

**CGIAR Research Program on Livestock Agri-Food Systems
Feeds and Forages Flagship**

**Capacity Development Report
Field day on sulla cultivation using a participatory
community-based approach**

Prepared by: Mounir Louhaichi (ICARDA – Tunisia)


Co-authors/contributors/collaborators: Slim Slim (ESAM, Tunisia) and
Khlifa Jilali (DGF, Tunisia)



Date: 17 November 2020

Place: Souk Jomaa, Jendouba – Tunisia

2020



Sulla cultivation using a participatory community-based approach

Activity name: Activity name: Sustainable restoration of agro-silvopastoral production systems in Tunisia

Location: Forest nursery for seedlings production of Souk Jomaa, Jendouba – Tunisia

Subject: Organize a field day on the importance of forage legume, Sulla (*Hedysarum coronarium*) cultivation and to distribute sulla seeds to farmers.

Trainers: Dr. Mounir Louhaichi: The International Center for Agricultural Research in the Dry Areas (ICARDA), Tunisia; Dr. Slim Slim: Ecole Supérieure d'Agriculture de Mateur (ESAM); M. Khelifa: Direction Générale des Forêts (DGF) and M. Lotfi: Forest chief district, Commissariat Régional au Développement Agricole (CRDA), Jendouba.

Attendees: The attendees included about 100 farmers and members of the 'Groupement de développement Agricole' (GDA) in Souk Jomaa and technicians from the Forestry Department in Jendouba.

Source of funding: CGIAR Research Program on Livestock Agri-Food Systems

Lead Center: International Livestock Research Institute (ILRI)

Flagship: Feeds and Forages Flagship

Justifications

The Souk Jomaa region under the territorial jurisdiction of the Jendouba northern delegation of the Jendouba governorate, characterized by cattle, sheep, goats breeding and beekeeping, suffers from a lack of support and an ever-increasing shortage of fodder and degradation biodiversity.

The Souk Jomaa forest and the biodiversity they shelter provide essential services for the region: soil retention, erosion control, water and climate regulation and pollination. These ecosystem services are essential to agriculture, energy, and infrastructure and sanitation; they are vital for local population.

Forests contribute to the long-term maintenance of the conditions essential for socio-economic growth and the fight against poverty. Deforestation is largely due to the demand for new agricultural land to feed livestock, this pressure on the forest disrupts land use at the expense of the forest and the forest cover. Everyone agrees that forests contribute to the long-term maintenance of the conditions essential for socio-economic growth and the fight against poverty in the region, but they continue to destroy it existing laws.

The ICARDA/DGF pilot initiative represents an asset for the survival and settlement of the local rural population in this remote region subjected to tensions and smuggling. Through this pilot action in the region and through a participatory approach of citizens and local authority, we wanted to lead an integrated approach to the landscape. this approach clarifies and consolidates best practices for the sustainable use of the natural resource base (land, water and forests) so that this use will enhance livelihood of the local populations.

One of the activities planned under the CRP Livestock is to assist the local population through the introduction of native forage species, sulla (*Hedysarum coronarium*), and its cultivation in the cropping systems. Thus, the field day has two main objectives:

- Increase awareness of local farmers of Souk Jomaa about the benefits and the importance of the sulla cultivation with emphasis on development of livestock production system and beekeeping.
- Distribute small quantity of sulla seed (20 kg/person) to farmers through the newly established community based organization of Souk Jomaa (GDA).



Distribution of sulla seeds to farmers through local GDA

Benefits of Sulla

Sulla is highly palatable, nutritious and productive forage for ruminant production. It is cultivated throughout the Mediterranean basin, where it is extensively grown as a 2-year forage crop for grazing and/or hay and/or silage production. The species plays a key role in cereal-based systems of semi-arid regions, particularly in organic and low-input agriculture, and is commonly used to enhance the productivity and sustainability of farming systems.

One of the main values of sulla is its water requirement coupled to its ability to provide large amounts of palatable forage in steppe areas. There has been a growing interest in sulla due to its excellent adaptability to marginal and drought-prone environments, versatility as a good quality, high-protein forage crop, and its moderate levels of condensed tannins beneficial to ruminant production. Sulla is also a melliferous plant.

Discussion

The main three points raised during the discussion are as follow:

1- Establishment of the sulla cultivation:

- A plowing of 20 - 25 cm is indicated or a passage of chisel to 30-35 cm of depth.
- Usually sown from the end of September.
- The density per ha is 25 - 40 kg of seed in pods.
- Depth of seeding is generally superficial from 1 - 2 cm deep.

2- Use and conservation of the sulla:

- Sulla is suitable as green forage crop or grazing or for hay or silage.
- Sulla should be cut at early flowering as the stems can become woody after flowering and quality will be much lower despite higher yields.
- Sulla makes good silage. Including large amounts of sulla in silage (e.g. 75% and above) wilting may be necessary. A good fermentation was achieved when sulla was ensiled at a dry matter (DM) content of at least 35%.
- For hay, it should be cut before peak flowering, preferably around 10% flowering. Like other legumes.

3- Advantages of two years cultivation:

- In the establishment year, sulla should be lightly grazed to ensure good root development and plant numbers for the second year.
- Sulla does not tolerate heavy grazing as the relatively high soft crowns and succulent stems are preferentially grazed and easily damaged.
- In its first year, sulla gives about 20 - 30 T of green fodder/ha and in the second year: 30 - 50 T of green forage/ha.
- Sulla must be rotationally grazed.
- It should be grazed when it reaches about 40 - 50 cm in height.
- Sulla is best managed by cutting for forage/silage or strip grazing.
- When grazing, it is advisable to move large numbers of stock onto small areas for rapid grazing and prompt stock removal when the desired grazing height is achieved.

Focused on the advantages of sulla cultivation from soil preparation for sowing to harvesting and fodder conservation.

A sulla cultivation flyer in Arabic language was distributed to the participants.

Since the training was interactive, the farmers shared their knowledge of sulla with the trainers as well as the other participants. It was clear that the local population has previous knowledge of sulla cultivation and recognize that it is ideal for animal feeding (sheep, goat and cattle) and for soil protection (reinforcement in organic matter and protection against water erosion). However, farmers appear to totally ignore its exploitation and its conservation. The major problem encountered is the unavailability of sulla seeds in the market, which reduces the overall cultivation of sulla in the region.

Toward the end of the field day, farmers wishing to cultivate sulla in their private land were offered each a bag of 20 kg of *Hedysarum coronarium*. The quantity is enough to cultivate about 0.5 ha. All farmers are members of the GDA of Souk Jomaa which presented a good venue for a participatory community-based approach.

Appendix 1. List of beneficiaries who received sulla seeds.


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توزيع بذور سلة الشمال على الفلاحين / سوق الجمعة - جندوبية

الامضاء	الهاتف	كمية البذور (كغ)	الاسم واللقب	العدد
	54868034	20	فتحي بن عمارة خزري	1
	5422757604	20	سمير بن حسونة	2
	964969224	20	قيس بن محمد بن يقاسم	3
	93528976	20	جلول بن محمد الزين	4
	96021113	20	الحبيب بن صالح بن علي	5
		20	فيصل بن الحبيب خزري	6
	93.360.211	20	عبد الواحد بن مسعود خزري	7
	94.303.103	20	سهيل بن محمد بلقاسم	8
	95.367.036	20	صالح بن محمود خليفي	9
	95.296.790	20	نوفل بن الطيب خزري	10
		20	الناجي بن محمد الصالح	11
		20	الحبيب بن العائش بن علي	12

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











الامضاء	الهاتف	كمية البذور (كغ)	الاسم واللقب	العدد
	27.636.754	20	كسار بن العائش خزري	13
		20	مبارك بن العائش خزري	14
	94.366.335	20	ريمان بن حسن بن سعد	15
	97.638.716	20	تمدور بن محمود خزري	16
	98.992.431	20	محسن عثمان حويجي	17
	29.521.583	20	بلال بن حسن نهار	18
		20	حميد بن بوجمعة خزري	19
	92.562.573	20	عمر بن الحبيب	20
	96.702.293	20	محسن بن محمد المالح	21
	96.011.019	20	عبد الستار علي موزيدي	22
	98.690.714	20	بوجمعة بن صالح	23
	97.412.100	20	خالد بن خليفة خزري	24

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










الامضاء	الهاتف	كمية البذور (كغ)	الاسم واللقب	العدد
	96.702.273	20	ابن مر بن محمد الصالح	25
		20	الطاهر بن بلعيد	26
		20	عمار بن بلعيد	27
		20	فتحي بن محمد العربي	28
		20	نصر بن العميد	29
		20	الشادلي بن رابع	30
	97.731.163	20	عادل بن صالح بن الحبيب	31
	20.463.976	20	سالم بن حسين بن عباس	32
	97.699.160	20	موسى بن عمارة بن صالح	33
	24.483.391	20	علي بن رابع خزري	34
	94.140.012	20	عمارة بن محمد دخيلي	35
	95.101.528	20	عبد الرزاق بن الخزري	36

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











الامضاء	الهاتف	كمية البذور (كغ)	الاسم واللقب	العدد
	93.284.451	20	شكري بن رابع	37
	94.303.515	20	عاطف بن الطاهر	38
	96.661060	20	الفاضل بن خميس	39
	94.303.515	20	الطاهر بن خليفة	40
	51.014.636	20	خالد بن محمد الزين	41
	97463.178	20	بشير بن خميس	42
	94.820.046	20	الناجي بن الأخضر	43
	94.337.047	20	رؤوف بن حسن	44
	50.127.960	20	وليد بن الشريف	45
	54.900.318	20	وصيف بن الأخضر	46
	" "	20	مسروكة بنت ابراهيم	47
	" "	20	وسام بن واثق	48

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








الامضاء	الهاتف	كمية البذور (كغ)	الاسم واللقب	العدد
	93.030.622		و سام بن يوسف بن رمطان	49
	92.003.742		محمد الطيب بن كمار	50
	" "		سيف الدين بن بشير	51
	96.332.003		مراد بن الحسين بن الامين	52
	97.922.433		شادي بن حمودة هابري	53
	" "		حمودة بن محمد هابري	54
	" "		أنور بن خليفة	55
	41.509.278		حسن الهادي بن رابع	56
	" "		مهدي بن طالح بن علي	57
	92.756.157		رحيم بن الطيب	58
	98533728		خريد بن عبد العزيز	59
	96.702.273		عاطف بن خزري خزري	60

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











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	99.279.426	20	ذبيح بن خليفة	61
	" "	20	صادي بن مصباح	62
	" "	20	عمر بن الحبيب	63
	96.816.621	20	توفيق المظاهر للسعد	64
	23.345.880	20	صمة بن عامر	65
	" "	20	عبد الواحد بن يوسف	66
	" "	20	أنور بن يوسف	67
	94.303.515	20	فجيب المصباح رجب	68
	99.893.613	20	منجي بن علي بن عباس	69
	97.920.913	20	عبد الكريم عبيد بن أحمد	70
	98488940	20	جمارة حسنا بالامين	71
	96.332.003	20	مichel ماحسين بوزيدي	72

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














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	910.126.840		الأمينا بن عبد الله خزري	73
	93.831724		راجح بن الناجي خليف	74
	93.831724		عمار العربي خزري	75
			علي بن عباس خزري	76
			المولدي بن حاهر	77
	97.629.601		الناجي بن فرحات	78
	20.111.477		الجبيا بن معود خزري	79
	20.111.477		مديرة بفتا معود خزري	80
			صبيد بن مصطفى خزري	81
	58161.424		عمام بن علي و رعي	82
	22066098		زمزي بالكافي حامي	83
	24309541		عمام عبد الحميد خذير	84

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الامضاء	الهاتف	كمية البذور (كغ)	الاسم واللقب	العدد
		20	عبد الحميد بلحايش بن زمال	85
		20	صلاح الدين حاجري	86
	98 609770	20	فيل بن رحيو خزري	87
		20	نوار بن سلسا بن لسعيد	88
	97.818.797	20	عيسى بالأخضر خزري	89
		20	لطيفة بنت محمد بن أحمد	90
	27.56.76.86	20	عبد الكريم بن خليفة	91
		20	فخر بن خنيس	92
	97.049.526	20	الحبيب بن العياشي	93
	92.812.113	20	صودة بن يونس خزري	94
	26.714.311	20	حافظ بن صادق عزواضا	95
	92.44.76.26	20	مراد بن ميرزا بن لسعد	96
	99.363.841	20	بوجمعة بن حاهر	97
		20	انصاف بن مجيد	98
		20	عصيدة بن عبد العزيز	99
		20	احمد بن بوجمعة	100

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