.
- 6- The ministry of agriculture should provide the necessary seedlings.

## REFERENCES

Arkema, K. K. ; Scyphers, S. B. and Shepard, C. (2017). **Living shorelines for people and natural** (vol.2). chapter.

AbdeL-Latif, T.; Ramadan, S. T. and Galal, A. M. (2012). **Egyptian coastal regions development through economic diversity for its coastal cities**. HBRC Journal, 8(3): 252-262.

Bilan, D. (1993). **The preliminary vulnerability assessment of the Chinese coastal zone due to sea level rise**. Proceedings of the IPCC eastern hemisphere workshop, Tsukuba, Japan 3–6 August 1993.

Bilkovic, D. M.; Mitchell, M. M.; Toft, J. D. and Lapeyre, M. K. (2017). **A primer to living shorelines** (pp. 3-10) CRC press.

Black K.P. (1999). **Submerged structures for coastal protection: A short summary of what they are, why we need them and how they work**. Hamilton, New Zealand, Artificial Reefs Program. Centre of Excellence in Coastal Oceanography and Marine Geology Department of Earth Sciences, University of Waikato and National Institute of Water and Atmospheric Research, 9 pp.

Bray, J.M.; Carter, D.J. and J.M. **Littoral cell definition and budgets for central southern England**. Journal of Coastal Research, 11(2): 381–400.

Cat, N.N.; Tien, P.H.; Sam, D.D. and Bien, N.N. (2006). **Status of coastal erosion of Viet Nam and proposed measures for protection**.

- Clark, J.R. (1995). **Coastal zone management handbook**. Lewis. 695 pp.
- Malini, B.H. and K.N. Rao. (2004). **Coastal erosion and habitat loss along the Godavari delta front—a fallout of dam construction (?)**. *Current Science*, 87 (9): 1232–126.
- Mazda, Y.; Wolanski, E.; King, B.; Sase, A.; Ohtsuka, D. and M. Magi. (1997). **Drag force due to vegetation in mangrove swamps**. *Mangroves and Salt Marshes*, 1: 1993–1999.
- Samarayanke, R.A.D.B. (2003). **Review of national fisheries situation in Sri Lanka**. In: G. Silvestre, L. Garces, I. Stobutzki, M. Ahed, R.A. Valmonte-Santos, C. Luna, L. Lachica-Alino, P. Munro, V. Christense & D. Pauly (Eds.) *Assessment, management and future direction of coastal fisheries in Asian countries*, pp. 987–1012. *WorldFish Center Conference Proceedings* 67. 1120 pp.
- Thampanya, U.; Vermaat, J.E.; Sinsakul, S. and N. Panapitukkul. (2006). **Coastal erosion and mangrove progradation of Southern Thailand**. *Estuarine, Coastal and Shelf Science*, 68: 75–85
- Tjardana, P. (1995). **Indonesian mangroves forest**. Duta Rimba, Jakarta.
- Van der Weide, J.; de Vroeg, H. and F. Sanyang. (2001). **Guidelines for coastal erosion management**. In: E. Ozhan, ed. *Medcoast 01: proceedings of the fifth international conference on Mediterranean coastal environment*. Vol. 3, pp. 1399–1414. Ankara. Turkey.

## وجهات نظر مسؤولي الفنادق والقرى السياحية حول زراعة الأشجار الخشبية لتثبيت الخط الساحلي للساحل الشمالي الغربي، مصر

نورا حسن سعد حسن<sup>(1)</sup>، إبتسام السيد السيد محمد<sup>(2)</sup>، هاني شاكر سليمان<sup>(3)</sup>

<sup>(1)</sup>،<sup>(2)</sup> معمل عمليات الشواطئ، المعهد القومي لعلوم البحار والمصايد، مصر

<sup>(3)</sup> قسم الدراسات الفندقية ، المعهد العالى للسياحة والفنادق والحاسب الآلي ، السيوف ، الإسكندرية ، مصر

### المخلص

تهدف هذه الدراسة إلى التعرف على مدى معرفة واستعداد مسؤولي القرى السياحية والفنادق لزراعة الأشجار الخشبية من الإسكندرية إلى مرسى مطروح في مصر لحماية الشواطئ من التعرية. تم جمع البيانات من إجمالي عدد ٤١ مبحوث من خلال الاستبيان عن طريق المقابلة الشخصية. تشير النتائج إلى أن معظم المبحوثين لا يعرفون شيئاً عن مفهوم البيئة البحرية أو أهمية الحفاظ عليها. اتضح من البيانات المتعلقة بسماع فكرة غرس الأشجار لتحقيق الاستقرار إجابات مختلفة من المبحوثين أنه لا تزال هناك بعض الفجوات المعرفية الأساسية في فهم بعض الجوانب الأساسية لزراعة الأشجار على الساحل. كما تم تقييم معرفة المبحوثين حول تبني زراعة الأشجار على الشاطئ، بشكل عام، من إجابات المبحوثين على بعض الأسئلة، تتضح الإجابات المختلفة في معلوماتهم المحدثة، ومصادر المعلومات، أسباب تبني زراعة الأشجار على السواحل، أسباب تبني زراعة الأشجار لتثبيت الشواطئ، أسباب عدم تبني فكرة زراعة الأشجار لحماية الشواطئ من التآكل، المشاكل التي يواجهها المبحوثون في زراعة الأشجار ورؤيتهم لحلها. وأخيراً أوصت هذه الدراسة بما يلي: هناك حاجة إلى مزيد من الجهود من المسؤولين عن العمل الإرشادي، ويجب الاهتمام بالتدريب الإرشادي من خلال إجراء حملات ودورات توعوية، ويجب على المنظمات المختلفة في مصر التعاون لنشر الفكرة وتسهيل الإجراءات.