Raising Goats as Adaptation Process to Long Drought incidence at the Coastal Zone of Western Desert in Egypt

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Mediterranean Sea
Bardīyah
As Sallūm
MARSĀ MAṬRŪḤ
ALEXANDRIA
Al 'Alamayn
KAFR ASH SHAYKH
DAMIETTA
PORT SAID
Al Maḥallah al Kubrá
AL MANṢŪRAH
ṬANṬĀ
SHIBĪN AL KAWM
AZ ZAQĀZĪQ
ISMAILIA
BANHĀ
AL JĪZAH
CAIRO
Ḥulwān
SUEZ
Suez Canal
AL 'ARĪSH
GAZA STRIP
Gaza
Israel
Tel Aviv-Yafo
WEST BANK
Jerusalem
AMMAN
Beersheba
Dead Sea
Al Qaṭrānah
Jordan
Ma'ān
An Nabk
Ṭurayf
Elat
Al 'Aqabah
Ḥaql
Al Bi'r
Tabūk
Al Qalibah
Saudi Arabia
Dubā
Al Wajh
Yanbu' al Baḥr
An Nakhl
Sinai Peninsula
Gulf of Suez
Gulf of Aqaba
Mount Catherine
AṬ ṬŪR
Sharm ash Shaykh
Ra's Ghārib
AL GHARDAQAH
Būr Safājah
Al Quṣayr
Red Sea
Baranīs
Ra's Banās
Ḥalā'ib
Ra's al Ḥadāribah
Administrative Boundary
Tobruk
Al Jaghbūb
Sīwah
Qattara Depression
AL FAYYŪM
BANĪ SUWAYF
Maghāghah
Al Bawīṭī
AL MINYĀ
Mallawī
Dayrūṭ
ASYŪṬ
Ṭimā
Ṭahṭā
SŪHĀJ
Jirjā
QINĀ
Naj' Ḥammādī
Luxor
Armant
AL KHĀRIJAH
Mūṭ
Bārīs
Aswan High Dam
ASWĀN
Tropic of Cancer
Lake Nasser
Abū Sunbul
Lake Nubia
Wādī Ḥalfā'
Libya
Egypt
Sudan
Al Jawf
Al 'Uwaynāt

Source: ????

Background

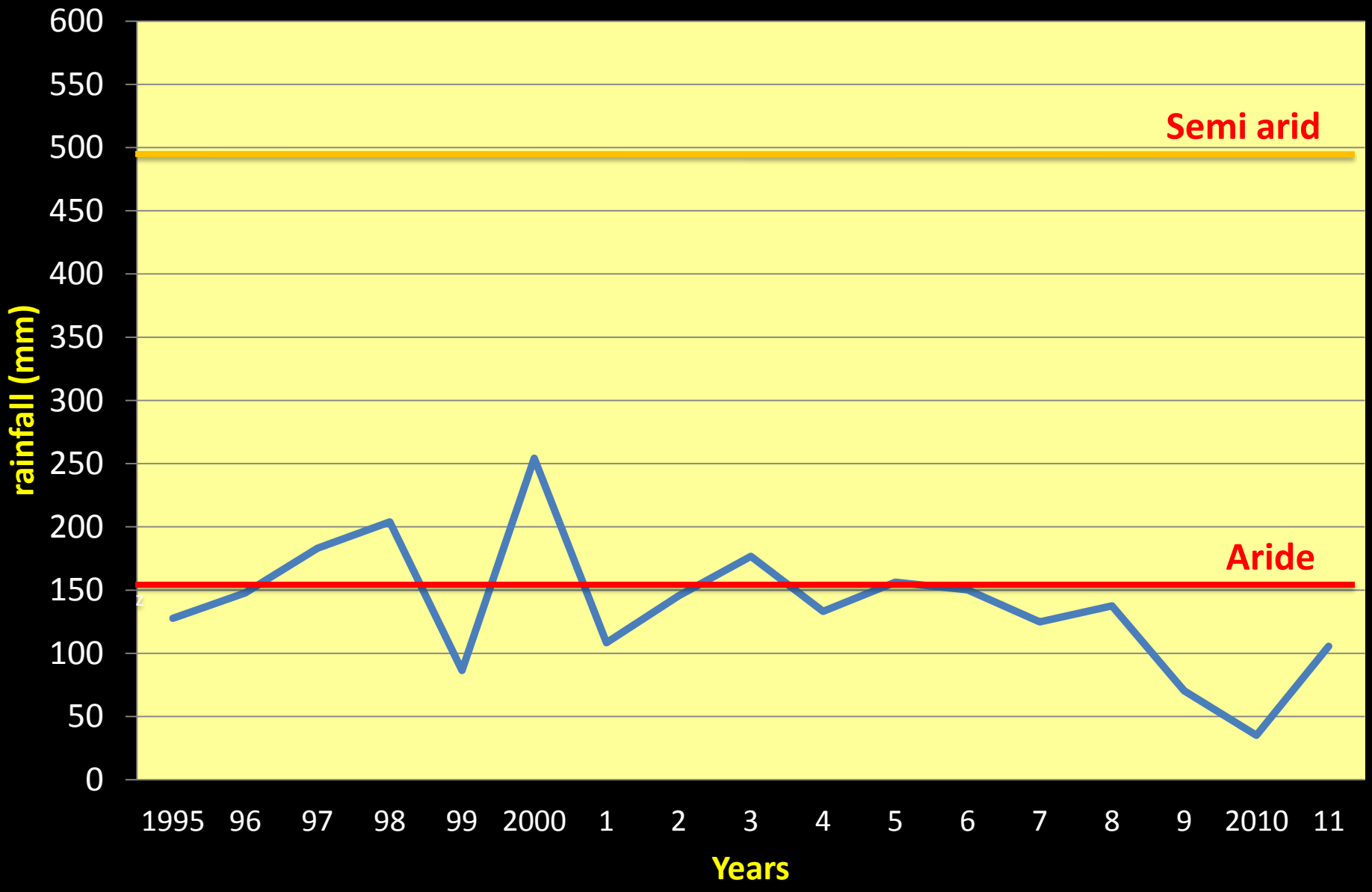
- The Coastal Zone of Western Desert (CZWD) in Egypt extended over 500 km from Alexandria East to Libyan border West.

- It is hot dry pastoral area, raising sheep and goats, beside some camels that are the main socioeconomic activity for Bedouins livelihood.

- The zone had witnessed major changes over the last decades, demographic growth, urbanization, touristic development and land reclamation in the eastern part.

- More recently the zone has faced a long drought period from 1995 – 2011, with low erratic rainfall (< 150 mm). The Bedouins had adopted different process to cope with the prolonged drought, mainly through the diversification of their farming system.

Estimates of rainfall during period(1995-2011)




Auteur:

Objective

- ELVULMED (French-Egyptian collaboration project) (project ANR CEP&S, 2011-2013) aimed to assess the role of livestock activities in the process of adaptation and reducing the vulnerability of Mediterranean societies facing climatic changes.

- The present study aims to assess different means taken by Bedouins in CZWD of Egypt to adapt with long drought incidence (1995-2011), include raising goats as adaptive process to such environmental hazard.

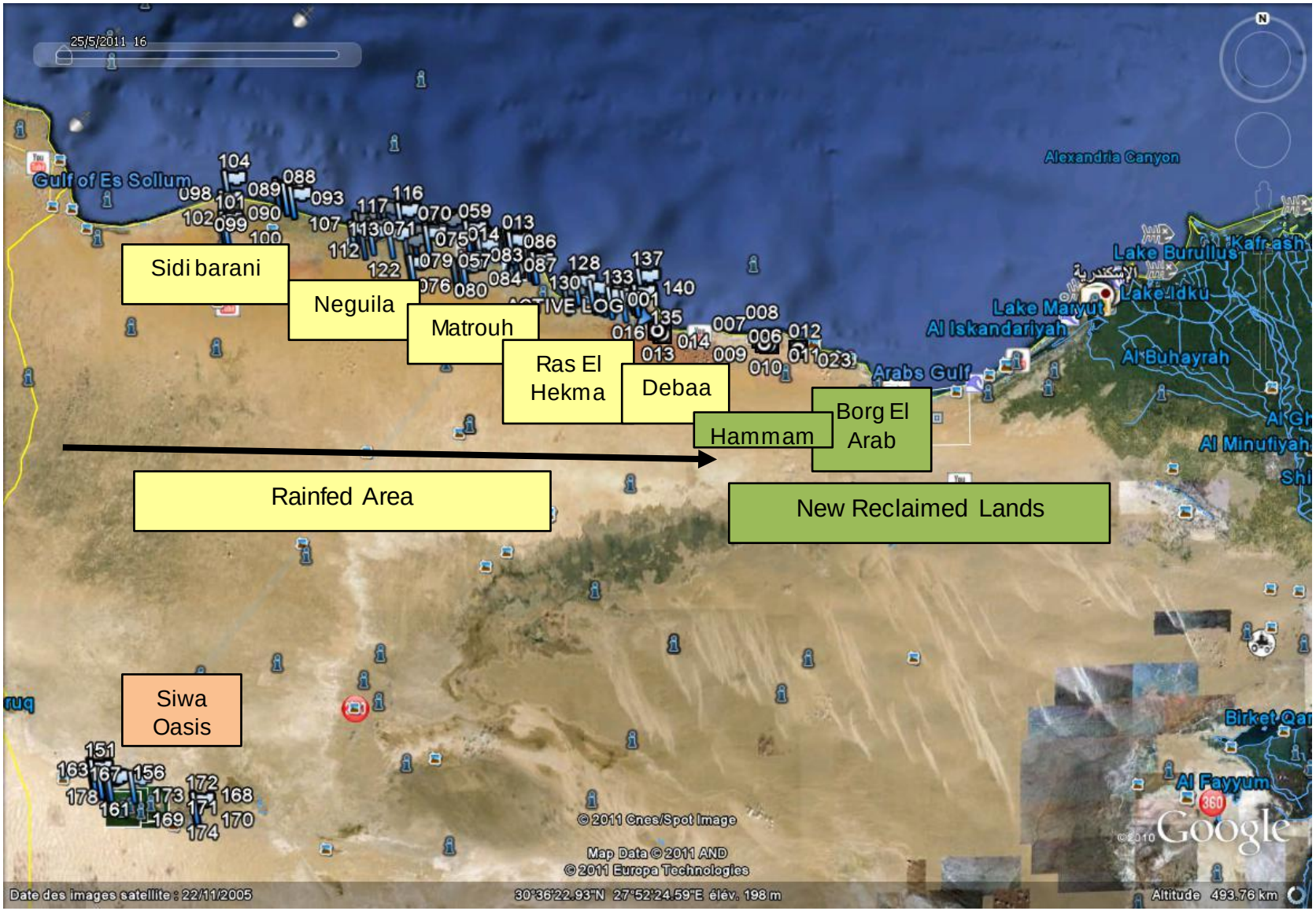
Materials & Methods

The area consisted of 3 agro-ecological regions:

- **The Rain-Fed Region;** is characterized by transhumant livestock system on natural ranges, with limited cropping activity mainly barley for animal feed (as grains and stubbles in normal years or as a pasture in dry years).

- **The New Reclaimed Lands;** had recently adapted a major agrarian reform through the establishment of irrigated canal. Crop-livestock mix system based on Egyptian clover and wheat in Winter, crops and vegetables in Summer.

- The third region is **Siwa Desert Oasis;** rainfall is negligible, they depend on ground water and springs as water resources to cultivate their fragmented lands with alfalfa, strategic crops, vegetables and fruits. Animals are raised mainly as household.


Sidi barani
Neguila
Matrouh
Ras El Hekma
Debaa
Hammam
Borg El Arab
Rainfed Area
New Reclaimed Lands
Siwa Oasis
Gulf of Es Sollum
Alexandria Canyon
Lake Burullus
Lake Idku
Lake Maryut
Al Iskandariyah
Arabs Gulf
Al Buhayrah
Al Minufiyah
Al Fayyum
© 2011 Cnes/Spot Image
Map Data © 2011 AND
© 2011 Europa Technologies
Google
Date des images satellite : 22/11/2005
30°36'22.93"N 27°52'24.59"E élév. 198 m
Altitude 493.76 km

- A field survey was implemented in 2011 (from April to July) for 182 breeders; 124 in the **Rain-Fed Region** (West), 28 in the **New Reclaimed Lands** (East) and 30 in **Siwa Desert Oasis.**

- The field survey was based on a technical and socio-economic questionnaire which comprises **5 main components:**

- Family structure, housing and off farm activities,

- Land and cropping system,

- Livestock structure, range status, grazing

  practices, feeing and management,

- Animal performance and marketing,

- Constraints and perception of climatic changes.

Results & Discussion

Flock Size and Goat %

Development of flock size and goat% in the flocks over the drought period

Areas (# breeder)	1995				2011				
	#Sheep	#Goat	Flock size	Goat/ Flock (%)	#Sheep	#Goat	Flock size	Goat/ flock (%)	Doe/ewe ratio
Rain-fed (124)	200	44	244	21	128	24	152	22	0.27
Reclaimed land (28)	142	18	161	14	213	21	234	17	0.14
Oasis (30)	31	27	58	32	37	27	65	57	0.68

- In the Rain-Fed Area, decreasing flock size (-38%) was the major adaptive process by the breeders to cope with the long drought incidence and deteriorated range conditions.

- Goat was part of the adaptive strategy of adaptation to the long drought incidence under hot dry conditions in the area (increase from 20 to 22%).

- Goats are dominated in Siwa Desert Oasis, with doe/ewe ratio of 0.68. 20% of breeders raise only goats there.

- With the availability of green fodder and crop residuals, in the New Reclaimed Land, flock size had been increased from 161 head in 1995 to 234 heads in 2011 (+45.6%), doe to ewe ratio was only 0.14.

Family Consumption

Family consumption from their animals and products at the 3 regions in 2011

Regions	Av.Family member	sheep Consumed (head)	goats consumed (head)	% Animal consumed/flock		milk consumed/family (kg/day)
				Sheep	Goats	
Rain-fed	20.9	3.4	3.4	2.7	14.1	4.3
Reclaimed land	20.7	3.6	0.7	2.0	3.0	7.9
Oasis	15.7	1.7	4.1	4.5	15.0	3.8

- The nutritional status of the householder in the whole hot dry areas, relays greatly for their meat and milk requirements on domestic consumption.

- Family of 21 member in the Rain-Fed Area utilized 14.1 % of their goats for their own consumption and social events, plus 2.7% of their sheep.

- In the Siwa Desert Oasis, they relay more on goats for their meat consumption (they consumed 15% of their herd).

- In the New Reclaimed Lands, the family consumed 4.3 kg of goat milk daily during the milking season (3 – 4 months), even with the availability of dairy large ruminants.

Marketing strategy of live animals in the 3 agro-ecological zones

Parameters	Weaned lambs/kids		Early fattening		Late fattening		Mature does/ewes	
	Sheep	Goats	Sheep	Goats	Sheep	Goats	Sheep	Goats
	1) Rain-fed area							
% breeders	53	78	38	18	9	3	78	50
# Sold animals	53	13	36	13	49	25	9	2
Age(mo)	3.9	3.9	4.6	4	9	8.8	7.1	6.8
Weight (kg)	26	16	30	16	46	25	45	33
	2) New reclaimed land							
% breeders	40	65	28	10	32	25	96	85
# Sold animals	70	24	157	11	116	7	16	5
Age(mo)	3.5	4	3.9	3.8	10.3	8.8	7.5	6
Weight (kg)	24	18	30	15	58	21	47	30
	3) Siwa oasis							
% breeders	58	60	29	40	13	-	33	30
# Sold animals	24	9	49	18	2	-	1	1
Age(mo)	3.5	3.7	4.9	3.9	9.5	-	5.1	5.6
Weight (kg)	22	10	25	11	40	-	41	32

Marketing Strategy of Live Animals

- With the lack of feed resources, > 92% of the breeders in the Rain-Fed Area sold their kids and lambs at weaning or after few weeks of fattening. Few breeders practiced late fattening of their lambs and kids.

- The breeders in Desert Siwa Oasis sold their kids and lambs at weaning or few weeks after. Few breeders practiced lamb fattening , and no fattening for kids.

- In the New Reclaimed Lands, the breeders practiced different marketing scenarios; 40 and 65% of the breeders sold their lambs and kids after weaning, 28 and 10% after short fattening and 32 and 25% fattened their lambs and kids, respectively.

- Most of the breeders sold part of their mature ewes around the year as a source of cash to buy feed stuffs for the rest of the flock (cash assets).

Cash Income from marketing of live animals/productive female in 3 zones in 2010/ 11

Regions	% of income from weaned lambs & kids	% of income from early fattened lambs & kids	% of income from late fattened lambs & kids	% of income from ewes & dams	Income/productive female (LE)	
					Sheep	Goats
Rain-fed	50	23	12	15	757	498
Reclaimed land	15	29	43	13	575	322
Oasis	30	62	1	8	409	235

Cash Income

- More than 50% of the cash income in the **Rain-Fed Area**, come from selling weaned lambs and kids, 24% from early fattened ones 12% from late fattening and 15% is coming from selling mature ewes and does.

- The reverse was the case for the **New Reclaimed Lands**, 43% of their income is coming from selling late fattening lambs and kids, 29% from early fattening, and only 15% coming from weaned lambs and kids.

- In the **Desert Siwa Oasis**, their main cash income comes from selling early fattened lambs and kids and 30% from weaned ones.

Conclusions

- Decreasing flock size was the major adaptive process taken by the Bedouin to cope with the incidence of long drought in the **Rain-Fed Area.**
- Raising goats was the other mean of adaptation to the drought incidence in the **Rain-Fed Area** and **Desert Siwa Oasis** under the dry hot conditions. 20% of the breeders in the desert oasis raise only goats.
- The explanation given by the breeders was that goats give them more flexibility in coping with climatic changes.
- The reverse was the case in the **New Reclaimed Land** with the availability of green fodder and crop residues; they increase their flock size, mainly from sheep.

Conclusions (cont.)

- Goats contribute, significantly to the nutritional status of the householders in the whole area, for meat and milk in the Rain-Fed Area and Desert Siwa Oasis, and for milk in the New Reclaimed Lands.

- Weaned kids was the main source of cash income for the breeders in the Rain-Fed Area while, fattening lambs were the main source of income for the breeders in the New Reclaimed Lands.

- An interest advantage of raising goats in the Rain-Fed Area was their high income relative to sheep, than in the New Reclaimed Land and the Desert Siwa Oasis (66 vs., 56 and 57%).

- Efficiency of goats as skillful grazing animals and efficient digestive system utilizing poor roughages was recognizable in the Rain-Fed Area with long drought incidence and partly in the Desert Siwa Oasis, but not in the New Reclaimed Lands.


شكرا
Спасиб
Köszönöm
Ευχαριστω
Děkuji
Dakujem
Obrigado
Teşekkür ederim
Thank You !
Tack
Danke
Dziękuję
Merci
Grazie