



Report on Screening of wild varieties and landraces of forages from ICARDA genebank at Terbol station

Introduction

ICARDA exploited the 35,000 accessions of forage, pastures and range genetic resources in its genebank to enrich the forage agrobiodiversity in the MENA region. Under the project, a total of 1355 forage, pastures and range plant species have been subjected to field evaluation under rainfed conditions for drought resistance and high biomass yield. Suitability to cutting, grazing and combination of both have also been evaluated using the parameters of biomass yield, sward density and sward height under intensive and extensive dryland systems.

Material and Methods

A total of 1355 forage and range species accessions of fourteen genus from the ICARDA's genebank were tested in small plots at the ICARDA research station in Terbol, Lebanon (33.809251; 35.990037). The experiment was conducted during the growing season 2018-2019.

During the growing season, the precipitation was 900 mm (long term average 533 mm) and the average temperature 23.3 °C (long term average 21.8 °C). All plots were seeded and harvested by hand. Suitability to cutting, grazing and combination of both have been evaluated using the parameters of biomass yield, sward density and sward height (observation scale from 1 – 9) under intensive and extensive dryland systems.

Results

The main results and outputs are listed below:

- a total of 1355 accessions of forage germplasm from the ICARDA genebank (Fig 1) screened for high yield potential focusing on canopy width, biomass and dry matter yield and seed yield
- out of 1355 forage and range plant accessions a total of 279 accessions were selected consisting of 109 accessions (8.0 %) and 170 accessions (12.5 %) with high potential of forage production and rangeland improvement under intensive and extensive dryland systems, respectively (Table 1)
- most of the selected accessions are annual *Medicago* species. (68.1 %) and *Trifolium* species. (22.9 %). The remaining 9.0 % accessions are *Trigonella* sp., *Astragalus* sp., *Hedysarum* sp., *Melilotus* sp., *Coronilla* sp. and *Hymenocarpus* sp.
- 28 of the selected species for rangeland will be tested with other species in special palatability trials with sheep grazing during the growing season 2019-2020 on-station and on-farm
- the results are published through a poster presentation to an international conference organized on 12 December 2019 in Rabat, Morocco entitled: "L'Agriculture Face Aux Changements Climatiques: Voies d'Adaption"

Outlook

Out of 279 selected species a total of 246 accessions (enough seeds available) are seeded in December 2019 for a second-year evaluation in Lebanon on-station and on-farm. The selected species after the second-year evaluation in Lebanon will be tested during the growing season 2020-2021 also in other countries in the MENA region on-station and on-farm.

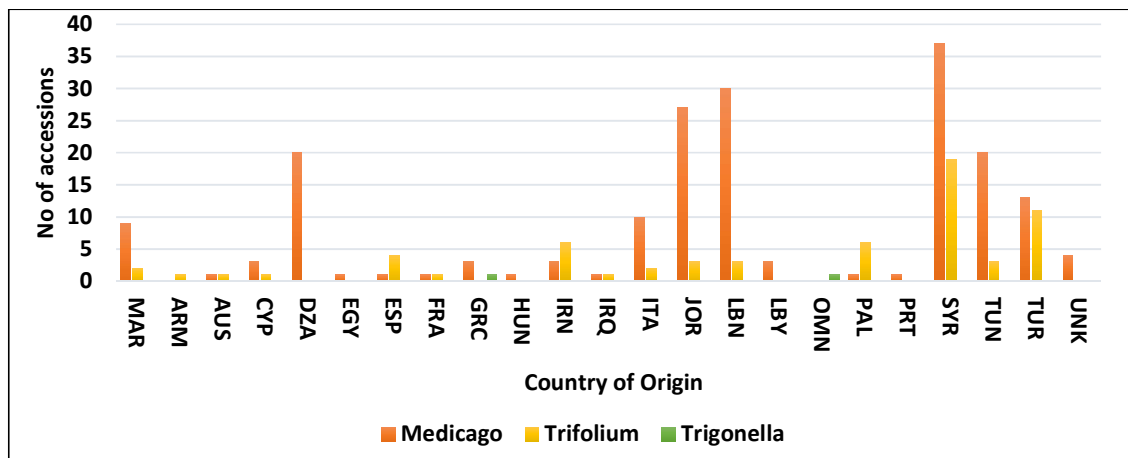


Fig 1: The country of origin for the selected accessions

Table 1: Yield, coverage, biomass, seed yield of 279 selected forage and range accessions (Scales: 1 –9; 1 = very low, 5 = medium, 9 = very high)

Crops	No of acc.	Estimated Coverage			Estimated Biological yield			Measured Biomass (kg m ⁻¹)			Rank
		Min.	Max.	Av.	Min.	Max.	Av.	Min.	Max.	Av.	
<i>Medicago</i>	190	2	5	3.7	3	7	3.6	0.42	3.5	1.55	1
<i>Trifolium</i>	64	1	8	3.9	3	7	3.6	0	3.39	0.94	2
<i>Trigonella</i>	2	3	3	3	5	5	5	0.29	0.51	0.4	3
<i>Astragalus</i>	3	2	3	2.3	3	4	3.7	0.07	0.32	0.17	4
<i>Melilotus</i>	18	1	4	2.1	3	5	3.6	0	0.15	0.05	5
<i>Hedysarum</i>	1	1	1	1	4	4	4	0	0	0	6
<i>Hymenocarpus</i>	1	3	3	3	3	3	3	0.02	0.02	0.02	7
Grand Total	279	1	8	3.6	3	7	3.6	0	3.5	1.28	



Fig 2: Screening and harvesting of forage and range species accessions at Terbol station

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