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SYRIAN ARAB REPUBLIC
Ministry of Agriculture and Agrarian Reform
NAPC
National Agricultural Policy Center

Benefiting Commercially from Untapped Plant Natural Resources: Caper as a Case study

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Table of contents

Forward 4
Acknowledgment 5
Abstract 6
1- Introduction 7
2- Wild plants in Syria 8
3- Caper 11
3-1 Morphological description 11
3-2 Caper characteristics 11
3-3 Caper production and trade 12
4- Caper production in Syria 14
4-1 Caper's value chain in Syria 15
4-1-1 Value chain for Rural Homs and Idleb 19
4-2 The legislative side 21
5- Syrian foreign trade of caper 22
6- International trade 28
6-1 Exports 28
6-1-1 Some trade indicators related to Syrian exports 29
6-2 Imports 32
7- Probable destination markets for Syria's export of caper 34
7-1 First market: Russian market 34
7-2 Second market: Venezuelan market 35
8- Possible transport means 36
8-1 Sea shipping 36
8-2 Air shipping 36
9- A look at the competitive advantage 38
9-1 Results of SWOT analysis 39
10- Conclusion 40
11- Recommendations 42
11-1 Technical recommendations 44

Forward

The National Agricultural Policy Center (NAPC) has shown in previous studies several examples of economic resources that are not sufficiently exploited; suggesting policies, approaches and practical applications in order to benefit from these resources. This paper, however, addresses one of the most agricultural sub-sectors that are still lacking adequate exploitation, which is the wild plants sector; the sector that represents a national wealth available for commercial exploitation through equipping and then shipping it to world markets thus bringing in hard currency returns which contribute to the state budget and increase agriculture's contribution to the gross domestic product (GDP). In this framework, the current research presents a case study, the caper, which is a plant spread widely in Syria yet harvested limitedly. At the same time, it is perceived as a luxury product with high prices in some foreign markets. The paper suggests exporting Syrian caper to some "friend" markets, as well, it introduces several trade indicators to study caper markets, in addition to the results of a SWOT analysis of caper production in and exportation from Syria. Furthermore, the paper presents a proposal to utilize sea and air shipping as means to export caper to the destination markets, and the papers shows that the operation is financially feasible. As a result, the paper suggests the state supervision and organization in terms of caper plantation, equipment and exportation through policies of irrigation, small loans and export support (support and credit policies).

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Abstract

Caper spreads widely in the MENA countries, particularly in Syria. About 60 countries trade capers, and the annual growth rate of caper trade is about 6%. Major exporting countries are Turkey, Lebanon, Morocco, Uzbekistan, Kyrgyzstan and Syria. The price of I Kg caper ready for consumption is about US$ 25 in the USA markets. Syria's production of caper in 2006 was estimated at 4,000 tons, and formal statistics show that Syria had exported different amounts of caper products before 2007. Caper exportation was oriented towards "preserved-temporarily", a form that is not suitable for immediate consumption.

The relative unite value (RUV) for each product is calculated as the average value of Syrian export unit divided on the average value of international export unit. The reference point or the average of RUV is 1, and if the index reached 1.15 or above, this would mean high level of quality competitiveness. Using the ITC (International Trade Center) database, we found that RUV for Syrian exports of caper preserved temporarily had increased, thus exceeding 1 even during the years of war imposed on Syria. On the other hand, the revealed comparative advantage (RCA) index shows whether the performance of a given exported commodity is higher than other exported commodities in terms of its share in international markets. Thus, if a commodity has a good share in international markets – to be divided on the share of the total Syrian exports in international markets, it can be considered that it has comparative advantage. Applying this index on Syrian caper's exports of the ITC database, we find that the Syrian caper has a very good comparative advantage.

The above findings emphasize the importance of caper, and the urgent need to benefit from it commercially. However, the big gap between the export unit value of caper preserved temporarily and caper ready for consumption must not be ignored; this gap reaches US$ 25 – US$ 45, which highlights the urgent need to export caper as a final product rather than preserved temporarily, thus benefiting from the added value of the processing stages.

1- Introduction

In its three spheres, namely lithosphere, hydrosphere and atmosphere, Natural environment contains a set of natural resources that are necessary for human. This set comprises each of natural plants, including forests, herbs and desert plants, as well as wild animals. In addition, it includes aquaculture (either plants or animals). Natural environmental resources are among the important economic elements for developing countries. Governments are considering the required laws to protect these resources, in the context of sustainable development.

According to the Arab Organization for Agricultural Development (AOAD), Syria is considered an important natural habitat for wildlife plants and animals; however, the decline of vegetation in rain-fed lands is threatening the wildlife, thus it is necessary to look for opportunities to exploit these valuable resources and simultaneously sustain them.

AOAD classifies wild usable plants spreading in Syria, as well as in the Arab World as follows:

- plants used as human food, (e.g. date palm, doum palm, buckthorn and cyperus)
- plants used as animal feed, (e.g. acacia and alfalfa)
- plants used for sand dune stabilization, (e.g. acacia Arabica and elephant (napier) grass)
- plants used for shade and windbreaks, (e.g. the European marram grass (European beach-grass) and Arak
- plants used for biological diagnostic, (e.g. water hyacinth and phragmites)
- plants used for paper production, (e.g. papyrus and yellow nuts-edge)
- plants used for yarn production, (e.g. the giant milk weed)
- plants used for oil abstraction, (e.g. safflower, colocynth (bitter apple), castor oil plant and mustard)
- plants with medical uses, such as sesbania, fennel, black henbane, azadirachta, thyme, yarrow, carob tree, sagebrush, hibiscus, cumin, marjoram, common rue (herb-of-grace), wormwood and cypress.

The economic advantages of wildlife range from cash benefits to health and environmental benefits. In fact, wildlife represents the original pillar of man’s life and prosperity. Currently, many rural households, particularly in countries with rich natural resources, depend on wild resources for their livelihood and earning; wild medical herbs and fruits trees are collected and marketed. Identically, a global trend has emerged in recent decades that promotes growing wild

species in special places rather than harvesting and collecting them from their natural environment.

Based on the above, it is clear that in general, conserving and protecting plant natural resources play an important role in increasing the GDP, as follows:

- Benefiting commercially from plant resources through collecting, packaging, and processing natural plant products or equipping and marketing them locally and internationally. In this respect, a working paper was published by the Arab Federation for Wildlife Protection (AFWP). It indicates that the value of wild species' international trade reaches 100s billion US$ annually, from which about 60% comes from legal trade[1].
- Benefiting from environmental tourism through tourism promotion for plant natural resources, and encouraging investments in this field.
- Benefiting medically from wild plant resources, where most of wild plant products have important medical or functional benefits, and are used either to cure specific diseases or as prevention from other diseases[2].
- A source of nutritious food when consumed as a part of the daily diet.
- Benefiting scientifically from plant natural resources by studying their characteristics, potentials, spread; in addition to difficulties, and how to find solutions for them.
- Benefiting environmentally from these resources by using them as a protection from soil loss or beaches erosion … etc.[3]

2- Wild plants in Syria

Despite the great damage caused by the aggressive war imposed on Syria, it is still rich with natural resources that can be invested and exploited economically; wild plants are at the forefront of these exploitable resources.

Syria is blessed with a diverse wild plant cover, thanks to its diversified climatic environments. The number of species registered in Syria so far is 3150, belonging to 130 families, including Amaryllidaceae, Fabaceae, Capparaceae, Asteraceae, Iridaceae, Malvaceae and Lamiaceae,

[1] http://afwp.org/SiteAr/index.php?option=com_wrapper&Itemid=8
[2] Babili, 2013.
[3] Based on http://afwp.org/SiteAr/index.php?option=com_wrapper&Itemid=8.

among others. These species comprise many wild plants that can be collected and utilized for medical, aromatic and ornamental purposes.

These plants differ according to the used part of the plant. The leaves of some plants are used medically and aromatically, such as basil and mint, while the bark of some others like cinnamon is used medically. The flowers are the used parts of some plants like chamomile and daffodils, whereas the seeds and fruits of some others like aniseed, cumin and soybean are the usable parts. Identically, the roots of some plants are the used part, such as liquorice and ginger.

Syria is among the most ancient countries that used wild plants for nutrition, body prevention and treatment, and Al-Buzuriyah markets in Damascus and other Syrian cities are among the oldest markets that spread the practice of trading wild plants as well as using them commonly for medical purposes.

Picture 1 some popular plants in Syria

Nettle is a popular plant in Tartous	Hibiscus is among the popular foods in South Syria
Alcarda is plant on which Aleppo populations depend for their food and treatment	

Source: http://www.esyria.sy/

3- Caper

3-1 Morphological description

Caper (Capparis spinosa) is a thorny perennial desert shrub that can stay productive for 25-30 years. The shrub is drought-resistant and it can withstand high temperature. Its origin is the Mediterranean region and it belongs to the Capparaceae family. The plant grows on its own in the *Badia* and around residential buildings, as well as on the sides of fields, around trees, in deserts, on wet walls and rocky shores, and on mountainous regions. Therefore, caper is found in all areas of Syria's environments. In general, the plant grows wherever there are rocky and calcareous soils. The shrub is thorny multi-stemmed, and is a creeping/climbing plant. Its length reaches 70 to 75cm and its width is 1m, and its fruits are pineapple shape with dark green color and a length of 2.5 to 5 cm. When the fruit becomes ripe, its skin tears showing a red pulp that contains a huge number of seeds (about 200-300 seeds)[4].

Caper grows throughout June, July and August, and flourishes during this period. Its vegetative growth ends in May, becoming a thorny shrub with a lot of leaves and spines on the stem. A floral bud develops in each leaf axel, yet it is difficult for caper to be reproduced by seeds, which are to be collected once the fruit becomes mature and its skin tears. The plant can live for more than 30 years, and it favors poor soil rather than fertile ones. Caper is considered a pastoral plant from the 4th degree (i.e. it becomes pastoral after the fruit buds emerge).

3-2 Caper characteristics

Caper contains lots of antioxidants, which makes it functional food. In this context, it is well known that caper is efficient in terms of cancer treatment, particularly its roots' skin. Also, caper stimulates and activates the liver and spleen functions, promotes the blood circulation, helps treating the atherosclerosis, facilitates digestion and helps disposing puff, softens the intestines, increases urine and menstrual flow, helps getting rid of bronchitis pulmonary secretions and treating some kinds of anemia as well as gout and dropsy. In addition, caper is useful for arthritis and helpful in terms of treating allergies and skin eruptions. Furthermore, the plant treats dental pain and helps getting rid of urinary sand, and caper's buds are used to protect against cataract

[4] For more information about caper's morphological description, please refer to (Aytaç et al, 2009).

eye disease, thanks to some special ingredients in the bud. In addition, caper is used for treating disc and knee cartilage pains, affecting elderly; it stimulate the secretion of the material that prevent knee friction – the same way used to treat disc pain[5].

Besides its medical and treatment usage, caper buds (the most important part of caper economically) are used as a kind of pickles, particularly in the European countries. Caper pickles are used in preparing salads and sauces, particularly red meat and fish sauces, where the sauces is made from non-blooming buds that have been pickled in salt or vinegar and processed with other additives. Caper leaves and buds are used as spices in many foods, where buds' powder is among the well-known spices in the Mediterranean kitchen; it is used to improve the food flavor. Also, some people prefer to cook the tender branches of caper in the same way that asparagus is cooked. Caper honey, finally, is deemed as one of the best kinds of honey. The buds are internationally[6] categorized according to their volumes as follows:

Nonpareilles 0-7mm

Surfines 7-8mm

Capucines 8-9mm

Capotes 9-11mm

Fines 11-13mm

Gruesas >13mm[7]

Economically speaking, the more the bud is smaller, the more its value is higher.

3-3 Caper production and trade

Caper spreads widely in Middle East countries, particularly Syria, and can be found in Europe as well. The earliest sign of caper consumption dates to 18000 years back in Upper Egypt, and 6000 years back in Iran[8]. Caper was planted in Mediterranean countries 2500 years ago[9], as indicates

[5] Al-thawra Newspaper, 14-8-2011.
[6] This classification applies for countries that speak French, but there is another Italian classification, which ranges from 7 to 16 mm.
[7] Noone, 2015.
[8] Trewartha, 2005.
[9] Some historical records claim that caper had been delivered to Queen Cleopatra as a pickle, and it was used as a treatment during the same period.

in the pharaonic manuscripts; however, it turned into wild after abandoning its plantation. Caper exists also in in Europe. Morocco (the first producer of caper internationally), France and Spain[10] are among caper producers. In general, caper can also be found in most Arab countries, but also it is spread in a range that extends from Canary Islands in the Atlantic Ocean to Crimea Peninsula in the Black Sea, covering Armenia and Iran in the East and Morocco in the west. On averages the number of countries that export or import caper are 60 countries, according to concerned study[11], and the annual growth of its trade is 6% according to the same study. The most important exporting countries of caper in the world are Turkey, Lebanon, Morocco, Uzbekistan and Kirgizstan as well as Syria, which exported some quantities of caper in the past. Identically, major importers are Turkey (it re-exports its imports), European States, Gulf States and the USA which had been importing caper ready-for-consumption valued at US$ 20 million[12] per year until the year 2005[13], as well as Canada and South America's countries. Still, there are indications that most caper sold in the Turkish and European markets is originally from Syria[14].

The price of 1kg ready-for-consumption caper in the US markets, for instance, is about US$ 25[15], while caper's farm gate price in Lebanon is US$ 5 for 1 kg, while the price of 1kg ready-for-consumption caper in (pickled caper) in Lebanon is US$ 45 (consumer price).

[10] Spain attempts seriously to create a sound reputation for it caper's products, which are labeled with "made in Spain", though in many cases the Spanish caper could be originated in Morocco. The Spanish government also attempts to encourage caper industry in Spain. (Noone, 2015).
[11] Trewartha, 2005.
[12] Kontaxis, 2012.
[13] There is nothing to support this figure in the available international statistics, which suggests that either the figure is highly exaggerated or a part of caper international trade is not registered officially.
[14] Trewartha, 2005.
[15] Kontaxis, 2012.

Picture 2 caper: leaves, flowers, fruits, ripe fruits.

Source: Al-thawra Newspaper

4- Caper production in Syria

Caper spread widely in several regions in Syria, including Rural Homs (Al-Mukharram) and Rural Idleb (Maarrat al-Nu'man), as well as Mount al-Hass in south east Aleppo, besides North Aleppo (Manbej). Furthermore, it is spread in Al-Raqqa Governorate and the overall Euphrates Valley. A paper published by the FAO in 2006 points to the large spread of caper in the Syrian Badia, as well as in Northern Aleppo, Al-Salamiyah Region and Al-Hasakah Governorate[16]. In this respect, Syria's production of caper was estimated at 4000 tons in 2006, whereas the international production was estimated at 10,000 tons in the same year[17]. This highlights the

[16] FAO, 2006.
[17] Trewartha, 2005.

absolute production advantage that Syria enjoys internationally in terms of producing caper. Yet, it should be mentioned that caper is not being grown in Syria, which is not the case in some other Mediterranean countries like Lebanon and Italy[18], but it is just being collected (buds collection)[19], where mostly women and children carry out this activity.

Picture 5 growing caper in Monastero Valley, Valeria, Italy.

Source: Noone, 2015.

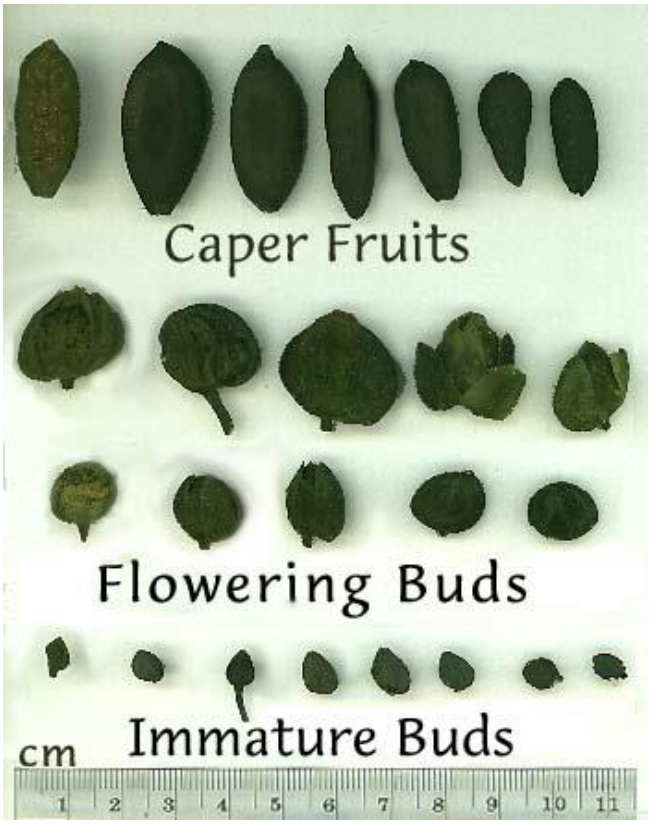
4-1 Caper's value chain in Syria

Excluding the value chain of Idleb factory (which will be discussed in details later); caper value chain in Syria starts in general at the moment of harvest, considering that there is not any activity before the harvest. The chain includes further the processing and equipping in Turkey then the consumption in Europe. Noticeably, there is almost no domestic market for caper in Syria; the amount of collected caper, the amount of labor hired, and wages all depend on external demand, which is characterized by instability; which consequently creates market instability and hinders market development, thus highlighting the need to organize the market.

Overall, households were paid less than 1 dollar for collecting 1 kg caper buds (this will be shown later in the section on Rural Homs and Rural Idleb).

[18] For example, caper is grown traditionally In Pantelleria Island in Italy, harvested, processed and packed there, and later it is exported. Also, irrigated caper is grown regularly in Albikaa Valley in Lebanon.
[19] There have been some unsuccessful attempts to grow caper in Syria, and an attempt to grow smooth caper, but no positive result until now.

Picture 7 caper buds.



Source: Wikipedia Encyclopedia

In each region there is a number of workers (as indicated previously, most of them are women and children). The employer is associated to the trader or the firm that determine the price of caper and consequently the wages. The FAO paper[20] shows that these households were earning 20% of their annual income from caper harvesting, which represents an economic return that can be developed if the activity and caper trade were organized. The buds are priced according to their lengths (as mentioned previously). The households immerse caper buds in salt water in plastic containers (this happens mostly in the household's home), then containers are collected and stored by the trader who pays for the product. The trader, in turn, deliver the containers later to the Turkish firm which put the caper buds in small bottles full with vinegar after washing them repeatedly to get rid of the saltiness. Then bottles are put in a bath of hot water for half an hour until their temperature rises to 70-80c, then cooled by air, packed and packaged, and then exported and sold to the European markets at high prices, where the bottle remains consumable for 6 months if it is kept at room temperature.

[20] FAO, 2006.

Consequently, caper's value chain consists of the collector, the processor and the trader, besides the policymaker and the agronomist. Theoretically, analyzing the value chain is supposed to define the optimal ways to generate market value and optimize the chain that generates more income for the fragile workers who collect the buds (the economically fragile groups). Here, we identify the most important weaknesses that hamper this chain[21]:

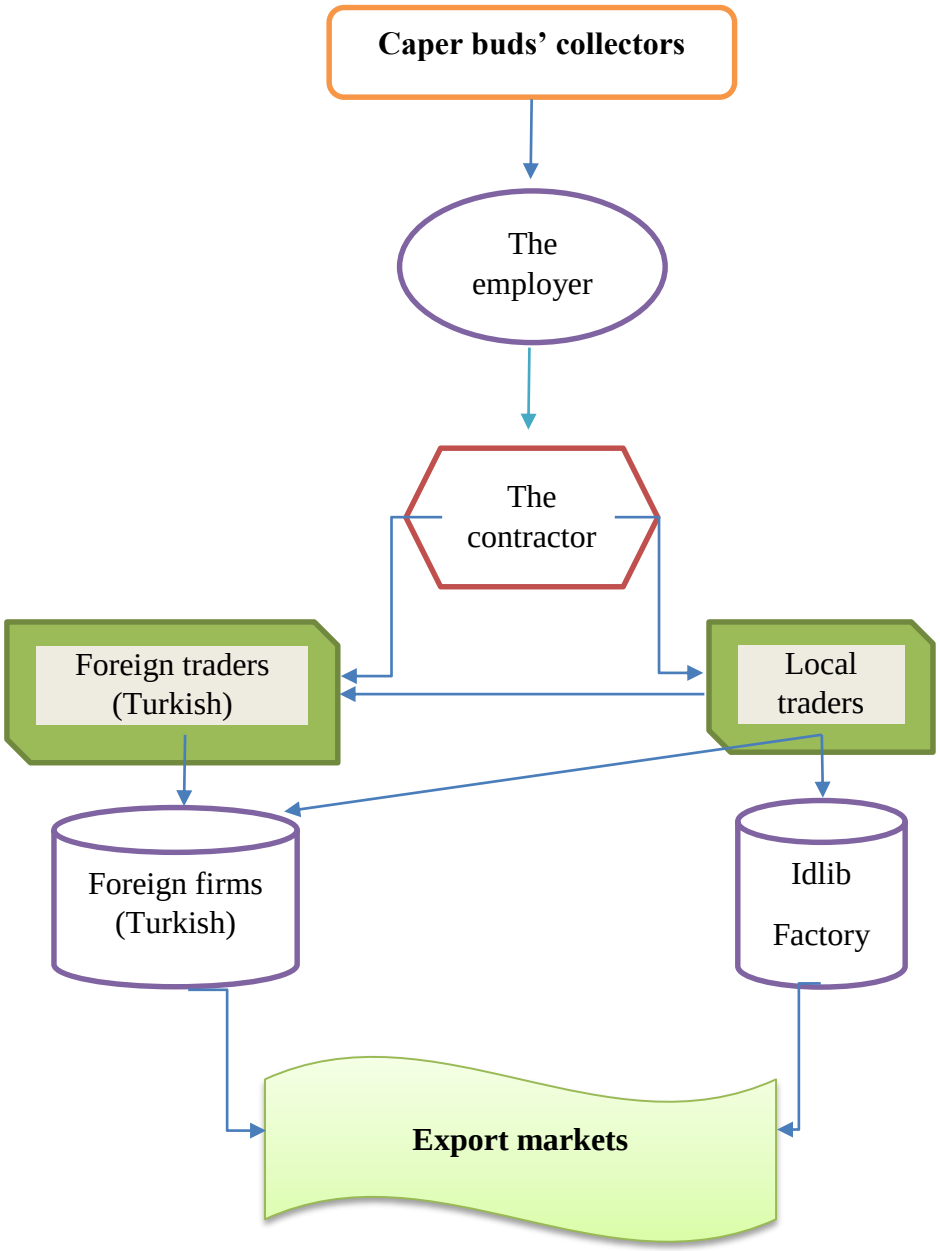
- The unavailability of extension service that leads to the Good Agricultural Practices (GAP).
- The stressful nature of the work, particularly considering that the plant is spiny and is spread in wild lands.
- Lack of experience and unavailability of mechanization.
- Demand and supply fluctuations.
- Supply instability and producers' inability to control supply
- Poor market transparency and lack of confidence in agents

Taking into consideration these difficulties, some opportunities to promote caper market can be drawn as follows:

- Horizontal integration: through collaboration among buds' collectors in order to increase the utilization of the resource;
- Vertical integration: collectors and traders integration through the involvement in related investment for the good of fragile communities that collect caper buds;
- Developing Good Agricultural Practices (GAP) for caper harvest, under the supervision of the government, and with local and popular organizations' cooperation;
- Tackling the issue of "lack of confidence between agents and/or traders" through state supervision over the sub-sector as well as governmental organization and care;

[21] Most of these points and suggestions were presented by caper buds' collectors in a meeting with them in Mount al-Hass, under the auspices of FAO.

Figure 1 a diagram of caper production and marketing value.



4-1-1 Value chain for Rural Homs and Idleb

Rural Homs and Idleb will be discussed in some details, due to their importance in caper production in Syria, where caper is spread extensively in these two regions. In Rural Homs, caper has been very abundant a long time[22]. The local populations noticed the importance of this plant since 2002, where some traders ask them to collect caper' buds for an agreed amount of money that ranged between 120 S.P. and 200 S.P. depending on the buds' volume. Consequently, several centers for caper buds' collecting were established in the region's villages. The main centers were in Um-Al-Amed and Al-Mukharram Al-Foukani. The buds (the bud is round and its volume is like green chickpea) are collected and immersed in salty water in order to pickle them; otherwise the buds spoil after one day of harvest due to its content of enzymes. By doing this, buds can be stored safely for one year. In 2008, the number of beneficiaries of caper buds collection in Al-Mukharram region and its villages was estimated at more than 10,000 people, with annual income for a household of five members estimated at 50,000 S.P. while the annual return for the community in the region was estimated at 100,000,000 S.P. in the same year (presuming that the region produces 1000-1500 tons of caper buds annually[23] and considering that the single plant produces 10 kg of buds to be sold by 75 S.P. on average in that year).

The production is transported to Aleppo in barrels of salt water and in large quantities (each 2 tons represent one load), and then exported by Turkish traders to Turkey and later to Germany and the rest of the world. In fact, the "trip" of Homs's caper is started from its natural grow without any intervention, and then the burgeoning, harvesting the buds by local populations, delivering the production to the local traders and consequently to the Turkish traders who export it internationally. This underlines the loss inflected as forgone added value that caper's sector suffers due to not exploiting this natural resource adequately.

On the other hand, a firm for processing and equipping caper was established in Idleb[24], Kafr-Romah, before the imposed war on Syria. The firm annually exported 500 tons of caper buds. Before establishing the firm, local populations had been uprooting caper because it is harmful to

[22] The information about caper production in Homs is abstracted from "The Agricultural Life" newspaper, issue 21-8-2014.
[23] Quoted from a research posted on "Jub Ramleh News" page.
[24] The information about caper production in Idleb is abstracted from Idleb Website, in connection with News of Syria website http://www.esyria.sy/eidleb/

their crops and because they were unaware of its economic benefit. However, when discovering its benefits and industrial usages, and after establishing the firm dedicated for caper process, those who were uprooting caper in the past turned into harvesting it and looking for it in the region and the neighborhood. In this sense, caper buds in the region were to be collected during the burgeoning season, and then collected in the storages where they got sieved, cleaned and sorted and graded according to their quality. The firms sorts buds in 4 grades as follows: 4-7 mm, 8-9 mm, 9-11 mm and 11-13 mm, as each grade had a special price, where the rule is the smaller the bud volume, the higher the price, and vice versa.

The produce is put in plastic barrels with salt and water in order to pickle it, and then it is bottled in small jars in order to export it in accordance with the importer's desire. During the production season, which extends to three months (May, June and July), the working groups (mostly family groups) harvest and collect caper buds, which helps generating income for many families in the region. In addition, Idleb firm stepped into importing caper buds from other Syrian regions, including Eastern Rural Homs, Hama Governorate (Al-Taybeh and Sheikh Hilal regions), Al-Raqqa Governorate and Aleppo Governorate (Jarabulus and Manbij regions), besides Maarrat al-Nu'man Region in Idleb. This reflects the large area that contains caper and the big opportunity to utilize it commercially. The primary estimations of Forestry Section in Idleb indicate that the governorate production of caper buds was about 6000 tons[25].

[25] This estimation dates back to 2011.

Picture 6 gathering caper buds in Kafr-Romah , Idleb.

Source: News of Syria website.

4-2 The legislative side

The law No.7 /1994 which regulates environmental protection and conservation of forestry areas defined caper as one of the wild forestry species. The law establishes rules and legislations, as well as the civil responsibilities and penalties and charges that aim at protecting natural resources and organize their commercial investment and usage within Syria's boarders. The law assigns special responsibility to the MAAR. In this context, it implies that using and trading caper and its different products need a license issued by the Forestry Section; this license can be obtained after submitting the necessary documents about the investor on one hand, and about the area to be invested on the other hand. Furthermore, rural communities are encouraged to communicate with local authorities in order to get information and clarifications about the law, with the aim of rationalizing environment conservation and utilizing caper.

The MAAR paid special attention to preparing the executive instructions for the mentioned law; thus it organized caper investment and harvest, stipulating that the investor must have two

documents: the first is a license for caper investment in the concerned area, and the second is a license for caper storage. These conditions contribute in protecting caper from over-harvesting and help its sustainable utilization, as the investor is required to leave at least 20% of caper without harvest. The MARR has considered buying caper seeds from the farmers to grow them in the desert and poor areas in order to boost its cultivation because of its economic value[26].

5- Syrian foreign trade of caper

Syrian formal statistics shows that Syria had exported different quantities of caper products before 2007, while it imported some quantities in 2003 and 2005 possibly to re-export them, considering that there is no local demand on caper as mentioned previously. The statistics clarify that Syria was exporting several products of caper as shown in the following table.

Table 1 Syria's export of caper until 2007, drawn from national statistics

Syria's exports of caper (tons)	**Year**											
	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Fresh or chilled	5	15	4	20	8	9	4	78	0.087	0.245	0	0
Preserved temporarily	0	0	0	0	0	0	0	0	0	0	4872	9656
Preserved in water	0	0	0	0	0	1,691	1,739	2,341	1,589	1,926	1,482	0
preserved in sulfur gas	0	0	0	0	0	50	0	0	0	0	0	0
Preserved in So2	0	0	0	0	0	0	0	0	0	0.984	2,012	0

Source: NAPC database

The table shows clearly that the trend was towards exporting caper as "preserved temporarily", which means it is not suitable for immediate consumption, and there have not been any exports of other forms of caper in 2007. Identically, the majority of caper exports before 2006 were in the "preserved in water" form. In both cases, it is clear the caper was not completely equipped before exporting it; therefore, "someone" in the importing country will finish its process and then re-export it again. This means that the national exporter was losing the added value resulted from processing caper. Also it is clear that the formally-registered exported quantities are less by far than those produced and exported in reality; however, they still give an indication of export

[26] Al-thawra Newspaper, 14-8-2011.

markets for Syrian caper. Subsequently, looking into the destination markets Syria had exported caper to, we draw the following conclusions:

- Fresh or chilled caper: until 2005 it had been exported to the following markets: Lebanon (100% of total exports in 1994 and 2002), Bahrain, Kuwait (100% of total exports in 2003), UAE (97.5% of total exports in 2005), Qatar, Saudi Arabia, Turkey (99.7% of total exports in 2003) and Russia (20% of total exports in 1998).
- Preserved temporarily caper: In 2006 and 2007 it was exported to the following countries: Turkey (55% of total exports in 2007), France (11%), USA (10%), Morocco (7%), Spain (6%), Brazil (2.4%) and Tunisia (2%), besides small quantities to Germany, Lebanon, Italy, Iraq and Cyprus.
- Caper preserved in cold water: In 2007all exports headed to Jordan, while in preceeding years it had been exported to a large number of countries. For example, in 2002 it was exported to Spain (36%), Italy (32%), Turkey (22%), Tunisia (3%) and the USA (3%), besides other quantities to Brazil, Germany, Morocco, Holland and Lebanon (1% for each). Identically, in 2006, it was exported to five markets only: Turkey (40%), Spain (32%), Brazil (14%), Italy (8%) and Germany (6%).
- Caper preserved in sulfur gas: it was only exported to Turkey in 2001.
- Lastly, concerning caper preserved in So2, it was exported in 2005 to the UK only, but in 2006 it was exported to each of USA (61%), Brazil (21%) and Italy (18%).

These statistics gives an idea about the markets that can be targeted by Syrian caper. It can be noticed that the countries which were importing Syrian caper (regardless its form) are compatible with the map of caper's international markets: the EU and the USA are major importers of caper, followed by Latin America. Arab countries and Turkey are not actual importers, they import caper in order to re-export after preparing it; this must be well-understood so as to know how to obtain the value added gained by these countries. In this respect, when we note that caper preserved in sulfur gas was exported only to Turkey and only in 2001, it can be concluded that this is a special transaction tailored to special conditions set by the Turkish importer. Thus, it would be useful to look for such transactions in order to export Syrian caper to the "friend" markets, and keep working on these markets so as to expand and diversify Syrian caper's markets. The same applies to the caper preserved in cold water; when in 2007 , as mentioned,

exports went to Jordan (while in preceding years it had been exported to a large number of countries), it can be drawn that "someone" has monopolized this product and absorbed it. In fact, Syrian traders supplied caper to Jordanian traders instead of exporting it to international markers, while Jordanian traders packaged and exported the product and consequently gained the value added. Regarding caper preserved in cold water, the fact that all exports in 2007 went to Jordan while in preceding years it had been exported to a large number of countries, which gives a negative indication of increased concentration of Syrian caper exports. The right approach however would be to expand export markets horizontally in order to increase the confidence in Syrian products and mitigate the impacts of markets' shocks and fluctuations. Finally, considering the current situation of Syria under the imposed war on it, and taking into consideration the new orientation of "stepping easterly", the above numbers can be taken as a basis to suggest targeting the Russian market by caper exports. This is, firstly, because Syrian caper had already found its way to Russian market though in limited quantities, and secondly because Russia is a "friend" country and the priority is to promote commercial ties with it.

Equally important, it is worth mentioning that ITC data points that Syrian exports of caper preserved temporarily in 2006 were about 6566 tons, exceeding the registered number by about 177 tons. This strongly suggests that there are unregistered exported quantities of caper. Moreover, when checking the detailed list of caper exporters in ITC database and comparing it with the one in the NAPC database, we find that most of the gap between Syria's two numbers represents the quantity exported to Turkey. This explains how this quantity reached the Turkish market without formal registration, because of the geographical proximity and the long mutual boarders. Consequently, we can be assured that the Turkish importer has processed this quantity and sold it later in the European markets or other markets as "Turkish product".

It is also important to mention that the financial returns of Syrian caper's exportation was not significant, considering that it had been sold as raw or almost raw commodity. On the other hand, the returns of exporting fresh or chilled were highest in 2003, where it reached SP10.6 million.; identically, the returns of selling caper preserved temporarily reached about SP697 million in 2007 (the price of one exported kg of caper was 72 S.P.). In the same way, the returns of selling caper preserved in cold water reached about SP241 million in 2001 (the price of one kilogram of exported caper was SP142).

Also, it should be mentioned that ITC data indicates that the value of Syrian exports of caper preserved temporarily in 2006 and 2007 amounted US$ 506 and US$754 million respectively (after converting the value from S.P. to dollar by multiplying it with the exchange rate in these two years (i.e. 50 S.P.=1 dollar). Still, although it is understandable that the registered value of exports in 2006 at the ITC is larger than the one registered in the national statistics because the registered exported quantity at ITC is larger than that registered in the local data, it is strange that the two values were not the same for the year 2007 despite the fact that the registered quantities are almost the same (the quantity in the NAPC database is 9659 tons and is 9571 in the ITC database). In this context, the export value of 2007 was SP698 million according to the NAPC database, while it was more than 754 million S.P. after converting the unit value from dollar to S.P. (the two values in dollar are 13.9 million for the national statistics and 15 million for the ITC statistics) according to the ITC database. This suggests that there were not only unregistered exported quantities but also the real prices of caper were not declared accurately[27], which reveal more clearly the potential opportunity lost due to caper's imbalanced trade, due to lack of transparency of trade and unlawful smuggling. This underlines the necessity to shed light on this sub-sector that is not exploited efficiently, and organize and develop it, which represents the major aim of this paper.

Comparing the numbers of values-to-quantities for caper exports, we notice a difference in the "export unit values". For example, concerning the export unit value of caper preserved temporarily, we note that the differences are linked to the markets, as illustrated in the next table.

[27] Alternatively, this gap could be due the exchange rates, therefore there is a need for more investigation; this could be the subject of coming detailed studies in case the necessary data is available.

Table 2 Unit values of Syria's exports of caper preserved temporarily (S.P/kg).

Year	Caper preserved temporarily	
	2006	**2007**
World	**70**	**72**
Morocco	-	238
Brazil	90	90
Lebanon	-	89
Spain	79	81
USA	79	74
France	67	66
Germany	67	66
Italy	59	66
Tunisia	-	62
Turkey	66	51
Iraq	-	1
Cyprus	90	-

Source: the author's calculations, based on NAPC database

It can be noticed from the table that the export price of 1 kg of Syrian caper preserved temporarily ranged between SP50 and SP90 in 2006 and 2007 (excluding the two odd values in the table, i.e. the prices for Morocco and Iraq), which is slightly less than two dollars per kilogram (considering the exchange rate in these two years). This reveals the large amount of returns lost as added value when exporting caper as raw material rather than a-ready-for-consumption one. Furthermore, it seems that the gradient in the unit values goes in parallel with the geographical distance between Syria and the importing country. In this respect, the value of one exported kg of caper to Brazil was SP90 while the value of one exported kg of caper to Turkey was SP 51, though Lebanon represents unexplainable exception as the value of one exported kg of caper to Lebanon was S.P89.

Focusing more on the issue of export unit value for Syrian caper, we note that the value mentioned in the ITC database is higher than the NAPC's. For instance, the value of one exported kg of caper to Morocco was 258 S.P. (after converting the dollar to S.P. by multiplying the value with exchange rate in the meant year, which was 50 S.P. for 1 dollar). The value also was 97 S.P. for each of Brazil and Lebanon, 80 S.P. for USA and 55 S.P. for Turkey; this again suggests the issue of probably not announcing the real price of exported caper and the attempt to reduce its value. This affirms the need to shed light on these defects disrupting trade and exports of this promising crop.

For caper preserved in cold water, its market seems wider than markets of other forms. The following table shows the export unit value for this form in the markets that Syria targeted in the past.

Table 3 unit value of Syria's exports of caper preserved in cold water (S.P/kg).

	Caper preserved in cold water					
Year	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
World	**142**	**133**	**100**	**77**	**76**	**75**
Malta	-	-	135	122	-	-
Cyprus	-	-	127	102	79	-
France	-	-	116	77	70	-
Germany	-	126	112	79	84	69
Brazil	-	135	106	86	87	81
Italy	137	127	106	76	70	63
USA	140	140	100	81	76	-
Turkey	144	134	100	73	76	78
Spain	144	135	97	80	81	72

Source: the author's calculations, based on NAPC database

Note: the values were ranked from largest to smallest, taking 2003 as a basis.

Concerning this exportable form of caper, it seems that the export unit value's margin is wider, where this value ranged between SP80 and SP135 per kilogram. However, the notable point here is that the geographical gradient doesn't necessarily reflect the geographical distance between Syria and the targeted market. For example, the value of one kg exported to Malta in 2003 was 135 S.P. (more than 2 dollars, considering the exchange rate in that year), while the value of one kg exported to the USA in the same year was 100 S.P. (about 2 dollars). This suggests that there may be other factors that influence the export price rather than the geographical distance; probably, the competition could be among the most important influencing factors. Consequently, if competition is to be considered, the European markets seem to be the most demanding markets for the Syrian caper, even if it is in this form (preserved in water, i.e. it needs process). This reflects the desire of the European importer to buy the Syrian caper and process it in the European factories and then sell it as a European product. Identically, Syria's interests favor exporting caper processed and ready for consumption in order not to lose the value added resulted from the process.

Regarding caper preserved in sulfur gas, it has a thin market. The UK imported it in 2005 with an export unit value of 36 S.P./kg, whereas Brazil and the USA imported it in 2006 with an export unit value of 90 S.P./kg. Italy also imported it in the same year with an export unit value of 68 S.P./kg. At first glance, this suggests that the geographical factor is the most important factor that influences price variations. Lastly, in terms of fresh or chilled caper, it has low export prices and thin market (mostly the Gulf market).

Finally, concerning the years after 2007, although there are no formal numbers that indicate caper exportations, the ITC statistics point that Syria has exported some quantities of caper preserved temporarily in 2011, 2012 and 2013. In this sense, the ITC statistics reveal that Syria has exported 58 tons, 415 tons and 805 tons of caper preserved temporarily in 2001, 2012 and 2013 respectively. Although these quantities are small, they clearly highlight the continuous demand on Syrian caper and the still-existing potential opportunities to develop this sub-sector and utilize it commercially.

Concerning imports, Syria imported caper in 2003 and 2005 as mentioned previously, where it imported 3 tons of caper fresh or chilled in 2003 from undefined origins, and imported about 12 tons of the same kind in 2005 from the European market. Notably, there have been no imports of any other forms of caper except caper fresh or chilled, which indicates that the importation was for the purpose of processing and re-exportation; which is a good initiative that needs to be revitalized and encouraged, along with local production of caper.

6- International trade

6-1 Exports

Despite the difficulties encountered in finding detailed international statistics on trade of caper, the ITC database demonstrates an international export flows of caper preserved temporarily, as shown in the next table.

Table 4 international exports of caper preserved temporarily in recent years by countries, tons and 1000$.

Years	**2010**		**2011**		**2012**		**2013**	
Quantity	**Value**	**Quantity**	**Value**	**Quantity**	**Value**	**Quantity**	**Quantity**	**Value**
World	**15192**	**23330**	**15468**	**28377**	**16492**	**35592**	**18358**	**41498**
Morocco	15192	23330	15410	28238	16071	34694	17510	39840
Syria	0	0	58	139	415	894	805	1592
Iran	0	0	0	0	0	0	43	66
Philippines	NA	NA	NA	NA	6	4	NA	NA

Source: ITC database.

The table places Syria the second international exporter of caper preserved temporarily after Morocco; however, it is clear that these statistics are preliminary and need more elaboration. For example, Neither Turkey nor any Arab country appear in the table, which provokes the question whether these countries do export caper but in other forms (which is likely the case in terms of

Turkey; it processes caper and equips it before exporting it) or there are quantities unregistered in the formal statistics (here we remember the value of USA imports of ready-for consumption caper, which was mentioned in a previous section). Consequently, when we review the data on preceding years, we find that Turkey, Spain and Uzbekistan had been exporting caper preserved temporarily until 2006, when Turkey exported more than 2000 tons, Spain exported about 650 tons and Uzbekistan exported more than 1400 tons. In the following years, these countries stopped exporting caper, which suggests that they became exporters of processed and equipped caper rather than caper preserved temporarily. However, the ITC statistics don't provide any information in this regard.

Concerning the export unit value, it is demonstrated in the next table.

Table 5 unit value for international exports of caper preserved temporarily, by countries, $/kg.

Years	2010	2011	2012	2013
World	1.5	1.8	2.2	2.3
Morocco	1.5	1.8	2.2	2.3
Syria	-	2.4	2.2	2.0
Iran	-	-	-	1.5
Philippines	-	-	0.7	-

Source: the author's calculations, based on NAPC database

As shown in the table, the price of one kg caper preserved temporarily in 2010 was US$ 1.5 and became US$ 2.3 in 2013. Nevertheless, in terms of Syria, the noticeable point is the retreat of the export unit value from US$ 2.4 in 2011 to US$ 2.2 in 2012 and then to US$ 2 in 2013. It is almost certain that this drawback is caused by the implications of the imposed war on Syria since 2011. Caper' production has been hindered and trade has been unfairly exploited by other countries who imported Syrian caper with unfair law prices. Therefore, this unfair exploitation should be faced by a strategy that include processing and equipping caper locally and then exporting it as a final product, as well as investigating markets in "friend" countries that demand Syrian caper[28].

6-1-1 Some trade indicators related to Syrian exports

Relative Unit Value (RUV)

[28] There is no detailed data about the markets that Syrian caper had been exported to in 2001, 2012 and 2013.

The RUV for any product is calculated as the average of Syrian export unit value to the Average of international export unit value. The reference point or the average of RUV is "1" (the unit value of the product in Syria which equals the unit value of the product in international markets)[29]. If the RUV value is higher than 1, this means that Syria is exporting its products at prices higher than the average of international price, which reflects good quality rather than weak price competition. Moreover, it even indicates good competition, based on a favorable quality. If the RUV value reached 1.15 and more, this indicates a very high level of quality competition. The equation that calculates the RUV is as follows:

$$RUV = \frac{E_{is}/Q_{is}}{E_{iw}/Q_{iw}}$$

Where:

RUV is the relative unit value for the product i

E_{is} is the value of Syrian export of the product i

Q_{is} is the quantity of Syrian export of the product i

E_{iw} is the value of world export of the product i

Q_{iw} is the quantity of world export of the product i

Utilizing the ITC data, we find that the RUVs for Syrian exports of caper preserved temporarily are as follows:

Table 6 RUVs values for Syrian exports of caper preserved temporarily.

Years	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2011**	**2012**	**2013**
Values of Syria's exports	4,812	5,081	2,550	3168	10126	15081	139	894	1592
Quantity of Syria's exports	1,691	2,341	1,545	1,925	6566	9571	58	415	805
Value of world exports	37,955	34,942	24,885	26,073	35,840	37,276	28,377	35,592	41,498
Quantity of world exports	17,454	20,515	17,659	18,808	24,164	23,084	15,468	16,492	18,358
RUV	**0.8**	**0.8**	**0.9**	**0.8**	**1.0**	**1.0**	**0.8**	**1.0**	**1.1**

Source: the author's calculations, based on NAPC database

As shown in the table, the RUV of Syrian caper was above 1 even during the years of war imposed on Syria, which indicates the increasing export competition of Syrian caper, based on its

[29] Based on (Babili et al, 2015).

good quality, and consequently the demand at higher prices despite the unfavorable circumstances that Syria is suffering from, as mentioned previously.

Revealed Comparative Advantage (RCA)

This index clarifies whether the performance of a certain exported product is better than the performance of other exported products, comparing its share in international markets with other products. So, if the given product has a higher share in international markets (comparing with the total Syrian exports), then it is to be said that it has comparative advantage. The formula that calculates the RCA can be written as follows:

$$RCA = \frac{E_{is} / E_{iw}}{E_s / E_w}$$

Where:

RCA is the revealed comparative advantage for the product i

E_{is} is the value of Syrian export of the product i

E_s is the value of total Syrian exports

E_{iw} is the value of world export of the product i

E_w is the value of total world exports

Conducting this indicator for Syrian exports of caper preserved temporarily, and utilizing the ITC data, the RCAs for this product appear as follows:

Table 7 the values of RCA for Syria's exports of caper preserved temporarily.

Years	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2011**	**2012**	**2013**
E_{is}/ E_{iw}	0.13	0.15	0.10	0.12	0.28	0.40	0.00	0.03	0.04
E_{s}/ E_{w}	0.0010	0.0008	0.0006	0.0006	0.0009	0.0008	0.0004	0.0001	0.0001
RCA	**124.2**	**189.4**	**173.2**	**195.3**	**310.1**	**484.4**	**11.2**	**218.1**	**493.3**

Source: the author's calculations, based on NAPC database

As the table clarifies, RCA is very high for Syrian caper preserved temporarily, which is understandable considering that Syria is one of the few and major producers of caper in the world. Lastly, it is worth to underlines the huge gap between the export unit value and the

consumption unit value of caper preserved temporarily[30], which reaches US$ 25 to US$ 45, as mentioned previously.

6-2 Imports

The ITC database presents data of import of caper preserved temporarily. At the first glance, one notes the big gap between the numbers of international exports and imports, where imports quantities are less by far than the exports'. For example, the table shows that the world imported 982 tons of caper preserved temporarily in 2010, but it exported 15192 in the same year. Although it is understandable to find gaps between the export and import numbers for a given commodity due to the administrative procedures related to the importation, the gap here is too big and cannot be interpreted in this way. It is likely that the countries which export this form of caper declare their exports explicitly, but those who import it hide this importation and don't declare it accurately but rather they lessen its numbers as a kind of monopolizing the commodity and securing the export markets. This may also due to the fact that importation is illegal or unregistered, as in case of some African countries that sell caper to Morocco or as the case of Turkey which unjustly utilize Syrian caper in areas dominated by armed gangs, benefiting from the current situation of the imposed war on Syria.

Morocco seems the first importer of caper in 2013, but comparing its imports with its exports, we notice that its imports were 10% below quantities exported; this suggests that Morocco imports small quantities of caper and re-export them along with its local production. On the other hand, it is notable to find that Venezuela is an importing market of caper, where it ranked second among major importers in the world in 2013, and even it was the first importer in previous years. This invites to think seriously about exporting caper to this "friend" country in case there is economic feasibility for this exportation. The Philippines ranked third among major importer in 2013, though with a big gap comparing with Morocco and Venezuela, as shown in the next table.

[30] That is, the gap between the value of 1 kg caper when it is being exported (regardless its form) and its value when the consumer buys is as final product.

Table 8 international imports of caper preserved temporarily in recent years by countries (tons and 1000$).

Years	2010		2011		2012		2013	
Importers	**Quantity**	**Value**	**Quantity**	**Value**	**Quantity**	**Value**	**Quantity**	**Value**
World	982	1361	495	820	1492	2818	1656	3158
Morocco	46	46	58	139	481	1000	895	1757
Venezuela	899	1287	397	656	976	1767	732	1382
Philippines	31	15	39	21	34	13	28	16
Barbados	1	3	1	3	1	3	1	3

Source: ITC database.

Concerning the unit values for world imports of caper preserved temporarily, we notice that it is less than the unit values for world exports of caper preserved temporarily. This is strange somehow where, for example, world exported the kg of caper preserved temporarily with a price of US$ 1.5 in 2010, but imported it with a price of US$ 1.4 in the same year. However, deeper thinking about the situation leads to another conclusion. In this respect, Morocco, for example, imported the kg of caper preserved temporarily with a price of US$ 1 in 2010, and exported it as it is (i.e. in the form of caper preserved temporarily) with a price of US$ 1.5. This was due to the differences between the list of countries Morocco imported from and the list of countries Morocco exported to. Morocco traditionally (as the ITC statistics clarify) imports caper preserved temporarily from countries like Syria, Turkey and Iran, while it exports this product to the European markets, particularly Italy and Spain. Therefore, Morocco imports caper preserved temporarily from Syria and re-export it without any processing or additions but with a profit margin of 50% of the product's value. In this sense, a huge economic gains is lost from Syria, while exploited by some neighbor or Arab countries (though it is in urgent need to utilize such opportunity) comes to mind. The following table shows the unit values for world imports of caper preserved temporarily.

Table 9 the unit values for world imports of caper preserved temporarily by countries, $/kg.

World	**2010**	**2011**	**2012**	**2013**
Morocco	1.4	1.7	1.9	1.9
Venezuela	1.0	2.4	2.1	2.0
Philippines	1.4	1.7	1.8	1.9
Barbados	0.5	0.5	0.4	0.6
World	3.0	3.0	3.0	3.0

Source: the author's calculations, based on NAPC database

7- Probable destination markets for Syria's export of caper

By re-reading the international markets, and in light of the Syrian government direction which implies promoting trade ties with "friend" countries that support Syria during the current period of the imposed war (namely the so-called "stepping easterly"), we note that there are two potential markets for Syrian caper. Yet, it is worth mentioning that the optimal market practically would be the EU market, but this option was abandoned due to the negative European attitudes towards Syria. Similarly, the North American market, which is the second market internationally, was also abandoned for the same reason. Thus, the Syrian caper would have only two important and "friend" markets. These will be studied in some details.

7-1 First market: Russian market

As mentioned, the national data indicated exporting quantities of fresh or chilled caper to Russia in 1998, where the share of those exported to Russia comparing with total Syrian exports of caper reached 20% in that year. Consequently, despite the spread of caper in Crimea and Caucasus regions in Russia, Syrian capers found his way to the Russian market, which suggests that the Russian production of caper is insufficient for the Russian market, thus the Russian market needs to pave the way for Syrian caper exports again.

It is worth mentioning in this sense that the Russian traditional salad dish, known as Olivier (well-known also in Mongolia, Iran, Europe and Latin America) includes caper buds among its components[31]. The price of one kg caper ready-for-consumption in Moscow markets is about 406 Rubles, i.e. US$ 7.7[32]. This means that there is a big profit margin for suppliers of Syrian caper when it is exported to the Russian market, no matter what the costs and transport fees are (we will show later that the air shipping costs about US$ 2 per kg, while sea shipping costs are half of air shipping costs in general).

[31] http://en.wikipedia.org/wiki/Olivier_salad
[32] Based on the Russian website http://www.rlcxxi.ru

Picture 8 a sample of caper available in Moscow markets.

Source: BIZ website for trade.

Still, in terms of Russian tariff on caper, the tariff for caper preserved temporarily is 15% of the shipment value[33], which is relatively high tariff but wouldn't be an obstacle to the export of caper, considering the original low price of Syrian caper.

7-2 Second market: Venezuelan market

As a matter of fact, the spread of caper consumption in Latin America is incomparable with its consumption in Europe, where caper is much better known in Europe than in Latin America[34]. However, Venezuela stands out as an exception, as it has been mentioned in this paper that Venezuela is an international importing market of caper preserved temporarily. In this respect, Venezuela ranked second among major importers in 2013, with imports of US$1.3 million. Moreover, Venezuela was the first importer of caper preserved temporarily before 2013. This invites to look into the validity of exporting Syrian caper to that "friend" country in case there is an economic feasibility for this exportation. In this sense, the price of one imported kg of caper preserved temporarily reached US$ 1.9 in 2013, which indicates the financial infeasibility for exporting caper in this form; thus its exportation as a final product should be considered in order to guarantee a profit margin. Also, it is worth to mention that, according to ALL BIZ website (which is dedicated for international trade markets), Casa de Fruta (house of fruits) Company is supplying Venezuelan markets with fresh caper, particularly the capital Karakas markets.

[33] http://www.russian-customs-tariff.com/SectionII/Chapter07.html
[34] Based on international trade statistics as well as international food consumption literatures.

8- Possible transport means

8-1 Sea shipping

The National Agricultural Policy Center published year ago a study[35] titled "Syrian Green Corridor: Penetrating Eastern Markets through Sea. The Study recommends establishing a sea line that links Lattakia (a Syrian port) with Novorossiysk (a Russian port) aiming at exporting Syrian agricultural products to Russia. Following the recommendation of the study, the line was established and the work has begun. Thus, considering that the Russian market is one of the two major markets proposed for importing Syrian caper, it is quite relevant to suggest (in addition to air shipping) counting on the Syrian green corridor to export caper, particularly as a final product. Moreover, it is important to remember that the price of one kg caper ready-for-consumption is US$ 7.7 in the Russian market, as mentioned previously. Therefore, exporting caper via the green corridor would undoubtedly have high financial feasibility, since other commodities with lower value have been exported through the corridor. Still, concerning the exportation of caper preserved temporarily (which is economically not recommended) through the green corridor, it would also have financial feasibility (though less than the feasibility for caper ready-for-consumption); the price of 1 kg of caper will never be less than the price of 1kg of vegetables being exported currently through the green corridor, if it is not more.

8-2 Air shipping

Air shipping is suitable for products of small weight and size, and that enjoy high prices. Accordingly, it is suitable for caper bottled and ready-for-consumption. The main problem regarding air shipping, however, is the return empty from the targeted market, which doubles the transportation cost. The optimal solution for this problem is the one followed by exporting countries that depend on air shipping, i.e. filling the returning planes with "backhaul". For example, Norway imports most of its needs of fruits and vegetables between November and May, using air shipping. The plans return loaded with some high value sea products. Also, Ecuador imports agricultural products that are transport-tolerant from the USA as "backhaul" for the return flights of their cargo airplanes from the USA.

[35] Babili et al, 2014.

Egypt, exporting about 75% of its green beans to the European market via air, suffers from the high transportation cost to Germany, Holland and the UK, as exports by air costs twice as much as the cost of transport by land or sea. The data reveal that the cost of exporting one kg of Egyptian green bean to Europe by air is one US dollar, where the green bean is shipped to the European countries on tourist planes. However, during December and January, the rates of tourism fall, and thus the number of flight trips shrinks, which increases transportation costs up to US$ 1.5[36].

Considering the above costs, we can suppose that the cost of exporting one kg of ready-for-consumption caper from Damascus or Latakia airport to Moscow would be about US$ 2. We can give an example to make the point clearer. A private company offers air shipping service from Beirut to Shanghai for 1 to 3 dollars per kg[37], which ensure that the ceiling of transportation cost from Syria to Russia cannot be more than 3 dollars per kg. Thus, presuming that one kg of caper bought from capers collectors in Syria costs 1 dollar, preparing and transport cost one dollar, its shipping by air costs US$ 2.5, and considering that the Russian tariff for caper is less than US$ 0.7 and the one kg of caper can be sold by 7.7 dollars in Russia, we can conclude that the net profit is US$ 2.5 for each kg of caper (these calculations are very approximate).

Equally important, when caper is exported as a final product, it cannot be re-produced and no additives can be added again so as to provide the product with a new origin and hide its Syrian originality. Rather, Syrian caper would have an absolute advantage in international markets of caper, considering that Syria has high potential in producing caper, because it is spread naturally all over Syria (as mentioned, countries where caper grows naturally are quite few). This advantage will be stronger in case current GCSAR-MAAR (General Commission for Scientific Agricultural Research/Ministry of Agriculture and Agrarian Reform) attempts to grow caper in Syria succeeded[38]. This advantage will be enhanced if new more productive species of caper are developed through genetic improvement.

It should be mentioned that a proposal for Syrian air shipping was presented recently by some actors in private sector, where the proposal suggests establishing a joint (mutually owned by

[36] Al boursa newspaper (Egyptian), issue 21-3-2013.
[37] http://arabic.alibaba.com/product-gs/beirut-lebanon-air-freight-from-china-vera-skype-colsales08-60079001645.html

[38] It has been mentioned previously that several Mediterranean countries are growing caper.

private and public sectors) company for air transportation through the collaboration between the state and private transportation companies in order to export Syrian products[39]. Consequently, this proposal can be linked to what the current paper suggests in terms of exporting caper by air shipping.

9- A look at the competitive advantage

It is known that competitive advantage is a mix of physical and non-physical factors. The concept means creating a value for the product by focusing on the price side as well as the product quality and its conformity with the required specifications and standards, in addition to other advantages of the product. Still, there is no fixed competitive advantage for any product; thus, it is necessary to promote and develop the competitive advantage in a way that goes in line with the market requirements, taking into consideration the timely competition and the continuous desire of consumer to "change" (the desire for new things). On the other hand, it should be noted that competitive advantage is one of several factors that lead to success; however, it could be the most important one in terms of achieving success. In general, the competition has four dimensions: the low cost, the good quality, the high flexibility and the prompt delivery.

In light of the above, it can be stated based on the SWOT analysis that Syrian caper can strongly compete in case it enjoyed technical, financial and institutional support. Here are the results of SWOT analysis.

[39] http://www.syriandays.com/print_details.php?page=show_det&id=43041&num_page_det=1

9-1 Results of SWOT analysis

Strengths	Weaknesses
- Caper grows on its own, and is spread in all Syrian agro systems. It also doesn't need any care. - Syria enjoys cheap labor, which reduces the possibility of being competed by other countries. - Syria has relatively good experience in caper planting and its collection in the due time. It also enjoys good experience regarding food industries. - The caterpillars - the major insect pest that threatens caper - can be controlled easily using nontoxic biological or organic methods. - Caper is sustainable to grow taking into consideration its unique characteristics: it is a desert plant that prefers high temperatures, grows in nitrogen-poor soils, requires little inputs (fertilizers, pesticides and irrigation), and is tolerant with salinity and resistant to pests and diseases.	- The difficulty of collecting caper buds, considering that it is a wild spiky plant. - The heterogeneous quality of buds, considering the existence of leaves and thorns as well small fruits and other foreign bodies with the buds. - It is a labor intensive commodity, and its refining, sorting and grading (according to the buds volumes) require huge labor. - Its growing requires precise control, in order to insure health standards, in the framework of "good practices to control pests". - Lack of technical expertise as well as advanced techniques used in its industry. - The weak agricultural extension services.
Opportunities	**Threats**
- A Caper agro-processing industry may be established in order to supply customers with unique and distinguished quality produce that meets the requirement of customers in the importing markets. - Most materials added to make caper sauce in developed countries are locally available, such as olive and tomato, which boost the opportunity to produce caper sauce in Syria in order to benefit from the added value. - In the future, it is possible to launch tourism activities related to caper, such as the case in Pantelleria Island in Italy, which is famous with growing, producing and marketing caper, where tourists' buses visit the island regularly to buy the different caper products as rural products. - Caper can be grown under olive trees without irrigation, such as the case in Morocco as well as some European countries. Not to forget that olive tree is the most common tree in Syria. Also, caper can be grown under almond tree. - Beehives can be placed in caper fields in case the	- Insects affect caper and spoil its buds. In Morocco, serious economic losses occurred because of insects, nematode and fungi that attack caper. - Pesticides residues on caper make it almost impossible to export it. A large shipment of Moroccan caper was rejected from entering European markets because the buds contain "dithiocarbamates", a pesticide residual; overall, any chemical residual would make the product absolutely prohibited from entering western markets.

buds were not collected before the blooming period, where caper is among the most important plant species that feed bees, and bees prefer caper (when it is available) than any other plant. Caper honey is among the most salable kinds of honey due to its numerous medical benefits. - In case the buds were not collected, the fruit can be used in jams industries. - Medical and beauty industries can be established relying on caper abstracts, particularly considering its richness with anti-oxidants. - Among caper products that are potentially expected to have future markets is caper flowers, as caper is potentially considered among decoration plants considering its attractive flowers and their colors; this is also a potential opportunity to invest in this commodity. - Caper is a labor intensive plant. Its plantation requires many agricultural, marketing, and processing activities. This contributes effectively in creating employment opportunities[40]. - Caper can help in preventing soil erosions, because of its deep roots. In addition it grows in reclaimed saline soil, because it is salinity tolerant.	

10- Conclusion

Syria is blessed with a diversity of wild plant, due to its diverse climatic conditions. Caper is among the wild plants spread widely in Syria. It is a thorny perennial shrub desert that can stay productive for 25-30 years. The shrub is drought-resistant and it can withstand high temperature. Its origin is the Mediterranean region and it belongs to the Capparaceae family. The plant grows on its own in the *Badia*, and around residential areas. Caper is distinguished by its abundant antioxidants, which obviously makes it functional food. Besides its medical and treatment usages, caper buds (the most important part of caper economically) are used as a kind of pickle, particularly in the European and American markets. The price of one kilogram ready-for-

[40] In case caper was grown, each hectare would produce (more or less) 15 jobs (over 3 months) and 1-3 permanent jobs equivalent to 6-8 jobs over 3 months; the jobs would be in harvesting and processing activities (Trewartha, 2005).

consumption caper in the US markets, for instance, is about US$ 25, while caper's farm gate price in Lebanon is US$ 5 for 1 kg and the price of 1kg ready-for-consumption caper (pickled caper) in Lebanon is US$ 45 (consumer price).

Caper can be found widely in several regions in Syria, including rural Homs (Al-Mukharram) and rural Idleb (Maarrat al-Nu'man), Mount al-Hass in south east Aleppo, and north Aleppo (Manbej). It can be found also in Al-Raqqa Governorate and across Euphrates Valley. Syria's production of caper was estimated at 4000 tons in 2006, while international production was estimated at 10,000 tons in the same year. This highlights the absolute production advantage that Syria enjoys as caper producer. Rural Idleb and rural Homs are noticeably two important regions for caper production, where a factory for processing, equipping and then exporting caper was established in Idleb, Kafr-Romah. Value chain of caper in Syria starts at the moment of harvest, as no production activities applied before harvest. The chain continues with processing or equipping the buds, or otherwise it ends with caper exportation to Turkey. The chain suffers from lack of agricultural extension that leads to "good agricultural practices". It also suffers from the stressful nature of the work, lack of experience and lack of mechanization, demand and price fluctuations, poor market transparency and lack of confidence in agents. This calls for firstly: horizontal integration and collaboration among buds' collectors in order to boost the utilization of the resource, secondly vertical integration, i.e. collectors and traders' integration though the involvement in related investment for the good of marginal communities that collect caper buds.

On the other hand, the law No.7 /1994 defined caper as one of the wild forestry species. The law implies that using and trading caper and its different products requires a permit issued by the Forestry Section. The MAAR has paid special attention to prepare the executive instructions for the mentioned law. It organized caper investment and harvest; requiring investors to obtain two documents: a cultivation permit on the area to be grown with caper, and a document for caper storage ownership.

Syrian formal statistics shows that Syria had exported amounts of caper products before 2007, particularly caper preserved temporarily but not ready for immediate consumption. This means that the national exporter has been losing the value added resulted from caper process. Main caper importing countries were the European countries and the USA. Arab countries and Turkey, however, were importing Syrian caper in order to re-export the product after equipping it. By re-

reading the international markets, and in light of the Syrian government orientation to promote trade ties with "friend" countries that stood by Syria during war imposed on it. We note that there are two potential markets for Syrian caper: the Russian market and the Venezuelan market. Actually, Syria already exported caper to Russia, while Venezuela is the second international importer of caper. The price of one kg caper ready-for-consumption in Moscow markets is about 406 Rubles, = US$7.7. Concerning Venezuela, there is no economic feasibility for exporting caper as transitional (not finished product). However, there could be economic feasibility for exporting caper as is ready-for-consumption produce. Concerning Russia, sea shipping could be utilized in caper exportation, particularly through green corridor that was established recently between Latakia and Novorossiysk ports. Air shipping may be suitable for capers exports to Venezuela, once economic feasibility is verified.

In light of all the above, and based on the SWOT (Strengths, weaknesses, opportunities and threats) analysis, it appears that Syrian caper can strongly compete if adequate financial and institutional support is provided. In addition there is potentially an uninvested trade opportunity 'that needs to be emphasized and utilized. This sub-sector lacks the efficient and economic exploitation; it needs to be organized and developed, and shedding light on this valuable resource is the major goal of this working paper.

11- Recommendations

1. Before the crisis, the MAAR was planning to buy caper seeds from rural households to grow them in the desert and poor areas in order to spread its plantation, because of its economic value. It is important now to re-visit these plans and try to apply them when possible.
2. It is useful for caper sub-sector to be under state supervision, in a way that it got organized and supported by small loans and export subsidies (supporting and loaning policies), as well as irrigation policies (in case its cultivation succeeded). In addition, production must be increased to benefit from "economies of scale" and reduce production costs.
3. It is important to bring together all parties involved in caper production and marketing: producers, processors and marketers, and unify their efforts in the framework of specialized organizations that should be connected with their counterparts in other

countries, besides international organizations like FAO. This would abolish caper monopolizing by some traders, as well as pre-defining its prices and consequently the workers' wages prejudicially.

4. Caper producers and processors should see themselves as one sub sector, and their efforts should contribute for the good of the sub-sector entirely. Problems encountered should be solved mutually and production trends should be defined in an atmosphere of cooperation and participatory.
5. There is a great importance in activating the role of agricultural extension regarding caper production, equipping and marketing. To this effect, a website can be established in order to provide caper labor with necessary directions and answers for their questions. In addition, it is possible to cooperate with universities and scientific research commission to provide this website with the studies and research foundations.
6. It would be useful to establish/mandate special body to verify caper quality, and establish a system for caper quality, which would help determine price margins of caper products in the targeted markets. Furthermore, it is important to obtain international certificates for Syrian caper's quality.
7. There should be concrete plans to target and revive Russian market, because this market was functioning in the past, and it is worth to mention that primary indicators suggest that there is reasonable financial feasibility for caper exports to Russia.
8. Examining the possibility to export Syrian caper to Venezuela, in case there is an economic feasibility for this proposal. That is, examining the economic feasibility for exporting caper ready-for-consumption to Venezuela, where there is no feasibility for exporting raw caper.
9. Capers' Economic returns are maximized when exported as processed and ready-for-consumption in order to benefit from added value. Therefore, it is necessary to establish a factory for caper (ready-for-consumption) production.
10. When caper is exported raw, export markets must be defined beforehand and then targeted; and margins must not be lost through mediation. For example, it was noticed that Morocco imports caper preserved temporarily from Syria and re-export it as it is (without process or additives) with a profit margin of 50% of the product value.

11. On the other hand, caper importation for the purpose of processing and re-exportation is an initiative that should be revitalized and encouraged, along with local caper' exports.
12. Lastly, it is very important in the future to obtain a geographical indicator for Syrian caper, and register it in framework of the World Intellectual Property Organization (WIPO)[41].

11-1 Technical recommendations

1. In caper cultivations, early blooming techniques must be considered, as well as effective breeding techniques; this is important to avoid over-wintering caterpillars.
2. It is important to continue scientific researches on caper plantation, and researches on examining the possibility of growing more productive species adopting genetic improvement.
3. Research efforts should be continued to introduce and grow smooth caper[42], which is characterized by the fast and easy harvest; which is reflected in reduction of production costs and harvest time as well[43]. In addition, efforts should be put to introduce and grow the round species which have fixed buds and strong flavor.
4. It is recommended to mechanize sorting and grading caper buds to increase margins instead of using manual sorting (by sieve) or exporting caper buds without sorting and grading, which reduce their prices.
5. Exerting efforts to establish "integrated pest-management system", and determine nutrition and irrigation needs to achieve the highest productivity of caper, as well as spotting the opportunities to diversify caper products as demanded by international market.
6. It is important that scientific research centers to invent techniques to facilitate and reduce the costs of caper harvest.

[41] Lisbon System offers the relevant tools to register the geographical indicator, where an application should be submitted to the IOE in one of the formal languages, with a list of fees that apply to the geographical indicator.
[42] It is worth to mention that there is a successful experience for growing smooth caper in Lebanon.
[43] The worker in Syria needs two hours per day on average to harvest on kg of caper buds (normal caper, rather than the smooth one).

Picture 9 caper processing in Usimar factory, Morocco, where caper is cultivated and harvested.

Source: Noone, 2015.

Annexes

Annex 1 caper products in Syria, by harmonized system.

Caper products	**H.S.**	**H.S. name**
Fresh or child	*0709.90.40*	*Capers, fresh or chilled*
Preserved temporarily	*(0711.30.00)*	*Capers provisionally preserved, but unsuitable in that state for immediate consumption*
Preserved in cold water	*0711.30.10*	*Capers, in brine, sulfur water or water with other added materials*
Preserved in sulfur	*0711.30.20*	*Capers, in sulfur dioxide gas or other means of preservation*
Preserved in So2	*0711.30.90*	*Capers, in sulfur dioxide gas or other means of preservation*

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