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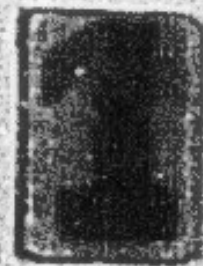
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Projet Régional de Développement Pastoral
Regional Rangelands Development Project
RAB - 90 - 001

ASSESSMENT OF THE SITUATION OF PASTORAL SEEDS IN JORDAN

Prepared by
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Amman 1992

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REGIONAL RANGELAND DEVELOPMENT PROJECT - PHASE II
(Algeria, Iraq, Jordan, Morocco, Syria, Tunisia)

RAB/90/001

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Table of Contents

I- INTRODUCTION

1 . General Features

- Location
- Population
- Natural Regions
- Climate
- Vegetation types

II- Rangelands in Jordan

Range Natural Zones

III- Rangeland Development Efforts

1. Development Activities

2. Range Development Policy, Strategy, Programmes, Projects

- The Policy
- The Strategy
- The Programmes
- Projects

IV- Country Seed Needs

1. - Present needs

- Present Seed collection localities
- Present use of collected seeds
 - . in nurseries
 - . in Rangeland

2. Future needs

3. Problems related to seed collection on use

V Seed Production Localities

VI Potentials of Seed Supply at regional level.

VII Institutions dealing with Pastoral Seeds in Jordan.

VIII Conclusions and Recommendations .

IX Seed Multiplication and Reseeding Demonstration Proposed Project.

Annexes

Maps

References

I. INTRODUCTION

1. General Features

Location: the Hashemite Kingdom of Jordan lies between 29° 20' - 32° 55' North Latitudes and 35° 50' - 39° 00' East Longitudes. It is surrounded by the following countries: Syria from the North, Saudi Arabia from the South, Iraq and Saudi Arabia from the East and Palestine from the West. Its area totals about 90 thousand sq. Km. (Map No. 1)

Population: It is totaled to 2,896,800. Rural Sector comprises 30.3% and the rest is urban living in country settlements of 5000 inhabitants and more.

Natural Regions: 4 major ecological regions can be distinguished each with its own pattern of Vegetation, Land use and Socio-economic features, two of them are further subdivided into ecological sub-regions:-

Region	Sub-region	Approx area ha
1- The Uplands	a- North-Eastern	400.000
	b- South-Eastern	150.000
2- The Steppe	-	1.000.000
3- The Rift Valley complex	a- The Jordan Valley	110.000
	b- The Dead Sea Basin	120.000
	c- The Wadi Araba Tract	260.000
4- The Desert Region	-	70.000.000

Climate: Jordan belongs to the Mediterranean climate which characterized by a cold rainy winter, and prolonged dry warm summer, with Arid Soil Moisture Regime.

- Sub-humid Mediterranean Bioclimate: which covers 1.2% of the Country Area in Ajlun and Salt regions. These areas receive 600 mm annual rainfall.

- Semi-arid Mediterranean Bioclimate: It covers 8.3% of the country Area with 300-600 mm average annual rainfall.

- Arid Mediterranean Bioclimate: It covers 18% of the Country Area, with 150-300 mm average annual rainfall.

- Saharian Mediterranean Bioclimate: It covers 71.5% of the Country Area, with 25-150 mm average annual rainfall. (Map 2)

Vegetation types: The general physiognomy of the Vegetation has been taken as a basis for the classification of vegetation types:

1. The Forest Vegetation: Divided into 3 categories:-

1) Machie Formation. is composed of Evergreen shrubs such as Quercus coccifera, Arbutus andrachne, Pistacia lentiscus, Cistus salvifolius, Oxyria alba, Phillyrea media, etc.

2) Needle Forests exhibit two types:

a- Pine Forests (Pinus halepensis). Located in Jerash and Ajlun districts, composed of trees with very irregular stems.

b- Juniper Forests. Located between Tafileh and Shubak. Juniperus phoenicia is associated with Cupressus sempervirens in small areas, highly denuded.

3) Broadleaf Forests also exhibit 2 types:

a- Evergreen Forests are composed of Quercus coccifera and Ceratonia siliqua. Wild olive are also common.

b- Deciduous Forests are mainly composed of Quercus agrifolia and Pistacia atlantica.

II. Savannah's, scattered small trees associated with shrubs and grasses, occur on plains near or below sea level, exhibits two types.

1. Acacia Savannahs, the main species are Acacia spirocarpa associated with Tamarix tetragyna and Haloxylon ammodendron. This type of savannahs occur near Gulf of Aqaba and in Southern end of the Dead Sea. Both distribution areas are possible connected through wadi Araba. Acacia spirocarpa and Haloxylon ammodendron both serve as fodder for goats and camels during winter.
2. Ziziphus Savannahs: Ziziphus spina-christi is the main species which associated with prosonia stephaniana, distributed in the northern end of the Dead Sea along the Jordan River Valley.

III- Steppe Vegetation: The dominant species is Artemisia herba alba and it is associated with Grasses such as Poa alnica, Festuca elatior, Lagurus ovatus, Bromus sp., Dactylis glomerata, Hordeum bulbosum, Phalaris tuberosa, etc. the steppe vegetation extends from Hafeq down to Ras Al-Naqab reaching its Clisax along the high plateau between Amhak and Naqab (Alt. 1400m) the Railway running from Hafeq to as'an is about the eastern boundary of the Artemisetum, but it penetrates into the desert area through the valleys running from east to west.

IV- Salina Marshes: mainly composed of Juncus maritima, Phragmites communis, Scirpus holoschoenus, Typha and several phenopodiaceae halophytes located in Jordan Valley, Dania, Ghor Safi, Feifa and Qa Al-Hafira (20km. South east of Qatana railway station) and around pools of Asraq.

V- Pastures: are composed of grasses as sorghum, Imperata, Eriochloa, Setaria, Phalaris, Alopecurus et. associated with Mesophytic herbs such as Malva, Sinapsis, Trigonella, Medicago, Trifolium etc. Malva rotundifolia is the dominant species in Wadies during December and January. Pastures of Valleys in Western part of the country such as Wadi Zigiabetc.

VI- Desert Shrub Vegetation: composed of Artemisia monosperma, Achillea, Betula nana, and many spinny and cushion shaped scrubs. It occupies Wadi Gueira in South, extending from Ras-El-Maqab to Wadi Al-Yutum, represents a poor grazing land.

VII- Dune Vegetation: mainly Haloxylon persicum and Suaeda vermiculata, former serves as fodder to camels and as a fuel to Beduins while the latter is good fodder shrub for camels and Goats. Anabasis articulata and Farula sinaica are the unpalatable species of dune vegetation. This type of vegetation occupies the sand dunes between Kharabet el Kithora, Hum and El-mudawara in the South.

VIII- Desert Galleries: these are the moist Wadi Bottoms occupied by Artemisia, Betula, Pistacia atlantica, Ochradinus baccatus etc. the last named shrub is a fodder for sheep, Goats and camels during winters. Poisonous shrubs such as Thymalea hirsuta and Daphne linearifolia commonly occur in galleries of the southern deserts.

IX- Stony deserts: lack plant cover and occupy a vast area extending from the Hejaz Railway to the eastern boundary. The soil surface is covered with flint stones, Basalts, volcanic tuffs and limestones. The Stony desert have no vegetation in summer, but ephemerals might grow in early spring.

I- Bad flats: also lack any plant life. The soil is very heavy, but considerably deep. Apparently poor aeration, high concentration of salts and the absence of organic matters are the causes of the lack of Vegetation. Deep ploughing, drainage and addition of organic manures may improve such soils.

II. Rangelands in Jordan

All lands which are not economically suitable for other agricultural activities due to ecological constraints and limitations, are used as rangeland. These lands include non-formed lands covered with native vegetation and farm lands which should be reverted to grazing because of either very low productivity, serious erosion hazards, salinity or alkalinity. In general, all areas receiving less than 200mm of average annual precipitation, are considered as rangelands excluding areas of runoff, flooding and irrigated areas, where farming systems exist.

Rangelands in Jordan represent about 30.5% of the total surface of the country. These lands are degraded and their soil heavily eroded and as a result their productivity and carrying capacity are very low. The productivity of these Rangelands dropped from 400 million feed units in 1975 to 262 million FU in 1981 and will continue to drop if these rangelands do not properly managed. However the natural rangelands in Jordan presently contribute to meet only 30% of the national livestock needs which totals about 2.1 million sheep equivalent (1983) in average year production conditions.

Natural Rangeland zones: Rangelands in Jordan ecologically can be divided into 3 main zones:

1. Desert rangelands: which receive less than 100 mm of average annual rainfall and cover about 7.5 million ha lies east of Hijaz railway. This area suffer of overgrazing, uprooting of Fodder Shrubs, uncontrolled movement of heavy trucks, and water and wind erosion. The production of this area have been estimated to be about 40 FU/ha. Sandstone, Granite massifs and Basalt lava flows covers a considerable portion of this area. The Importance of this rangelands comes of the big area it covers and because it is the main Watershed in the country. Due to inadequacy and erratic nature of the rains, development of this areas should be limited to the host sites and wadi bottoms through establishment of water harvesting and spreading systems and dams, good management and regulation of grazing herds.

2. Brush Vegetation Zone: This area extends from the western edge of the Jordan plateau from the Naqab Station in South to

about Qatreesa Station in North varying in width from two to five miles. The predominant vegetation is woody perennial mostly *Acacia* *horrida* *alba*. Remnants of former palatable perennial species can still be found as *Stipa lessertii*, *Lactuca silvestris*, *Lolium arvensis*, *Haloxylon articulata*, *Phalaris tuberosa*, *Hordeum bulbosum*, *Eruca hirta* and others. Rainfall averages between 150-200mm annually. This region should have the priority for management as Rangelands. Recovery of vegetation needs good management and reduction in grazing animals. Re-Seeding, water spreading and other methods will help. This zone covers an area of about 4000 sq. km.

3. Desert Zone: This is the northern extension of the brush vegetation zone. The average annual rainfall is about 200mm. *Eragrostis*, *P. bulbosum* and *Carex Stenohylla* are from the desert cover. At present vast tracts of this zone has been ploughed up

by tractors either to be planted by grain crops which rarely be harvested or to put under irrigation using artesian water. This zone has a good potentiality as rangeland supplemented by community farms and pastures, especially where ground water is available the area of this zone is about 8000 sq.km.

4. The Mediterranean upland zone: This zone comprises the area of the northern and southern highlands from syrian border to Naqab Station in the South. It includes the important forest area of Jordan and bulk of the cultivated land. The main forest tree species are Quercus conifera and Q. aegilops. Average annual rainfall varies between 250-600mm. Approximate area is about 8000 sq.km half of it is steep slopes and forest lands. This region is not yet managed according to landuse suitability. Soil and Water losses are heavy under effect of mislanduse.

III. Rangeland development efforts:

1. Development Activities: Rangeland development activities are of the oldest development activities carried out in the newly established state of Jordan. Vegetation and rangeland survey, establishment of Range reserves, Forage species trials, reseeding of local and introduced species, water harvesting and spreading activities and other activities had been carried out since the thirties of this century by Experts of Foreign aid agencies. This efforts had been not followed-up and continued due to lack of local specialized technicians. From the mid of Seventies on more importance was given to range development issues. More range reserves have been established and an annual plans of development and management of rangelands have applied.

Now there are 20 Range reserves with total reserved area of about 50,000 ha. (18,830) ha of this area have been improved by planting of Fodder shrubs, re-seeding, water harvesting and soil and water conservation practises.

2. Range development Policy, Strategy and programs.

a. the policy: the country's rangeland development policy is not clearly and openly announced yet. The Agricultural law No 20 for the year 1973 describes the range lands and their use regulate the rights in use of these lands and how to protect and manage them. Most of Articles in this law is not in practise now because of several socio-economic and management reasons. Its believed and agreed upon that there is a great need for a stable and strong range development policy which should stress on:

- * - Protection of natural resources and optimise their use in addition to conservation of the environment.
- * - Increase the contribution of Range resources towards reducing the importation of concentrates and red meat and Animal products.
- * - Create optimum full-time employment opportunities in the exploitation of rangelands as well as in settled communities.
- * - Provide the Rangeland users with facilities and possibilities of ensuring a decent living level comparable to other sectors of the society.

b. The Strategy: Range development should not be considered in insulation but as a part of the overall strategy for agricultural development. This strategy should include:

- * - Improvement of Rangelands conditions and productivity (Best grazing, Reseeding, Scarification, Shrub plantation, Soil conservation)

* - Establishment of a sound legal and ecological base for tenure and exploitation. The absence of a practical land tenure system has accelerated range deterioration and constitutes a major bottleneck to range management and improvement.

* - Improvement of stubble, fallows and other fodder production practices.

* - Improvement of herding and breeding practices.

* - Establishment of a fodder reserve in order to stabilize stock number and production.

* - Improvement of veterinary care

* - Stratification of livestock industry (Fattening operations on farms under irrigation or using cereal/medic/rotation-destocking of weaned lambs and culled ewes)

c- Rangeland development programmes: rangeland development programmes in Jordan can be classified into three activities:

1- Protection activities : this activity includes establishment of Range reserves or enclosures. Protection of natural vegetation increases rangeland carrying capacity by as much as 5 times and serves seed multiplication purposes. range reservation first started at 1946. At present there are 20 range reserves belong to Ministry of Agriculture with total area of 55.000 ha, and 6 reserves belong to cooperative societies with total area of about 8.000 ha.

2- Range improvement activities: Range improvement works through applying soil and water conservation measures, reseeding and planting of natural or introduced plant species up to now more than 22.000 ha of reserved rangelands being planted or reseeded by fodder shrub species.

3- Grazing management activities: a grazing management programme being annually implemented in range reserves, natural forests and older artificially afforested areas according certain regulations which assure sustainability of production of these areas.

d. Range development projects: in order to improve the natural rangelands and raise their productivity, range development works being carried out by three categories.

1. development of Government Rangeland by Government itself for benefit of herders.
2. development of Rangelands allocated to cooperative society members by the Government, by the members themselves for their benefit.
3. development of privately owned Grazing land by the owner farmers themselves with assistance of the government, for their benefit.
4. Livestock irrigation water and Desert Dam construction, prog. in this context, the following projects are worth mentioning:

1. Rangeland development project: through this project, 2000-2500 ha and 500-10,000 ha of Rangeland being annually planted by fodder shrubs by Ministry of Agriculture and cooperative Society members respectively. Through this project also 200-300 ha of Rangeland being annually reseeded by fodder shrubs seeds by Ministry of Agriculture.

2. Development of Zarqa River Basin Project through this project 1500 ha of state owned rangeland and 11882 ha of privately owned rangelands will be developed. The project started at 1986 and will end at 1995.

3. Hamad Basin development Project: This project aim at integrated development of 4 pilot areas proposed for development on a pilot basis by Arab center for study of Aridlands and Dry regions (ACSAD) on the entire Hamad Basin which covers an area of 108,000 sq/km of Badia lying between Jordan, Syria, Iraq and Saudi Arabia. This project consists of a number of pilot projects in the area including utilization of stored rain water development of Groundwater, rangeland and livestock, and expansion of basic health and educational services.

4. Rangeland development, and management, study and research works carried out by national center for Agricultural research and technology transfer.

IV Country Seed Needs

At present, country relies on collection of fodder shrub seeds for rangeland development activities. The seeds collected usually used either for fodder shrub seedling production in Nurseries or for reseeding of natural rangelands. Annually 3.5-4 million of seedlings used as fodder shrubs being raised in 12 nursery in Jordan the main species produced are: Atriplex halimna, A. nummularia, A. canescens, A. Semibacata, A. leucoclada, Acacia cynaphylla, A. farnesiana, A. tortilis, Prosopis juliflora, Calutia istaria, Zetana ratean, etc.

Also 2-3 hundred hectares of rangelands being annual reseeded by *Atriplex halimus*, *A. leuconclada*, *Salicola variegata* in Madaba, Kerak, Amman and Salt districts. The total amount of seed being collected 1.5-2.0 Tonnes. These amount collected of seed mother stands in nurseries or in forest areas (in case of *Acacia's*, *Prosopis* and some *Atriplex* species) or from range reserves like Ma'in (Madaba), Adassiyah Amman, Arda Salt, and Kerak. Shrubs raised in nurseries, the seeds of *Atriplex halimus*, *A. leuconclada*, *Salicola variegata* and other used species being collected from selected protected locations in Range reservations or forest areas. The seeds being manually collected and extracted by Employees of the nurseries and Regional Range Service under close direction of the central rangeland division staff of the Department of Afforestation and Forests of Ministry of Agriculture.

Present Seed Collection Localities:

Acacia's, *Prosopis*, and other *F. lder* tree species being collected from selected mother trees grow in Forests or Road-Side plantations. *Atriplex nummularia* being collected from mother trees.

Present use of collected Seeds: The collected seeds used presently either for fodder shrub seedling production in nurseries or for direct reseeding in rangelands. In nurseries the seedling being raised in polythene bags of 30 x 250-300 mm height. The seeds being direct seeded in bags. Usually the germination rate of seeds relatively low (about 35-75% for *Salicola variegata*, 50-80% for *Atriplex halimus*, 15-35% *A. conarcana*, 2-25% for *A. nummularia*, 2-10% for *A. leuconclada*). The vigorous plants which grow in favorable environments, usually have higher fertility rate. Usually, the nurseries start planting the seeds in May-June (except in Khaldiyyah nursery which do the seeding in

winter due to salinity of irrigation water), so the age of fodder shrub seedling used in plantation is (7-8) months. (in Khaldiyyah case one year).

Direct re-seeding in Rangelands: Since range vegetation development by plantation of Fodder. Shrubs is too costly in Jordan (250 JD/ha) due to high number of labours involved in soil preparation, plantation and seedling production and transportation, the Department of Afforestation and Forests (DAF) started since some years to reduce plantations and use direct re-seeding of Fodder shrub seeds in rangelands. The cost of development per ha is reduced by 80-80% compare to plantation. The seeds are being manually broadcasted on the contour ripped soil or on prepared lines and covered lightly either by foot or hand harrow, no pretreatment being used for the seeds used.

Country's Future needs of Seeds: The future needs from seeds depend on the Government programs in regard to range development for the next years, both for plantations and re-seeding. The declared goal now is green Jordan by year 2000. That mean the Department of Afforestation and Forests will act hardily to plant all lands suitable either with forest trees or fodder trees and shrubs (as multipurpose trees). DAF plans are:

- * - Plantation of 17500 ha with Forest and fodder tree and shrubs
- * - Development of 180,000 ha of Rangelands through plantation and reseeding.
- * - Plantation of 15000 ha of Forest lands with Forest trees and Fodder shrubs
- * - Reservation of New Rangelands to be developed in future (the goal is reservation of 10% of total rangeland areas)
- * - Development of 3500 ha of communal (Rangelands by cooperative society members through plantation and reseeding

- * - Plantation of 1000 ha, and reseeded of 500 ha of private rangelands within Zarqa River Basin development project area

- * - Development of 8000 ha of Rangelands within Hamad Basin development project by water harvesting and plantation of Fodder Shrubs.

From these projected targets and programmes, it is easy to notice that the country's need for Fodder shrub seeds and other Range Plants will increase in next years, in addition to use Forage Species never had been used in past in development activities like legumes, grasses, other shrubs and subshrubs.

The expectation for the future are:

- * - DAF will maintain the same level of the quantity of Fodder shrub Seedling raised in its nurseries.

- * - DAF will put more emphasis on development of Rangelands using reseeded. So, The areas being reseeded in future will increase rapidly

- * - DAF will make big efforts towards use of annual and perennial legumes and grasses in addition to fodder shrub and sub-shrub seeds in reseeded activities.

- * - DAF will continue to manage its natural Forests for the benefit of livestock raising (sustaining silvipastoral system) and will develop their ground cover vegetation by reseeded of Forage plant species.

Putting these prospectives in mind, it is expected that the average future need of seeds used in range development activities in Jordan will be about 7-10 tonnes Annually.

3- Problems Related to seed collection and use

- * - Lack of information about the phenology of plants and their seeds

- * - inadequacy of trained manpower who take the responsibility of seed collection, extraction and handling
- * - Low level of awareness among Technicians, populations and institution about the efficiency reseeding of rangelands
- * - Fluctuation of amount of rains in the rangelands make the reseeding activities not assured and the seeding operation should be repeated for several following years.
- * - The seeds of some Fodder species (*Acacia tortilis*, *Calupia* sp) infected by insects in pods on the trees, so in most times, it is not easy to find the desirable amount of sound seeds.
- * - degradation of natural vegetation as a result of misuse practices, which led to disappearance of the most desirable pastoral species in large tracts of rangelands
- * - the lack of seed collection, extraction, testing and storage facilities in the country.

V. SEED PRODUCTION LOCALITIES

The following areas have a considerable interest from phyto-ecological, socio-economic and Geographic point of view (Map No.

2)

1. Main reserve - Madaba district

This area is located on the eastern slopes of Dead Sea, its Elevation range from 100 beneath Sea Level up to 800m above Sea Level. The area of the first phase of this reserve is 8300 ha. rainfall ranges between 150-300 mm (from down to up the mountains. Mean annual temperature in this area ranges from 15.2-23.6 where as mean annual maximum and minimum temperature range from (21.0-29.8co) and (9.1-17.3co) respectively. It contains different types of soil range from sandy to Loamy, silty Loamy of different depth. This area represent a transitional zone between mountainous mediterranean uplands and Brush vegetation zone. From plant succession point of view this area represent a degraded stage of *Artemisia herba alba* vegetation. Now, this area is un-

der protection and annual 300-400 ha of it being planted or reseeded. *Atriplex leucoclada*, *A. halimna* and *Salsola vermiculata* seeds being collected from this area. This area represent a great potential in seed collection and multiplication of the pastoral species listed below:-

Perennials

- *Artemisia herba alba*
- *Gymnocarpus decandrum*
- *Helianthemum rosicarpum*
- *Setaria rostrata*
- *Atriplex leucoclada*
- *Monarda mucronata*
- *Dactylis glomerata*
- *Stipa lagascae*
- *Ephedra alata*
- *Trifolium cluail*
- *Astragalus baer shabensis*
- *Oryzopsis sp.*
- *Poa bulbosa*
- *Hordium bulbosum*
- *Aristida coarctata*
- *Salsola vermiculata*
- *Stipa barbata*
- *Hymenocallis hirta*
- *Oryzopsis borealis*
- *Alnus tuberosa*

Annuals

- *Anthemina sp.*
- *Onobrychia sp.*
- *Eragrostis hispanica*
- *Plantago coronopus*
- *Schismus arabicus*
- *Urtica plicata*
- *Astragalus hamosus*
- *Bromus scoparius*
- *Stipa capensis*
- *Agrostis kotschy*
- *Plantago ovata*
- *Rathia aspera*
- *Scabiosa palaestina*
- *Koeleria phleoides*
- *Medicago bruceolata*
- *Medicago lacinata*
- *Onobrychia christa*
- *Hemipocrenia sp.*
- *Stipa parviflora*
- *Hordeum glaucum*
- *Lolium temulentum*

Balab Range reserve and proposed Seed Multiplication Site.

This area is located at the western slopes of Ajlun mountains facing Jordan Valley and represents the Deciduous Quercus agrifolia forests with different stages of degradation. The amount of rainfall for this area ranges between 400-500mm. soil type is light to dark brown terra rossa formed on limestone. Its texture varies from sandy loam to sandy clay.

This area now is being protected and developed by plantation and reseeding of Acacia cyanophylla and Atriplex halimus and being managed for grazing. It has big potential to serve as seed collection and multiplication site for the following sp: Erodium cicutarium, Bromus sterilis, Dactylis glomerata, Vicia hybrida, Poa bulbosa, Sclerurus ridgii, Trifolium stolonatum, T. resupinatum, T. compositum, Hyparrhenia hirta, Atriplex halimus, Rhynchospora alba, Urtica dioica.

Wadi Shu'ayb area:

This area represents pastures of Mesophytic vegetation of Wadi Slopes. These wadi's cross the mountainous northern mountains from east to west and end in Jordan Valley. The average rainfall of this area is 200-400mm. Wadi Shu'ayb area now is being planted with multipurpose fodder and forest trees and being protected and managed for grazing this area can serve as collection and multiplication site for these species: Malva parviflora, M. rotundifolia, M. sylvestris, Aletris aegyptiaca, A. involucrata, Agrostis scabra, Avena sterilis, Bromus sterilis, Dactylis glomerata, Lolium perenne, Poa an-

and *E. bulbosa*, *Sarcobatus halimifolius*, *Lathyrus bearyanaia*, *Viola hybrida*, *Trigonotis alarica*, *Ziziphus spina christii*, *Erodium* sp., *Senecio alba*, *Pisum tunisia*, *Sinapis arvensis*.

4.5 Surra and Khanasri Reserves:

This area represents the steppe Range area which extends from the Naqab in the south northwards to Naftaq area and consists of brush vegetation (See II-3). The average annual rainfall of this two areas is 150-250mm. The soils are loam and sandy loam. These areas are protected as range reserves since 1948 the natural vegetation consists of: *Artemisia herba alba*, *Alopecurus anthoxanthoides*, *Ansilops variabilis*, *Avena sterilis*, *A. wicetii*, *Bromus lanceolatus*, *Dactylis glomerata*, *Euphorbia bulbosa*, *U. spontaneum*, *Koeleria schooides*, *Lolium citidus*, *Echalaris alior*, *E. tuberosa*, *Poa sinensis*, *Stipa capensis*, *S. breviflora*, *Salzola var. sinensis*.

6. Large desert reserves:

This area (600 sq/km) located to the west and south-west of Azraq Oasis at about 80 Km east of Amman. Elevation (500-700)m. Annual rainfall 50mm, the soil types are Grey desert soils, Solonchaks and Alluvial soil with relatively high salt and Gypsum content. The vegetation cover of this area: *Pistacia atlantica*, *Sistraria retusa*, *Tamarix naccor-cuma*, *Artemisia inculata*, *Achillea fragrantissima*, *Atriplex halimifolia*, *Solidaria rosmarinifolia*, *Salzola tetrandra*, *Haloxylon salicornioides*, *Anabasis articulata*, *Erythraea arabica* (*Amargosa sparsiflora*), *Stipa capensis*, *Hordeum elatense*, *Avena barbata*, *Collinsonia coccinea*, *Ephedra transitoria*, *Echalaris alior*, *Erythraea* sp., *Erodium* sp.

7. Wadi Shara area

This area represents Wadi Araba and South-Eastern desert with its sand dunes between sand stone and Basalt volcanic massifs. The rainfall of this area is about 50mm annually. This area is not protected yet and proposed for protection in near future. The vegetation cover of sand dunes consist of the following species: *Haloxylon persicum*, *Anabasis articulata*, *Haloxylon schweinfurthii*, *Traganum nudatum*, *Echinopsylon muricata*, *Hilacromia* sp., *Danthonia forskahlei*, *Quadrantia mesphitica* *Stipa capensis*, *Schismus barbatus*, *Aristida plumosa*, *Boissiera pumilia*, *Bromus hachvatachya*, *Lolium rigidum*, *Lotus pusillus*, *Eremobium lineare*, *E. aegyptiacum*, *Haloxylon persicum*, *H. salicornicum*, *Colligonum commosum*, *Artemisia Judaica*, *A. monosperma*, *Retsma duriaei*, *Rhus tripartita*, *Gyanocarpus fruticosus* and *Acacia tortilis*. *A. spirocarpa* and *Ocradinus baccatus* are common on wadi coarces and nearby slopes.

8. Wadi Araba proposed reserve.

This location represent the area extends from the Gulf of Aqaba at the South to the Dead Sea at the north, its elevation ranges between 400m below Sea level up to 600m above Sea level. The average annual (rainfall of the area is around 50mm.) The vegetation type is scattered Acacia Grassland which occur on terrestrial and alluvial sand. The following plant species are common in the area: *Acacia spirocarpa*, *A. radiana*, *Ocradinus baccatus*, *Colligonum commosum*, *Salvadora persica*, *Balanites aegyptiaca*, *Haloxylon persicum* and the grass species, *Panicum turgidum*, *Desmostachya bipinnata*, *Schismus barbatus*, *Aristida plumosa*, *A. adscensionis*, *Pappophorum foxtii*, *Stipa barbata*, *Stipa tortilis*, *Danthonia forskahlei*, *Scleropoa mesphitica*.

9. Irbid Seed Collection and multiplication proposed reserve:

The proposed site can be precisely selected in one of Forest plots near Irbid-Umm Qeis Road. This area represent the vegetation type of Deciduous Quercus aegilops forests which grow on large area extends from Yarmouk river at the North to Bahhath near Amman at the South. Soil type is light to dark brown terra rossa formed on limestone. Average annual rainfall is 400-500 mm. the elevations range of 100-750 m above sea level. Another representing location proposed for seed collection and multiplication purpose is to east of Jerash in Mafraq or Zarqa District Lands. The plant species growing in this areas are: Quercus aegilops, Ceratonia siliqua, Pistacia atlantica, Styrax officinalis, Hordeum bulbosum, Bromus sterilis, Dactylis glomerata, Vicia hybrida, Poa bulbosa, Phleum tenue, Scleropoa rigida, Trifolium stat-latum, T. resupinatum, T. campestre.

VI. Potentialities of Seed Supply at regional level

At present time, seed collection activities and the amounts being collected are matching the country needs for Range development programmes and projects. There is a great potentials of expanding the seed collection activities, either in the amounts of seed collected or number of plant species used in collection to meet the probable future needs for the country and outside demand. The Geographical location of Jordan and its floristic richness as a place where four major plant Geographical regions encountered (namely: Mediterranean region, Sahara-Arabian region, Sudanian region and Irano-turanian Region) enables Jordan to contribut effectively in supplement of a big number of Dryland fodder shrub and pastoral species, specially the species listed in Appendix (1).

VII. Institutions dealing with Pastoral Seeds in Jordan

1. Forestry Seed Center-Kenaliyya- Jordan

This center has been established in 1992 in Department of Afforestation and Forests (DAF) of Ministry of Agriculture (MOA). The center aims on conservation of Genetic resources of natural Forestry and Range plant species, establish and facilitate seed collection resources, carry-out all activities related to seed collection, extraction, testing, storage, Documentation, handling and marketing.

The center consist of collection, extraction, testing, and storage and backaging unites, and having cold storage facilities. The Center has storage capacity of about 10 tons of Seeds.

Due to newly establishment of the center, its dealing now with improved seed activities related to forestry and Fodder species raised in Nurseries for the future, the Center will take over full responsibility of all forest and range seed collection and handing.

2. National Center for Agricultural Research and Technology Transfer (NCARTT). The Agricultural research body of the Ministry of Agriculture which dealing with all research aspects related to Agriculture including range development and management.

NCARTT has the Genetic Resource unit dealing with Pastoral Seeds through:-

- Discription of their natural Habitat, and
- Relationship between the natural distribution of them and, Climatic and edaphic factors inorder to establish improved production.

The activities of the unit are, collection of seeds of Wild legumes, Wild barley and wheat in different sites representing the various ecological zones with soil samples, and evaluation of the results for further studies.

The center co-operate with Local Institution (Universities, DAF, JCO) and Regional ones (ICARDA, ACSAD, ICRPGR) in its research work.

3- Seed Center of the Faculty of Agr. of University of Jordan(U.O.J)

The activities of this Center are:

- research activities on the Seeds of Cereals and Pastoral plants,
- Co-operation with international Seed bodies in organization of training courses and workshops (on seed testing, Seed health, Seed certification etc)

4- Jordan cooperative Organisation (JCO) through Jordan Australian Project for development of reinfed agriculture. This project which being carried-out in close cooperation with JCO, MOA, NCARTT, and UOJ), doing research and demonstration trials on Medico varieties and their role in range development in areas receiving more than 300mm annual rainfall, also, the project deals with Seed multiplication programmes for Vetch and Medica and introduction of them in Rotational Cycle with Cereals.

VIII. Conclusions and Recommendations

a- Conclusions

1. Fodder shrub and pastoral seeds being manually collected and extracted in full accordance with country range development programmes and projects.. The annual collected Seed amount totals to about 1.5-2.0 tons.

2. Seeds of Fodder Shrubs like *Acacia* sp. and *Prosopis* sp., *Colutea*, *Atriplex* sp. being collected and used to produce 3-4 million fodder shrub seedling to be planted in rangelands. While the collected *atriplex halimus*, *Atriplex leucoclada* and *Salzola vermiculata* seeds used in reseeding of 200-300 ha of rangelands annually.

3. Country Range development programmes and projects emphasize on importance of reseeding as a practical solution cheap alternative for high costly plantation operations.

4. Due to its Geographic location, Jordan have a very rich floristic composition of species suitable for Aridland climatic conditions, and which have high value as fodder. There are a great potentials for seed production, either to meet local needs or to support the outside needs in the region or other places.

5. Presently Seeds being collected from selected fodder trees growing in forests, Range reserves or in Nurseries. There is no seed multiplication activities carried-out in Jordan in regard to Pastoral seeds.

6. The newly established Forestry Seed Center will be responsible about collection, extraction, testing, storage, handling and of all Forest and Pastoral Seeds, and will be the channel of communication in regard to pastoral seeds.

2- Recommendations:

* - The country should adapt a clear rangeland development policy (including land tenure issues, proper landuse (legislation management of rangelands and livestock sector) and define a specific long term programmes for rangeland development and management.

* - In order to implement range development activities, DAF should give a bigger importance to develop the technical capabilities of its staff through inside and outside training activities on Range development activities including seed collection, handling and reseeding.

* - Since the development of Rangelands through plantation is too costly, more importance should be given to minimize these costs through using reseeding of Rangelands and design implement range reseeding programmes for all locations under development.

* - Since the reseeding programmes require considerable amounts of seeds, DAF should secure this amounts through:

- establishment of permanent seed reservations used only for seed collection..

- selection of suitable location as seed multiplication sites.

- import suitable pastoral seeds from areas having same condition in the region and other places to be used as mother plants for future seed collection activities.

- Special attention should be given to the most desirable range plant species which disappeared or endangered due to misuse and heavy grazing pressure on range areas. In species usually infected continuous monitoring and preventive precautions should be carried out.

- DAF should give special importance to the possible co-operation with other institutions at regional level using the possibilities provided by the Regional Rangeland Development project- Phase II - RAD/90/001.

- Due to lack of information on pastoral (Seeds on regional level, its recommended that a regional study be conducted on pastoral seed issues.

- RAB/90/001 should act immediately towards establishment of Regional Pastoral Seed Network, and the concern institutions in the region should cooperate effectively in that.

IX SEED Multiplication and Reseeding Demonstration Proposed Project

The long term objective: Development of rangelands in order to promote its contribution to the national economy and improvement of environment and combat Desertification.

The Short term objectives:

- * - increase the Rangeland areas developed by reseeded in order to reduce the high cost of range development by plantation of Fodder Shrubs.
- * - conservation of most desirable natural range plant species endangered or disappeared from rangelands due to heavy grazing and misuse.
- * - secure the local and regional demands from Pastoral Seeds in due time.
- * - improve of the information and Data regarding Pastoral Seed aspects.
- * - increase of the efficiency of local personal dealing with seed and reseeded issues, through training activities.

ACTIVITIES

- * - Conservation of 10 plots as seed mother plants (The size depends on the type and richness of vegetation) represent the major phyto-ecological areas in the country.
- * - Establishment of (4) Seed multiplication areas in four different ecologic zones.

- * - Selection of 10 Reseeding Demonstration Sites and design and implementation of reseeding activities in these sites.
- * - Carrying out annual monitoring and evaluation activities of the Demonstration Sites and the other sites.
- * - Participation of 2 technicians in training session on seed multiplication and reseeding activities outside the country for 8 weeks each.
- * - Organize 2 local training sessions for 12 technicians for one week for each.

INPUTS

		US\$
Project Manager (local)	1 (24 months)	11,000
Fencing material	(24000 meter long)	110,000
Pastural Seeds		10,000
Seed collector	(2)	12,000
Chisel Seeder	(2)	12,000
Tractor	(1)	25,000
Pick-up	(1)	25,000
Hand tools		5,000
Training costs		10,000
In-Service Training		15,000
Miscellaneous		10,000
Total		245,000

Annex No. 1

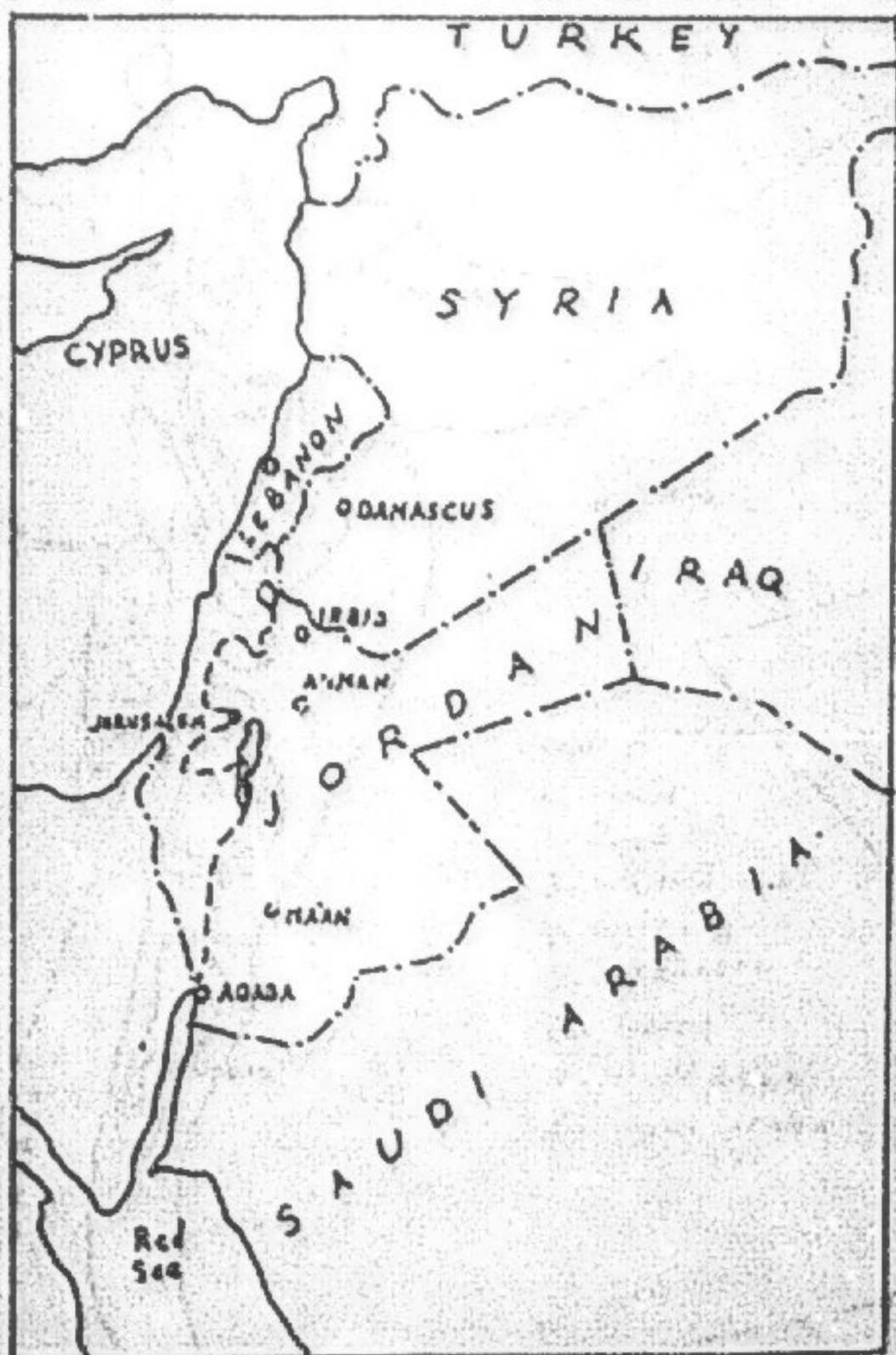
List of Plant species which Jordan have considerable potencial for production and marketing.

- *Atriplex halimus* L.
- *Atriplex leucoclada* Boiss.
- *Atriplex nummularia*
- *Acacia tortilis* (forssk) Hayne
- *Acacia senegal* (L)
- *Acacia farnesiana*
- *Acacia arabica*
- *Aristida* sp.
- *Avena subsp. sterilis* h.
- *Artemisia herba alba* Asso
- *Artemisia Judaica* L.
- *Artemisia tridentata* Del.
- *Achillea fragrantissima* (Forssk) sch. Bip.
- *Asparagus officinalis* L.
- *Aegilops ovata* auct. non L.
- *Ercalla* sp.
- *Colutea istria* Mill.
- *Ceratonia siliqua* L.
- *Carex* sp.
- *Cynodon dactylon* (L) pers.
- *Calligonum* sp.
- *Dactylis glomerata* L.
- *Ephedra alata* Decne
- *Erodium* sp.
- *Hymenocallis hirta* (L) Stapf
- *Hordium bulbosum* L.
- *Hordium spontaneum* C. Koch esend
- *Haloxylon persicum* Ege.

- Gynocarpus sp.
- Lathyrus L.
- Lolium rigidum Gaudin
- Medicago sp.
- Moringa ontara Gaertn
- Oryzopsis holciformis (Bief) Hackel.
- Oryzopsis miliacea (L) Aschers. & Schweinf.
- Oenothera Mill. Sp.
- Ochradenus baccatus Del.
- Pennisetum sp.
- Platelia var atlantica
- Prosopis juliflora
- Prosopis tinctoria
- Panicum turgidum
- Poa bulbosa var bulbosa
- Poa sinensis
- Rattus rattus (Forsk.) Webb. var rattus
- Rhus tripartita (Bernard de Uoria) DC.
- = = = (= = =) Grande
- Stipa capensis Thunb. prodr. Fl. Cap.
- = barbata Desf.
- = Lagasciae Roem. & Schult.
- = Parviflora Desf.
- Salicaria verticillata L.
- Trifolium sp.
- Vicia sp.
- Ziziphium lotus (L) Lam.
- Ziziphium anina-christi (L) Desf.

MAP 1

GEOGRAPHICAL LOCATION



Map of the study area in the Euphrates valley, showing seed production localities. The map includes contour lines (100, 200, 300) and labels for various locations: LADAKH, NAFRA, KAFKAN, KAZRAD, and KAFKAN. A legend titled "Seed production localities" lists eight numbered locations: 1. Meir, 2. Rijeb, 3. Wadi Shuib, 4. Surra, 5. Khanasri, 6. Araq, 7. Wadi Khum, and 8. Wadi araha.

REFERENCES

Abu Setta: Rangelands in Jordan 1998

Saki Kesapliligil: An ecological Survey of the Vegetation. In relation to forestry and grazing zone 1965

Bruce Hancock: Jordan Australian Dryland Farming Project Annual Report, Final Report 1991

Department of forests and Soil Conservation: Rangelands in Jordan, Amman 1986

Geddes N.E.: Proposals for Rangeland Development In Jordan, Arrival Report, 1990

Long G.A.: The Bioclimatology and Vegetation of Eastern Jordan, 1957

Masria: Range Management and Stabilization of Nomadic Sheep Husbandry Rome 1983

Maha Syouf Plant Genetic Resources in Jordan (NCA RTT) Scientific Paper 1990-1992

Rihani, And others: The Natural Resources in Ma'in Pilot Perimeter Amman 1987

RSCN: Azraq desert Reserve Development Plan Amman 1978

UNDP/FAO: Forestry and Rangeland Development Project
JOB/37/007 Doaff Summary - Rangeland conditions Proposals for
development, Amman 1991

IRBBDP : Viability Study of Zarqa River Basin Development
Project Amman 1990

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المشروع الاقليمي لتنمية المراعي

Projet Régional de Développement Pastoral
Regional Rangelands Development Project
RAB - 90 - 001

تقييم وضعية البنور الرعوية بالأردن

إعداد

المهندس مسند مهييرات

عمان 1992

بسم الله الرحمن الرحيم

تاسيم وتسمية التطور التربة في الارض

حسنه هيرات

الطبعة الأولى -

.....

× يقع الارض بين خطوط العرض ١١° - ٢٠° ٢٢' ٥٥ شمالاً
وخطوط الطول ٢٥° - ٥٠° ٢١' ٢٠ شرقاً

× ويحده من الشمال سوريا ومن الجنوب السعودية ومن الشرق العراق والسعودية وثريا للبحرين المحتلة

× وتبلغ مساحة الارض ١٠٠ ٠٠٠ كم وسكانه ٢٠٨١٦٠٠٠ نسمة منهم ٢٠ % يقيمون في الريف

× ويمكن تقسيم الارض الى اربعة اقاليم رئيسية هي:-

١- المرتفعات الشرقية :-

(أ) المرتفعات الشرقية الشمالية ٤٠٠ ٠٠٠ هكتار

(ب) المرتفعات الشرقية الجنوبية ١٥٠ ٠٠٠ هكتار

٢- السهوب :- ١٠٠ ٠٠٠ هكتار

٣- حرة الابتنام :-

(أ) وادي الارض ١١٠ ٠٠٠ هكتار

(ب) حوض البحر الميت ١٢٠ ٠٠٠ هكتار

(ج) وادي عربة ٦٦٠ ٠٠٠ هكتار

٤- الاقاليم الصحراوية :- ٢٠ ٠٠٠ هكتار

× ويسود مناخ البحر الابيض المتوسط المميز بشتاء بارد وممطر وصيف طويل وحار ويحتوي تلال رطوبية جافة ويمكن تقسيمه الى ثلاثة اقسام :-

- ١- متوسطي تحت رطوبي - يغطي ١٠,٢ % من المساحة الكلية ومناخه ٦٠٠ ملم / سنة
- ٢- متوسطي شبه جاف - يغطي ٨,٢ % من المساحة الكلية ومناخه ٢٠٠ - ٦٠٠ ملم / سنة
- ٣- متوسطي صحراوي - ويغطي ٧١,٥ % من المساحة الكلية ومناخه ٢٥ - ١٥٠ ملم / سنة

× الانواع النباتية واعتماد على تصنيفها الى اربعة اقسام ويمكن تقسيمها الى عشرة اقسام :-

- ١- النباتات النابتة :- وتشمل الاتجار عريضة الاوراق الدائمة الخضرة والمتساقطة الاوراق والاشجار الابدية (صنوبر - عرعر)
- ٢- نباتات السافانا :- تتكون من اشجار صغيرة ومعمرة وتشمل سافانا الاكاسيا (Acacia) وسافانا السنبل والنباتات المعمرة
- ٣- نباتات السهوب :- وتشمل شجيرات الشج والاشجار والحقول وتمتد من الطرق الى راس النقب
- ٤- النباتات الطحلبية :- في وادي الارض والاردق وفيه الماشي وتضم الشجيرات التي تتحمل الطحلبية
- ٥- المراعي :- وتشمل الامشاب التي تنمو في الوديان مثل وادي زقلاب والمناطق الغربية
- ٦- النباتات الشجرية الصحراوية :- وتشمل الشج والقيوم والرتم وتضم مناطق راس النقب ووادي النعم

- ٧- نباتات الكبان :- وتشمل نباتات الغطاء الصخرية في رم والمردية
- ٨- الاودية الصحراوية :- تشمل الاودية الصحراوية الجنوبية وتضم نباتات التين والرم والبطم الاطلسي
- ٩- الصحراء الحجرية :- وتند من خط سكة الحديد الى الحدود الشرقية منطقة حجارة الباروت والحجارة البركانية
- ١٠- السطحات الطينية :- قرب نفطة بسكة نخلة من الحياة النباتية

« المراسي في الارض :-

.....

تشمل ارض المراسي في الارض المناطق التي يقل معدل الهطول فيها ٢٠٠ ملم سنوياً ، ما عدا الاراضي الذي يتوفر لها رى مستديم حيث ينطبق عليها نظام المزارع . وتشكل المراسي ما مساحته ٦.١١ من مساحة القطر التي تعاني من الجفاف والتربة الصخرية وتغطي طمس ٢٠٪ من الاحتياجات المائية للثروة الحيوانية في الارض والطيرة بحوالي ١ و ٢ وحدة وحدة .

ويمكن تقسيم المراسي في الارض الى اربعة اقسام :-

- ١- المراسي الصحراوية :- اطارها المل من ١٠٠ ملم / سنوياً مساحتها ٧,٥ مليون هكتار نظراً لانتاجها ٢٠ وحدة للهكتار وتقع شرق خط الحديد وهي الحوض الثاني الرئيس في المنطقة .
- ٢- منطقة الشجيرات :- تمتد ما بين المرق في الشمال وراس النقب في الجنوب ويمر في يتراوح ما بين ٨-٢ كم اطارها ما بين ١٥٠-٢٠٠ ملم / سنوياً ومساحتها ٤٠٠,٠٠٠ هكتار ، ونباتاتها السائدة الشج والعمود وحشيشة البستان ، والشعير البري .
- ٣- منطقة الامتاب :- وتند ما بين المرق شمالاً الى الحدود العراقية ، اطارها ١٠٠ ملم / سنوياً ، ومساحتها ٨٠٠,٠٠٠ هكتار ونباتاتها السائدة القبا النعلى والساني .
- ٤- المنطقة المنخفضة المرتفعة :- وتمثل المرتفعات الشرقية والمنخفضات الطلة على وادي الارض ما بين الحدود السورية وراس النقب جنوباً وتضم مناطق الغابات .

8

« الجهود المبذولة لتطوير المراسي :-

.....

تعتبر أنشطة تطوير المراسي من المدم الأنشطة التي بدتها عند تأسيس المنطقة مثل مسح ارض المراسي ودراسة الغطاء النباتي وتأسيس المحميات الرعوية وتجارب انواع الاملاط واذاً بطار الانواع المحلية والمخلطة كذلك أنشطة حماد ونشر البساتين تم عليها في استلانتات من هذا القرن من قبل خبراء وتحويل خارجيين ولكن هذه الأنشطة لم تتم متابعتها لفلة المختصين بهذا المجال ، وبهذا الاهتمام يظهر مرة اخرى في اواسط السبعينات حبال المراسي حيث تم انشاء مشروى محبة رعوية بمساحة ٥٠,٠٠٠ هكتار ، تم استزراع واستغلال نصف هذه المساحة .

« سياسة واستراتيجية المراسي »

لا يوجد سياسة واضحة فيما يخص ارض المراسي وبعد قانون الزراعة رقم ٢٠ لعام ١٩٧٢ ارض المراسي وحقوق استغلالها وكيفية حمايتها وادارتها ومعظم بنود هذا القانون لم تطبق لنا فالمساحة طعة الى وضع سياسة ثابتة ليتم منها التأكيد على :-

- حماية المصادر الطبيعية واستغلالها الاستغلال الامثل وحماية انبثت .
- زيادة مساحة المصادر الرعوية للتقليل من استيراد الاغلاف المركزة واللحوم الحيوانية ومنتجاتها .
- خلق فرص عمل ملائمة في مجالات استغلال المراسي .
- الارتقاء بالمستوى المعيشي للمجتمعات الرعوية كقطاع اجتماعي هام .

ولما يتعلق بدور تطوير المراسي فمن الاستراتيجية الزراعية والناتج استراتيجية الامن الغذائي والامن القومي ، يجب ان تتضمن

هذه الاستراتيجية :-

- تحسين ارض المراسي بوسائل الارادة ، البنى التحتية ، التخضير ، الزراعة ، حفظ التربة ، التخزين الحيواني .
- انشاء قاعدة مبنية على اساسيات قانونية وللملكية والاستغلال لتسهيل ادارة وتطوير المراسي .
- تحسين عمليات استغلال تواتر بقايا الحماد وارض القير والاعلاف الاخرى .
- تحسين وتطوير النظام وطرق الكارها وترتيبها .
- انشاء المحميات الرعوية وتثبيت أعداد الحيوانات وتحسين الخدمات البيطرية وجراء الدراسات الشاملة للتطوير .

مستقبل صناعة الثروة الحيوانية (النسد ، الدورة الزراعية)

١٠ برامج تطوير المراعى

نعانى معظم ارض المراعى من التدهور المفرط جراء الرعى الجائر وخلع الشجيرات الرعوية وحرق ارض الرعى وازدياد حركة الالهاث المشواى ما سبب لى ازدياد الانجراف الهوائى والعائى ويمكن تطويرها من خلال :-

(١) - الحماية :- وهى حماية ارض المراعى لفترات قصيرة بهدف اراحة المراعى بواسطة الحراس او السياج وذلك لزيادة محصولها

الرعوية وازديادها المملية ويتم حماية ٥٠٠٠٠ هكتار .

(٢) - التحسين :- ويتم عملية تحسين المراعى من خلال حفظ التربة والمياه واعادة البذار واستزراع الغراسات المملية المحلية

والمدخله حيث تم استزراع ٢٥٠٠٠ هكتار .

(٣) - الامارة والاسفلال :- يتم عملية الامارة لتطبيق برامج رعى سنوية خلال فصل الربيع والخريف حسب الانتاجية المملية

المتوفرة وامداد الثروة الحيوانية وتنظيم ذلك حسب عامل الوقت (فترات الرعى) .

١١ مشاريع تطوير المراعى

تتم من خلال ارض المراعى الحكومية وتقوم الدولة بذلك وهناك اعمال تتم من خلال ارض المراعى المخصصة للجمعيات التعاونية ويتم استزراعها وبدرها من قبل الحكومة واصناء الجمعيات وتطوير اراضى المراعى الخاصة وتقوم بتطويرها المرارعين انفسهم بمساعدة الحكومة كذلك تقوم الدولة بانشاء السدود الصحراوية ونقاط مياه الشرب ومن البرامج التى يستوجب ذكرها :-

(١) - مشروع تطوير المراعى السنوى :- ويتم فيه سنويا استزراع ٢٠٠٠ - ٢٥٠٠ هكتار بالشجيرات المملية من قبل وزارة الزراعة و ٦٠٠ - ١٠٠٠ هكتار من قبل اصناء الجمعية التعاونية ، ويتم ايضا استبدال ١٠٠ - ٢٠٠ هكتار بطيور الشجيرات

الرعوية من قبل وزارة الزراعة .

(٢) - مشروع تطوير حوض نهر الزرقا :- وسعة هذا المشروع عشر سنوات بدأت عام ١٩٨٦ ويتم فيها تطوير ١٥٠٠ هكتار

من المراعى الحكومية و ١١٨٨٢ هكتار من المراعى الخاصة .

(٣) - مشروع تطوير حوض الحصاد :- ويهدف الى تطوير اربع من مناطق ريادية فى الاردن والعراق وسوريا والسعودية ، ويتم

اقتراح هذا المشروع من قبل المركز العرسى لدراسات المناطق الجافة والاراضى القاحلة (الكساد) وقد بدأ المشروع

باستغلال امعاء الجوفية وتأمين خدمات البنية التحتية .

(٤) - مشروع ابحاث المراعى :- وهى عبارة عن ابحاث ودراسات يقوم بتنفيذها المركز الوطنى للبحوث والتكنولوجيا فى وزارة الزراعة .

احتياجات البصر من البصر :-

.....

يتم ضمن أنشطة تطوير المراعى جمع البذور الرعوية بالطرق التقليدية المعروفة وبواسطة الممال ، حيث تستخدم هذه البذور لانتاج الشجيرات المملية فى المناطق التى تصل الى اربعة ملايين ليرة سنويا ، ومن اهم الانواع المنتجة اللؤلؤة والاكاسيا والسلم والقرم حيث يتم استزراعها سنويا فيها مساحته حوالى ٤٠٠٠ - ٥٠٠٠ هكتار ، تشمل مختلف برامج التطوير فى السلكة ويتم بذر ٢٠٠ - ٢٠٠ هكتار سنويا ، ببذور اللؤلؤة المحلي والزلل والحنى ، ويصل مجموع البذور التى يتم جمعها سنويا حوالى ٢ طن يتم جمعها من الاماات البهرية فى المناطق او الجمعيات الرعوية او جوارب الطرق او مناطق الغابات ، وبدأت مديرية الترويج والملايات بوجاه انتاج اسلوب البذر المباشر وذلك لارتفاع تكلفة الهكتار الواحد انا ما تم زراته بالشجيرات المملية والتى تصل الى ٢٦٠ دولارا حيث انه انا ما سقطت ابطار ومرة على البذر التى نثرها بعدها وتغطى بواسطة الاقدام او المجالول بشكل طفيف تقلل التكلفة بمعدل ١٠ - ٨٠ ٪ انا ما تم تحضير الخطوط الكثيرة الى لهذه الغاية .

١٢ احتياجات البصر المستقبلية :-

تعتمد احتياجات البصر المستقبلية على برامج الحكومة والجهات المعنية فيها بتطوير المراعى للسنوات المقبلة سواء الاستزراع او البذر المباشر وحيث ان هذا المعلن ارض اخطر عام ٢٠٠٠ م يعنى ذلك ان مديرية الترويج والملايات ستعمل ما بوسعها جاهدة لاستزراع المناطق بما تلائمها من الاجار بمعدنية الاراضى ويمكن سرد خطط البصرية كالتالى :-

- زراعة ما مساحته ١٧٥٠٠ هكتار بتاجلر الغابات والشجيرات المملية

تطوير ما مساحته ١٨٠٠٠ هكتار من ارض المراعى بحمايتها واعادة بذرها

(ن) :- محمية وادي عربة المقترحة / محافظة معان :- تقع ما بين خليج العقبة والبحر الميت ويتناثر فيها الأكاسيا والأراك والفسفا والنمس والعزم

(س) :- محمية اربد المقترحة لجميع البذور / محافظة اربد :- يمكن اختيار هذه المحمية ضمن ثاباات البلوط المتسلطة طريق اربد ١٠٠ قيس. الاطار ٤٠٠-٥٠٠ ملم/سنة ويكثر فيها اشجار الحروب والبطم والشعير والفا ٠٠٠ الخ

امكانية تأمين البذور على المستوى الاقليمي :-

.....

تلك البذور التي يتم جمعها حاليا للاباء، بحاجات الفطر لتنفيذ برامج تطوير الغراس حسب الامكانيات المتاحة وهناك امكانية كبيرة لتوسيع هذا النشاط من الناحية الكمية والتنوعية لتأمين حاجيات الفطر والطلب الخارجي وبيع الارمن ونحوه بأربعة اقليم جغرافية رئيسية :-

١- الاقليم المتوسطي ٢- اقليم الصحراء العربية ٣- الاقليم السوري ٤- الاقليم الايراني الطوراني
بجملته اني بالتنوع النباتي مع امكانية تأمين بذور كثير من الشجيرات الملقحة والنباتات الرعوية بلاطية كبيرة

« المؤسسات ذات العلاقة ببذور الغراس في الارمن :-

- ١- مركز البذور ب مديرية الترويج والغابات :- تأسس عام ١٩٩٢ ويهدف لحفظ المصادر الوراثية للانواع الغابائية والرعية وتأمين وتسهيل مصادر البذور والقيام باعمال الفحص والتسويق والتخزين وتوسع في الوقت الحالي ١٠ طن من البذور
- ٢- المركز الوطني للبحوث ونقل التكنولوجيا :- يهتم هذا المركز باجراء البحوث والتجارب لوزارة الزراعة في جميع النشاطات الزراعية بما فيه الغراس ويوجد فيه وحدة مصادر وراثية تتعامل مع بذور الغراس بوحدة موطنا وطاقة التوزيع الطبيعي وعامل المناخ ويوجد تعاون ما بين هذا المركز والجامعة الاردنية والاكساد والاكاسيا و (IPGR)
- ٣- مركز بذور الجامعة الاردنية :- يستلزم بنشاطاته البحثية وتنظيم الدورات التدريبية بالاشتراك مع مركز البذور العلمية
- ٤- المنظمة التعاونية الاردنية :- وذلك من خلال نشاط المشروع الاستراتيجي الاردني الذي يهتم بالنشاط الرعي لاجراء البحوث والدراسات وتم اجراء بحوث ودراسات عن الميلا ٠٠٠٠٠ وغيرها

الخلاصة :-

.....

- ا- يتم جمع بذور الشجيرات والنباتات الرعية يدويا وحسب متطلبات برامج التطوير المعقدة وتقدر ٥-١٠ طن
- ب- يتم جمع بذور الاكاسيا والفاك والردم لانتاج الحشا طيون شطة لاستزراجيولنر البذور بشكل مباشر
- ج- نتيجة الموقع الجغرافي للارمن ولناه بالتنوع النباتي هناك امكانية جمع العديد من الانواع النباتية الثلاثة للنشاط الجافة وذات القيمة الغذائية العالية سواء للاحتياج المحلي والاقليمي
- د- تجمع بذور الشجيرات الملقحة حاليا عن اميات مخطرة في الغابة او المحميات او المناطق ولا يوجد أماكن مخصصة في الارمن لهذا الغرض والانواع الاخرى
- و- سيكون مركز البذور التابع لمديرية الترويج والغابات مسؤولا عن كافة الانشطة المتعلقة ببذور الغابات والغراس

التوصيات :-

.....

- ا- وضع سياسة واضحة وبلائحة لتطوير الغراس تتضمن مواضيع (ملكية ارض الغراس ، الاستعمال الامثل للاراضي ، تصديق خاص بقطاع ادارة الغراس وقثيرة الحيوانية ، وضع برامج طويلة الاء لتطوير ادارة الغراس
- ب- على مديرية الترويج والغابات ابلاء اهتمام كبير لتطوير الامكانيات الفنية للمعاملين في مجال تطوير الغراس من طريق البحوث التدريبية الداخلية والخارجية
- ج- استحداث فنية الاستزراع بالبذر المباشر لتقليل التكاليف ووضع برامج للامكن التواء تطويرها لهذا المقصد
- د- تنظيمنا لاحتياجات برامج البذر المباشر من البذور فعلى مديرية الترويج والغابات تأمين هذه الكميات من خلال :-
- انشاء مصبات خاصة ، القروض منها جمع البذور فقط
- اختيار مواقع لاقتار البذور

لحفراد بلود الترع الرعوية على السورين الإيطالي والفرجي ليس النطبات الجيدة في الأردن ولدا
أهت بلورية لها.

- إسماء إسماء على الترع الرعوية النفره أو التي في غربها إلى التفراس تيجت سوء الإستخدام والرمي الجفر
وانتظا الإجمالت الوقتية لإجمالت الحشيرة

- على مدربة التريج ايك إجمالتا الطون مع التوسك على السورين اللطي والإيطالي سطة بذلك إككيات
المشروع الإيطالي

- طرا لكة المخرمات التعلنة بلور الترامي على سترى الإطيم يوسي بإجرا. دولة إيطالية لهذا السد

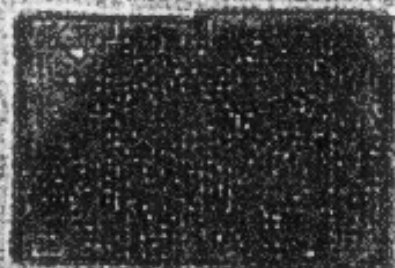
- السك على تيس شبكة بلور مرامي إيطالية وعلى التوسك الإيطالية المية الطون لذلك

مرفق : قائمة النباتات في الأردن

- *Atriplex halimus* L.
- *Atriplex leucoclada* Boiss.
- *Atriplex nummularia*
- *Acacia tortilis* (forsk) Hayne
- *Acacia gummifera* (L)
- *Acacia farnesiana*
- *Acacia arabica*
- *Aristida* sp.
- *Avena* Subsp. *sterilis* h.
- *Artemisia herba alba* Asso
- *Artemisia judaica* L.
- *Artemisia monosperma* Del.
- *Achillea fragrantissima* (Forsk) sch. Bip.
- *Astragalus hamosus* L.
- *Astiloides ovata* auct. non L.
- *Bromus* sp.
- *Colutea latris* Mill.
- *Ceratonia siliqua* L.
- *Carex* sp.
- *Cynodon dactylon* (L) pers.
- *Calligonum* sp.
- *Dactylis glomerata* L.
- *Ephedra alata* Decne
- *Erodium* sp.
- *Hyparrhenia hirta* (L) Stapf
- *Hordium bulbosum* L.
- *Hordium spontaneum* C. Koch exend
- *Haloxylon persicum* Bge.

- *Gynocarpus* sp.
- *Lathyrus* L.
- *Lolium rigidum* Gaudin
- *Medicago* sp.
- *Morina anthera* Gaertn.
- *Urtica bulbifera* (Vierh.) Hackel.
- *Oxyria alliacea* (L.) Aschero. & Schweinf.
- *Dactyloctenium* Mill. Sp.
- *Ochrolepis hirsuta* Del.
- *Pennisetum* sp.
- *Pistia* var. *atlantica*
- *Prosopea juliflora*
- *Prosopea tinctoria*
- *Panicum turgidum*
- *Poa bulbosa* var. *bulbosa*
- *Poa sinica*
- *Halimolobos* (Forssk.) Webb. var. *raetia*
- *Rhus tripartita* (Bernard de Urie) DC.
- " " " (" " ") Grande
- *Sida capensis* Thunb. prodr. Fl. Cap.
- " *barbata* Desf.
- " *lagascae* Roem. & Schult.
- " *parviflora* Desf.
- *Salsola vermiculata* L.
- *Trifolium* sp.
- *Viola* sp.
- *Ziziphium latum* (L.) Lam.
- *Ziziphium spinosa-christi* (L.) Desf.

FIN



WMA