

PEOPLE'S DEMOCRATIC REPUBLIC OF ALGERIA

**MINISTRY OF HIGHER EDUCATION
AND SCIENTIFIC RESEARCH**

HARMONIZATION

MASTER TRAINING OFFER

ACADEMIC/PROFESSIONAL

| Establishment | Faculty / Institute | Department |
|----------------------------------|--|------------------------------|
| Mohamed Khider University | Faculty of Exact Sciences and Natural and Life Sciences | Agricultural sciences |

Domain :Natural and life sciences

Sector :Agronomy

Specialty: Phoeniculture and Phœniciculture TechniquesDates

Academic year: 2016/2017

الجمهورية الجزائرية الديمقراطية الشعبية
وزارة التعليم العالي والبحث العلمي

مواصلة
عرضتكوين ماستر
أكاديمي/مهني

| القسم | الكلية/ المعهد | المؤسسة |
|-----------------|---|-----------------|
| العلوم الزراعية | كلية العلوم الدقيقة و علوم الطبيعة و الحياة | جامعة محمد خيضر |

الميدان: علوم الطبيعة و الحياة

الشعبة: : الزراعة

التخصص: زراعة النخيل وتقنيات تثمين التمور

السنة الجامعية: 2016/2017

SUMMARY

- I - Master's identity sheet**-----
- 1 - Location of the training-----
- 2 - Training partners-----
- 3 - Context and objectives of the training-----
- A - Access conditions -----
- B - Training objectives -----
- C - Profiles and targeted skills -----
- D - Regional and national employability potential -----
- E - Gateways to other specialties -----
- F - Training monitoring indicators -----
- G - Management abilities-----
- 4 - Human resources available-----
- HAS -Teachers working in the specialty-----
- B-External supervision
-
- 5 - Specific material resources available-----
- A - Educational Laboratories and Equipment -----
- B- Internship sites and in-company training -----
- C - Research laboratories supporting the master's degree-----
- D - Research projects supporting the master's
- degree-----
- E - Personal work spaces and ICT -----
- II - Half-yearly teaching organization sheet**-----
- 1- Semester 1 -----
- 2- Semester 2 -----
- 3- Semester 3 -----
- 4- Semester 4 -----
- 5- Overall summary of the training -----
- III - Detailed program by subject** -----
- IV – Agreements / conventions** -----

**I – Master’s identity sheet
(All fields must be completed)**

1 - Location of the training:

Faculty (or Institute): Exact Sciences and Sciences of Nature and Life
Department: Agricultural Sciences

2- Training partners *:

- other university establishments:

University of Batna, University of Annaba, ENSA of Elharrach

- businesses and other socio-economic partners:

CRSTRA--ITDAS--DSA--INPV—INRAA -EAC- EAI- DGF- -CRBt-ITGC- ONA batna- ONID

Farmers; Date packaging units

- International partners:

Universities and research institutes, CIRAD FRANCE. University of RENNE; PADOVA ITALY University;

* = Present the conventions in the appendix to the training

3 – Context and objectives of the training

A – Access conditions*(indicate the license specialties which can give access to the Master)*

- *Academic degree in arido-culture and environment*
- *Professional or academic degree in Agronomy*
- *Professional or academic degree Biology option: plant physiology*
- *Professional or academic degree in environmental sciences*
- *Other licenses accepted, upon study of the file and agreement of the educational committee*

B - Training objectives*(skills targeted, educational knowledge acquired at the end of the training - maximum 20 lines)*

The date palm constitutes the original culture of oasis environments where the total number is of the order of 18 million with 4.3 million date palms located in the Ziban oases. This Phoenicultural potential, which constitutes ecological, agronomic and socio-economic wealth, currently faces several challenges; requires training programs; development and research with the aim of preserving and promoting this national Phoenicultural heritage.

With this in mind, the opening of specialized training in phoeniculture in the Ziban region becomes essential to respond to the major concerns of phoeniculture, namely: the management of water and soil salinity, phytosanitary problems and the improvement qualitative and quantitative of date production. Also the practice of monoculture and single variety (Deglet Nour variety) and agricultural changes have accentuated genetic erosion, which deserves particular attention to fight against the erosion of this biodiversity.

The major objectives of this training are to have specialists in phoeniculture capable of meeting the needs of this sector by promoting research in the fields of genetics, conservation and national and international marketing in order to ensure oasis agricultural activity. sustainable.

Following the master's course in phoeniculture, the program provides the tools for the production, protection and sustainable preservation of date palm plant genetic resources; as well as valorization techniques, technological transformation of dates and marketing approaches.

At the end of the theoretical year, these major themes must have been addressed either in the form of courses or conferences, or in the form of tutorials, or in the form of internships and corrected personal work. This will allow students to understand all facets related to their training. At the end of the course, students can deal with complex subjects linked to the development of the sector.

Finally ; These studies are necessary and provide researchers who will strengthen national and international investigations for the development of phoeniculture.

C – Targeted job profiles and skills(*in matters of professional integration - maximum 20 lines*):

Knowledge transmitted

- *Date production techniques.*
- *Techniques for combating date palm diseases and pests*
- *Conservation and multiplication processes for endangered cultivars*
- *Date processing*
- *Commercialization*
- *Agricultural extension*

D- Regional and national employability potential of graduates

The Wilaya of Biskra is an agricultural center par excellence. Biskra dates are exported to Canada, Europe and the United States of America. The mastery of production techniques by future phoeniculture executives trained at the level of the Agronomy department is essential to ensure the quality of agricultural production.

This training allows you to open up to the world of work in fields belonging to both the public and private sectors for the following applications:

- a) DSA Consulting Services.
- b) Quality control laboratories (agri-food products).
- c) Private agricultural sector
- d) Customs services for control of agricultural products

E – Gateways to other specialties

- Agricultural mechanization
- Plant protection
- Water and soil management
- Date valorization and processing technology

- Marketing and marketing

F – Training monitoring indicators

- Continuous monitoring and permanent monitoring of students' achievements in the form of written questions, reports and presentations.
- Exams at the end of each semester.
- Internship report at the end of the training cycle
- Seminars and scientific activities.

G – Supervisory capacity(give the number of students that can be supported)

4 – Human resources available

A: Teachers from the establishment working in the specialty:

| Last name First Name | Graduation diploma + Specialty | Diploma Post graduation + Specialty | Grade | Type of intervention * | Registration |
|-------------------------|--------------------------------|-------------------------------------|-------|------------------------|--------------|
| BELHAMRA Mohamed | Ecology | Ecology | Pr. | | |
| TARAI Nacer | Agricultural zoology | Agricultural zoology | MCA | | |
| BENAZIZA Abdelaziz | Phytotechnics | Phytotechnics | MCA | | |
| DEGHNOUCHE Kahramen | Veterinarian | Veterinarian | MCA | | |
| BENZIOUCHE Saleh | Economy and rural development | Economy and rural development | MCA | | |
| MASMOUDI Ali | Soil science | Soil science | MCA | | |
| DEMNATI Fatma | Forest | Forest | MCA | | |
| BOUMAARAF Belgacem | Soil science | Soil science | MCA | | |
| ACHOURA Amar | Agricultural zoology | Agricultural zoology | MCA | | |
| BOUKHALFA Hassinahafida | Agricultural machinery | Agricultural machinery | MCA | | |
| BECHAR M. Farouk | Soil biology | Soil biology | MCA | | |
| MEHAOUA M.Seghir | Protection | Protection | MCA | | |
| BOUKEHIL Khaled | Agricultural machinery | Agricultural machinery | MAA | | |
| DJEKEREFF Laala | Protection | Protection | MAA | | |
| DJERAH Abdelghani | Phytotechnics | Phytotechnics | MAA | | |
| KASSAI Abla | Soil science | Soil science | MAA | | |
| KHACHAI Salim | Soil science | Soil science | MAA | | |
| ALLACHE Farid | Agricultural zoology | Agricultural zoology | MAA | | |
| BEDJAOUI Hanane | Phytotechnics | Phytotechnics | MAA | | |
| GUIMER Kamal | Soil science | Soil science | MAA | | |
| MABREK Naïma | Agricultural hydraulics | Agricultural hydraulics | MAA | | |
| MELAKHSOU Zouhra | production | | MAA | | |

* = Courses, tutorials, practical work, internship supervision, dissertation supervision, other (to be specified)

B: External supervision:

Home establishment:

| Last name First Name | Graduation diploma + Specialty | Diploma Post graduation + Specialty | Grade | Type of intervention * | Registration |
|-----------------------------|---------------------------------------|--|--------------|-------------------------------|---------------------|
| | | | | | |
| | | | | | |
| | | | | | |

Home establishment:

| Last name First Name | Graduation diploma + Specialty | Diploma Post graduation + Specialty | Grade | Type of intervention * | Registration |
|-----------------------------|---------------------------------------|--|--------------|-------------------------------|---------------------|
| | | | | | |
| | | | | | |
| | | | | | |

Home establishment:

| Last name First Name | Graduation diploma + Specialty | Diploma Post graduation + Specialty | Grade | Type of intervention * | Registration |
|-----------------------------|---------------------------------------|--|--------------|-------------------------------|---------------------|
| | | | | | |
| | | | | | |
| | | | | | |

*** = Courses, tutorials, practical work, internship supervision, dissertation supervision, other (to be specified)**

5 – Specific material resources available

A- Educational Laboratories and Equipment: Sheet of existing educational equipment for the practical work of the planned training (1 sheet per laboratory)

Laboratory title: Soil physics laboratory

Student capacity: 30

| No | Equipment title | Number | observations |
|----|---|--------|--------------|
| 1 | Orbital shaker | 02 | |
| 2 | Mechanical stirrer | 01 | |
| 3 | Multi-parameter field analyzer (pH, conductivity, oximeter) | 01 | |
| 4 | Apparatus from Casa Grande | 01 | |
| 5 | Camera | 01 | |
| 6 | Sand bath 06l | 01 | |
| 7 | Water bath | 04 | |
| 8 | Electronic scale with internal calibration, range 150g/65g | 02 | |
| 9 | Compass | 01 | |
| 10 | Munsell Charter | 01 | |
| 11 | Digital stopwatch | 05 | |
| 12 | Clinometer | 01 | |
| 13 | Membrane hydrometer | 01 | |
| 14 | Universal oven | 04 | |
| 15 | Ceramic plate extractor; Richard's device | 01 | |
| 16 | Muffle furnace | 01 | |
| 17 | GPS III Plus | 01 | |
| 18 | Auger kit for sampling heterogeneous soils | 01 | |
| 19 | Laboratory glassware washing | 01 | |
| 20 | Percussion penetrometer | 01 | |
| 21 | Fixed and variable head permeameter | 01 | |
| 22 | Polar digital planimeter | 03 | |
| 23 | Diaphragm pump | 02 | |
| 24 | Electronic total station with memory | 01 | |
| 25 | Pocket stereoscope. | 08 | |
| 26 | Folding mirror stereoscope | 01 | |
| 27 | HP designjet 800 plotter and scanner | 01 | |
| 28 | Analytical sieve (gamma of 23 different mesh openings) | 01 | |
| 29 | Dial blood pressure monitor | 01 | |
| 30 | Electronic digital theodolite | 01 | |

Laboratory title:Soil Chemistry Laboratory
Student capacity:30

| No | Equipment title | Number | observations |
|----|--|--------|--------------|
| 1 | Heating magnetic stirrer | 08 | |
| 2 | BOD5 analyzer | 01 | |
| 3 | Device for studying pressure losses | 01 | |
| 4 | Bench-top autoclave | 02 | |
| 5 | Analytical balance, capacity 210g | 03 | |
| 6 | Precision balance, range 7200g | 03 | |
| 7 | Hydraulic bench | 01 | |
| 8 | Bunsen burner | 30 | |
| 9 | Plastic carboys capacity10 liters | 30 | |
| 10 | Mortar grinder | 01 | |
| 11 | Color CCD camera | 01 | |
| 12 | Yahita Benchtop Centrifuge | 02 | |
| 13 | Sigma Benchtop Centrifuge | 01 | |
| 14 | Colony counter | 02 | |
| 15 | Laboratory conductivity meter | 03 | |
| 16 | Water demineralization | 01 | |
| 17 | Ultrasonic disintegrator | 01 | |
| 18 | Vacuum Desiccator | 05 | |
| 19 | Water distiller | 04 | |
| 20 | Flow over a dam | 01 | |
| 21 | Drainer | 03 | |
| 22 | Thermostatic enclosure, internal temperature20°C | 01 | |
| 23 | Bernoulli's Theorem Proof Set | 01 | |
| 24 | Horizontal chamber kiln for ceramic firing | 01 | |
| 25 | Filter hood | 02 | |
| 26 | Refrigerated incubator | 01 | |
| 27 | Metro scope magnifying glass | 05 | |
| 28 | Elastic membrane manoscope | 01 | |
| 29 | Binocular microscope with camera and camera adapters | 01 | |
| 30 | Monocular microscope | 10 | |
| 31 | Mineralizer with heating block 06 stations | 01 | |
| 32 | Osborne Reynolds flow regime demonstration module | 01 | |
| 33 | Automatic level with straight optics | 02 | |
| 34 | Benchtop pH/mV meter | 06 | |
| 35 | Flame photometer | 01 | |
| 36 | Crucible tongs | 30 | |
| 37 | Atomic absorption photometer | 01 | |
| 38 | Plastic tray | 10 | |
| 39 | Hydrostatic pressure | 01 | |

| | | | |
|----|--|----|--|
| 40 | Backpack sprayer | 01 | |
| 41 | Mineralization ramp | 01 | |
| 42 | Laboratory refrigerator | 01 | |
| 43 | UV-VIS spectrophotometer | 03 | |
| 44 | Automatic universal titrator | 01 | |
| 45 | Dissection kits | 10 | |
| 46 | Laboratory turbidimeter | 01 | |
| 47 | Nitrogen distillation unit 06 stations | 01 | |

B- Internship sites and in-company training:

| Training place | Number of students | Training period |
|-----------------------------------|--------------------|-----------------|
| <i>ANRH</i> Constantine/Algiers | 10 | 07 days |
| <i>BNEDER</i> Constantine/Algiers | 10 | 07 days |
| <i>ONID</i> BISKRA | 10 | 07 days |
| <i>ITDAS</i> BISKRA | 10 | 07 days |
| <i>INRAB</i> BISKRA / ALGIERS | 10 | 07 days |
| <i>INPV</i> BISKRA / ALGIERS | 10 | 07 days |
| <i>ONA</i> BATNA | 10 | 07 days |

C- Master's support research laboratory(ies):

| |
|--|
| Head of the laboratory: BELHAMRA Mohamed |
| Laboratory approval number: No. 87 of 04/14/2013 |
| <p>Date :</p> <p>Opinion of the laboratory head: Ecosystem diversity and dynamics of agricultural production systems in arid zones</p> |

D- Master's support research project(s):

| Title of the research project | Project code | Project start date | Project end date |
|---|---------------------|---------------------------|-------------------------|
| CNEPRU projects: Techno-economic analysis of the date sector in the Zibans region (Biskra) | F0142010001 4 | 2010 | 2013 |
| CNEPRU projects: Study and development of water and soil resources in the Saharan region | F01420090025 | 2010 | 2012 |
| PNR projects: Trace chemical elements in groundwater intended for AEP and irrigation in the wilaya of Biskra | 08/2011 | 2011 | 2013 |

E- Personal work spaces and ICT:

II – Half-yearly teaching organization sheet
(Please present the forms for the 4 semesters)

1- Semester 1:

| Teaching unit | VHS | Weekly VH | | | | coefficient | Credits | Evaluation method | |
|---|--------------|-----------|------|----------|------------|-------------|-----------|-------------------|------|
| | 14-16 weeks | VS | T.D. | TP | Others | | | Continuous | Exam |
| Fundamental EU | | | | | | | | | |
| UEF1(O/P) | 202.5 | | | | | | | | |
| Date palm pests | 67.5 | 3h | | 1h30 | 82.5 | 3 | 6 | 50% | 50% |
| Water and soil management in an oasis environment 1 | 45 | 1h30 | 1h30 | | 55 | 2 | 4 | 50% | 50% |
| UEF2(O/P) | | | | | | | | | |
| Biology of the date palm | 45 | 1h30 | | 1h30 | 55 | 2 | 4 | 50% | 50% |
| Cultivation management of date palm 1 | 45 | 3h | | | 55 | 2 | 4 | 50% | 50% |
| EU methodology | | | | | | | | | |
| UEM1(O/P) | | | | | | | | | |
| Bio-statistics | 37.5 | 1h30 | 1h | | 37.5 | 2 | 3 | 50% | 50% |
| Oasis production system 1: Cereal farming | 22.5 | 1h30/15d | | 1h30/15d | 27.5 | 1 | 2 | 50% | 50% |
| UEM2(O/P) | | | | | | | | | |
| Oasis production system 2: Fodder crops | 22.5 | 1h30/15d | | 1h30/15d | 27.5 | 1 | 2 | 50% | 50% |
| Applied geomatics in agriculture | 22.5 | 1h30/15d | | 1h30/15d | 27.5 | 1 | 2 | 50% | 50% |
| Discovery EU | | | | | | | | | |
| UED1(O/P) | | | | | | | | | |
| Oasis ecosystem | 22.5 | 1h30 | | | 2.5 | 1 | 1 | 50% | 50% |
| Transversal EU | | | | | | | | | |
| Communication | 45 | 1h30 | 1h30 | | 5 | 2 | 2 | 50% | 50% |
| Total Semester1 | 375 | | | | 375 | 17 | 30 | | |

2- Semester 2:

| Teaching unit | VHS | Weekly VH | | | | coefficient | Credits | Evaluation method | |
|--|--------------|-------------|-------------|-----------|--------|-------------|-----------|-------------------|------|
| | 14-16 weeks | VS | T.D. | TP | Others | | | Continuous | Exam |
| Fundamental EU | | | | | | | | | |
| UEF1(O/P) | 202.5 | 135 | 22.5 | 45 | | 4 | 18 | | |
| Cultivation management of date palm 2 | 45 | 3h | | | 55 | 2 | 4 | 50% | 50% |
| Integrated conservation of date palm plant genetic resources | 45 | 1h30 | | 1h30 | 55 | 2 | 4 | 50% | 50% |
| UEF2(O/P) | | | | | | 5 | | | |
| Water and soil management in an oasis environment 2 | 67.5 | 3 | 1h30 | | 82.5 | 3 | 6 | 50% | 50% |
| Date palm diseases | 45 | 1h30 | | 1h30 | 55 | 2 | 4 | 50% | 50% |
| EU methodology | 105 | | | | | 5 | 9 | | |
| UEM2(O/P) | | | | | | | | | |
| Oasis production system 3: Arboriculture | 37.5 | 1h30 | | 1h | 37.5 | 2 | 3 | 50% | 50% |
| Oasis production system 4: Plasticulture | 45 | 1h30 | | 1h30 | 55 | 2 | 4 | 50% | 50% |
| Animal production in an oasis environment | 22.5 | 1h30 | | | 27.5 | 1 | 2 | 50% | 50% |
| UED2(O/P) | 22.5 | 22.5 | | | | 1 | 1 | | |
| Introduction to modeling | 45 | 1h30 | 1h30 | | 5 | 2 | 2 | 50% | 50% |
| UET2(O/P) | 45 | 22.5 | 22.5 | 0 | | 2 | 2 | | |
| Legislation | 22.5 | 1h30 | | | 2.5 | 1 | 1 | | |
| Total Semester 2 | 375 | | | | | 17 | 30 | | |

3- Semester 3:

| Teaching unit | VHS | Weekly VH | | | | coefficient | Credits | Evaluation method | |
|---|--------------|-------------|-------------|-----------|----------|-------------|-----------|-------------------|------|
| | 14-16 weeks | VS | T.D. | TP | Others | | | Continuous | Exam |
| Fundamental EU | | | | | | | | | |
| UEF1(O/P) | 202.5 | 90 | 22.5 | 45 | | 9 | 18 | | |
| Valorization and processing technology | 45 | 3h | | | 55 | 2 | 4 | 50% | 50% |
| Date palm architecture modeling | 45 | 1h30 | | 1h30 | 55 | 2 | 4 | 50% | 50% |
| UEF2(O/P) | | | | | | | | | |
| Plant biotechnology and molecular tools applied to Palm | 67.5 | 3h | 1h30 | | 82.5 | 3 | 6 | 50% | 50% |
| Conservation and packaging of dates | 45 | 1h30 | | 1h30 | 55 | 2 | 4 | 50% | 50% |
| EU methodology | 105 | 67.5 | 0 | 0 | | 5 | 9 | | |
| UEM1(O/P) | | | | | | | | | |
| Innovation in an oasis environment | 37.5 | 1h30 | 1h | | 37.5 | 2 | 3 | 50% | 50% |
| Instrumental analysis | 45 | 1h30 | | 1h30 | 55 | 2 | 4 | 50% | 50% |
| UEM2(O/P) | | | | | | | | 50% | 50% |
| Bibliographic search | 22.5 | 1h30 | | | 27.5 | 1 | 2 | 50% | 50% |
| Discovery EU | | | | | | | | | |
| UED1(O/P) | 45 | 22.5 | 22.5 | | 5 | 2 | 2 | | |
| Organic Agriculture | 45 | 1h30 | 1h30 | | 5 | 2 | 2 | 50% | 50% |
| Transversal EU | | | | | | | | | |
| UET1(O/P) | 22.5 | 22.5 | | | | 1 | 1 | | |
| Entrepreneurship and project management | 22.5 | 1h30 | | | 2.5 | 1 | 1 | 50% | 50% |
| Total Semester 3 | 375 | | | | | 17 | 30 | | |

4- Semester 4:

Field: Natural and life sciences

Sector: Agronomy

Speciality :Phoeniciculture and date valorization techniques

Internship in a company culminating in a dissertation and a defense.

| | VHS | coefficient | Credits |
|---------------------------|------------|-------------|-----------|
| Personal Work (Memory) | 500* | 10 | 20 |
| Internship in company | 250** | 5 | 10 |
| Seminars | | | |
| Other (Thesis/Internship) | | | |
| Total Semester4 | 750 | 15 | 30 |

*UEF

**EMU

5- Overall summary of the training:(indicate the separate global VH in progress, TD, for the 04 semesters of teaching, for the different types of EU)

| EU V.H. | UEF | EMU | UED | UET | Total |
|--------------------------|-------------|------------|------------|------------|-------------|
| Course | 405 | 191.25 | 67.5 | 67.5 | 731.25 |
| T.D. | 67.5 | 30 | 45 | 22.5 | 165 |
| TP | 135 | 93.75 | 0 | 0 | 228.75 |
| Personal work | 742.5 | 360 | 12.5 | 10 | 1125 |
| other (explain, list,) | 500 | 250 | 0 | 0 | 750 |
| Total | 1850 | 925 | 125 | 100 | 3000 |
| Credits | 74 | 37 | 5 | 4 | 120 |
| % in credits for each EU | 61.67 | 30.83 | 4.17 | 3.33 | 100 |

III - Detailed program by subject
(1 detailed sheet per subject)

IV - Detailed program by subject
(1 detailed sheet per subject)

S1

Title of the Master: Phoeniculture and date valorization techniques

Semester: 1

Title of the UEF:

Title of the subject: Date palm and date pests

Credits: 6

Coefficients: 3

Teaching objectives This teaching will help the student to make a first approach to the biological study of insects. Morphological and bioecological criteria of insects and mites. Ultimately, our aim through this module is to train the student to understand an agronomic problem of a phytosanitary nature and to plan their own control protocol.

Recommended prior knowledge

1. Anatomical and morphological characteristics of insects and mites.
2. Plant-insect and host-parasite relationships.

Content of the subject

Chap.1 homoptera

A: the white mealybug (*Parlatoria blanchardi*)

1. classification
2. geographical distribution
3. bio-ecology
4. symptoms and damage
5. means of struggle

Chap.2 beetles

A: the palm borer (*Apatemonachus*)

1. classification
2. geographical distribution
3. bio-ecology
4. symptoms and damage
5. means of struggle

B: Red palm weevil (*Rhyncophorus ferrugineus*)

1. classification
2. geographical distribution
3. bio-ecology
4. symptoms and damage
5. means of struggle

C: Dried fruit beetle (*Carpophilushemipterus*) and (*C. dimidiotus*)

1. classification
2. geographical distribution
3. bio-ecology
4. symptoms and damage
5. means of struggle

Chap.3 Lepidoptera

A: The date moth (*Ectomyelois ceratoniae*)

1. classification
2. geographical distribution
3. bio-ecology
4. symptoms and damage
5. means of struggle

B: The palm butterfly(*Paysandiaarchon*)

1. classification
2. geographical distribution
3. bio-ecology
4. symptoms and damage
5. means of struggle

C: The Indian meal moth (*Plodiainterpunctella*)

1. classification
2. geographical distribution
3. bio-ecology
4. symptoms and damage
5. means of struggle

Chap.4 Mites

A: The Boufaroua (*Oligonychusafrasiaticus*)

1. classification
2. geographical distribution
3. bio-ecology
4. symptoms and damage
5. means of struggle

Chap.5 Pesticides

1. Classification, formulation and methods of application
2. Risks of pesticides for human health
3. Ecotoxicity and fate in the environment (plants, water, soil)
4. Good phytosanitary practices

Practical work :

- TP1: Diagnosis and identification of species
- TP2: Calculating the concentration of a chemical

Personal work : presentations, output report, bibliographic research

Evaluation method: A medium-length exam. The general average of the module will be calculated on two grades (EMD, TP)

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 1

Title of the UEF:

Title of the subject: Water and soil management in oasis environments

Credits: 4

Coefficients:2

Teaching objectives a first part is intended for the study of climate characterization parameters as well as the processes involved for reasoned water management. A second part is devoted to the characterization of the soils of oasis environments and highlight the mechanisms for better land restoration.

Recommended prior knowledge

Content of the subject

A. Climate synthesis

- Climagram (Embergé)
- Caussen Ombrothermal Diagram
- Aridity index

B. Water management

1/ Water requirements for crops

- Calculation of evapotranspiration
- Calculation of dose and frequency of irrigation
 - The total available water in soil (TAW)
 - The readily available water (RAW)
 - Irrigation management

2/ Water leaching

- Calculation of leaching frequency (IR)
- Calculation of the piezometric level of the water table

3/ Water drainage

- Notions on topography, slope
- Types of drain (open; buried; others)
- Agricultural drainage networks (tertiary; secondary; primary and natural outlet)

4/ Quality of irrigation water

- Risk of salinization
- Risk of alkalization
- Irrigation water class

Tutorials

- TD1: calculation of the ET reference
- TD2: Calculation of (TAW) and(RAW)
- Establishment of the Caussen Ombrothermal diagram

Practical work

- Outing to the oases of Ziban
- Outing to the oases of Oued Righ

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD+TP+TD+personal work

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Establishment: Mohamed Khider University, Biskra

Title of the master's degree: Phoeniculture and date valorization techniques

Academic year: 2016/2017:

Page27

Semester: 1

Title of the UEF:

Title of the subject: Biology of the date palm

Credits: 4

Coefficients: 2

Teaching objectives: The date palm constitutes the main crop of the oases; it creates a special microclimate in an arid environment for the introduction of underlying crops. The module is devoted to botanical characterization and describing the main components of the date palm.

Prior knowledge recommended (*brief description of the knowledge required to be able to follow this course – Maximum 2 lines*).

Content of the subject

1. General information on Palmaceae

- Plant biosystematics
- Distribution areas
- Basic notions of agri-food valorization

2. Biological characteristics of the date palm

a. Root system

- Respiratory root (auxirhyzes)
- Root nutrition (mesorhyses)
- Absorption root (brachyrhyza)

b. Vegetative apparatus

- Trunk or stipe
- Buds
- Crown or foliage
- Fins

c. Reproduction device

1-Inflorescences

- Male inflorescences
- Female inflorescences

2-Fruits

3-Evolution and formation of the date

- Unfertilized flowers

- Fertilized flowers

4-Phenological stages of dates

Loulou – Khlel – B'ser – Martouba – T'mar

3. Annual cycle of the date palm

- Vegetative rest
- Development of inflorescences
- Opening of the spathes
- Fruit setting
- Maturity of dates
- End of maturity

Practical work

TP.1: morphology of dates

TP.2: phenological stages of dates

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:A medium-length exam. The general average of the module will be calculated on two grades (EMD, TP).

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 1

Title of the UEF:

Title of the subject: Cultivation management of the date palm

Credits: 4

Coefficients: 2

Teaching objectives The content of the module aims to help students learn all the production techniques applied during the vegetative cycle of the palm tree as well as the ways of maintaining palm groves.

Recommended prior knowledge

Content of the subject

1-Different types of oases in Algeria and their particularities

2Factors and distribution areas of the date palm

- Geographical distribution of the main cultivars in the Algerian oases
- types of climates
- soil typology
- altitude
- Topography

3 - Ecological requirements of the date palm

- Hygrometry
- Wind
- Precipitation
- Temperatures (of husk emergence, flowering, pollination, fruiting)
- Thermal index

4- Maintenance of the palm grove

- Weeding
- grooming
- collection of harvest waste

5 - production techniques

- Weaning
 - Weaning techniques
 - Classes of weaned suckers (unweaned suckers, djabars, rekkabs and gourmands)
 - Weaning time
- Planting
 - Care of suckers before and after planting
 - Setting up a nursery
 - Planting suckers
 - Planting time
 - Conditions for a good recovery
 - Planting density
 - Planting system (Pits, trenches, “Daïr” basins)

- Fertilization
 - Organic (Dose, time of application, types of organic manure (sheep, cattle, etc.))
 - Mineral (nitrogen, phosphate and potassium fertilizers)
 - Injection of fertilizers into the trunk of the palm tree
- Date palm irrigation
 - Irrigation systems (localized, submersion, planks)
 - Dose and rate of irrigation
 - Advantages and disadvantages of each irrigation system
- Pollination
 - Pollen collection
 - Pollination time
 - Manual, semi-mechanized and mechanized pollination
 - Germination power
 - Floral receptivity
 - Pollen conservation
 - Morphologies of the different Dokkar feet (male feet) used
- Limiting and chiseling
 - -Number of regimes to eliminate for young levels
 - Number of bunches to eliminate for adult palms
 - Plant limitation factors (palm morphology, types of cultivars)
- General overview of date palm enemies
 - Pests (examples: date moths, white mealybug, etc.)
 - Diseases (Examples: fusarium wilt, khamedj, etc.)
 - Others
- Bagging: -advantages of bagging - Type of bagging materials - Bagging period
- Harvest :
 - Harvest period
 - Harvesting techniques (manual harvesting, mechanized)

6-Constraints of phoeniculture in Algeria

7-General notions about organic phoeniculture

Personal work :report ofOutings: educational outingto the Ziban oases

Evaluation method:EMD1+EMD2+ output ratio

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester :

Title of the EMU:

Subject title: Biostatistics

Credits: 3

Coefficients:2

Teaching objectives This unit aims to develop the conceptual understanding of biostatistics, through the application, underlying assumptions, and interpretation of statistical analyzes presented with the assistance of computer interfaces and software.

Prior knowledge recommended (*brief description of the knowledge required to be able to follow this course – Maximum 2 lines*).

Content of the subject

Chapter 1: describe, explore and compare data

(Revision on descriptive statistics studied in S1 and S3, return to basic statistical vocabulary, observe, understand, analyze, decide)

Chapter 2: Know the distribution laws

- Represent a distribution
- Use the normal distribution
- Use the binomial law
- Use Poisson's law
- Understanding Correlation

Chapter 3: Sampling

- Sampling procedure
- Estimate in a population a parameter measured in a sample

Chapter 4: comparing statistical data

- Understand the principles of statistical testing
- Establish statistical test hypotheses
- Interpreting a test: the little p
- Prepare the calculation of a statistical test
- Compare two percentages compare two averages
- Compare multiple distributions
- Compare multiple averages
- Test a correlation

Tutorials

The ultimate objective of the tutorial sessions is to help the student master computer statistics by mastering the main software in the subject.

Main applications will rely on: MS.EXCEL, SPSS and STATISTICA.

TD1 Descriptive statistics and sampling (calculations, graphics and random sampling);

TD2 ANOVA and other statistical tests

TD3Linear regression and correlation

TD4Multivariate analysis.

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD+TD+personal work.

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques
OASIAN PRODUCTION SYSTEMS

(fodder farming – arboriculture – plastic farming)

Objective : This teaching unit is made up of four modules (Plasticulture (cereal farming; fodder crops and arboriculture). It aims to explain to students the technical itinerary of the different crops grown under the date palm as well as the impact of agricultural changes on the sustainability of the practice of phoeniculture.

Module evaluation mode

EMD rating = EMD1+EMD2+EMD3+EMD4

Title of the Master: Phoeniculture and date valorization techniques

Semester: 1

Title of the UEM: Methodology

Title of the subject: Oasis production systems 1: Cereal farming

Credits: 2

Coefficients: 1

Teaching objectives

Recommended prior knowledge

Content of the subject

I. GENERAL.

- Economic data, production, surface areas, yields, consumption needs.
- Use and composition of grain.

II. MORPHOLOGICAL CHARACTERS.

- The vegetative system.
- The reproductive system.

III. BIOLOGICAL CHARACTERS.

- Description of the development cycle.
- Vegetative period.
- Reproductive period.
- Maturation period.
- Developmental physiology.
- Maturation period.

IV. CULTURE.

1. Choice of cultivation system.
2. Varieties grown in Algeria.
3. cereals in the oases
 - Nature of soils.
 - Ground work.
 - Sowing.
 - Water (irrigation).
 - Fertilizing elements (fertilization).

- Protection against diseases, pests and weed control.
- The harvest.
- Cereal processing

V. GENETIC IMPROVEMENT.

- Reproductive regimes.
- Selection programs.
- Seed production.

B/ PRACTICAL WORK

- TP 01: Study of seeds and the vegetative stage of winter cereals.
- TP 02: Study of the reproductive stage of winter cereals.

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD+ TP note+ personal work

Evaluation method:

- A test of medium duration.
- TP report

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 1

Title of the UEM: Methodology

Title of the subject: Oasis production systems 2: Fodder cultivation Credits: 2

Coefficients: 1

Content of the subject

I. General

A - Main sources of fodder.

1. The prairies
 - 1.1. permanent meadow
 - 1.2. Temporary meadows
2. Annual forage
3. co-product of palm as livestock feed

B - Operation and maintenance of meadows

1. Pasture
2. Mowing
3. Fertilization
4. Cultivation methods
5. Destruction of weeds.
6. Clearing the meadow

II. Main forage species

1. Forage grasses.

- Barley:**
- Ray Gras from Italy (*Lolium multiflorum*)**
- Tall fescue (*Festuca elatior*)**
- Corn (*Zea mays*)**
- Sorghum (*Sorghum vulgare*)**

2. Forage legumes

- Bersim (*Trifolium alexandrinum*)**
- Perennial alfalfa (*Medicago sativa*)**
- Annual Alfalfa (*Medicago sp.*)**
- Clover (*Trifolium fragiferum*)**

3. Trees and shrubs

- Date palm
- G'taf (*Atriplex sp.*) (*Chenopodiaceae*)**
- Alfalfa shrub (*Medicago arborea*)**
-
- Atlas pistachio tree (*Pistacia atlantica*)**
- Acacia (*Acacia sp.*)**
- Unarmed cactus (without thorns)**

4. Other families.

- Fodder beet (*Beta vulgaris*);**

- Fodder cabbage** (*Brassicaoleracea*) ;
- Foraged rapeseed**(*Brassiccanapus*);
- Foraged turnip**(*Brassicacampestris*);
- White mustard**(*Sinapis alba*;
- Jerusalem artichoke**(*Helianthustuberosus*).

III. Conservation of fodder.

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:Course: 1 EMD+ PERSONAL WORK

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 1

Title of the EMU:

Title of the subject: Geomatics

Credits: 2

Coefficients: 1

Teaching objectives This involves the application of knowledge relating to the soil and the physical environment to define better land allocation through the use of the geographic information system.

Recommended prior knowledge

Content of the subject

HAS. COURSE

CHAPTER I: GENERAL PRINCIPLES

1- Goals

2- Land use planning

CHAPTER II: RESOURCES

1- Natural resources

2- Socio-economic resources

CHAPTER III: EVALUATION METHODS

1- In rainfed agriculture

2- In irrigated agriculture

3- Other uses

CHAPTER IV: INTRODUCTION TO GIS

1- Historical

2- Goals

3- The concepts

CHAPTER V: THE MAIN FUNCTIONS OF A GIS

1- Data acquisition

2- Data preparation

3- Data entry and updating

4- Data processing/analytical mapping

5- Data output

CHAPTER VI: PRESENTATION OF ARC/INFO AND IDRISI W

1- The main functions of Arc/info and Idrisiw

2- Advantages and disadvantages

b. TUTORIALS

- Data preparation
- Introduction of graphic data and semantic data
- Cartographic analysis and printing of documents on screen and on paper

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:

Course: 1 EMD

TD practical work

Personal work

References(Books and handouts, websites, etc.).

- Geographic information systems, power and organizations;Henri Pornon- 1998
- GIS The geographical dimension of the information system;Henri Pornon- 2011
- Geomatics and environmental management of the territory;IETI Consultants- 1998

Title of the Master: Phoeniculture and date valorization techniques

Semester :

Title of the UED:

Title of the subject: Oasis ecosystem

Credits: 1

Coefficients: 1

Teaching objectives: Oases constitute unique ecosystems, rich in biotic and abiotic components. They define themselves as ecological entities of human design to ensure local socio-economic stability, and can suffer the most threatening impacts given their extreme vulnerability to socio-economic and environmental changes.

Recommended prior knowledge The module aims to deepen the analyzes and exchange of thoughts on the state of play and the main challenges and issues characterizing oasis ecosystems in terms of sustainable management, governance systems, risk assessment, resilience and adaptation to climate change

Content of the subject

1) Definition of oasis

- Traditional oasis
- Modern oasis

2) Definition of palm grove

- Traditional palm grove
- Modern palm grove

3-Components of an oasis

a- Biotic characteristic of an oasis

- Palm groves
- Intercropping
- Spontaneous plants (zygophyllaceae; salsolaceae; legumes, etc.)
- Medicinal plants (zygophyllum, mugwort, rosemary, others)
- Fauna (birds; reptiles; rodents; arthropods, etc.)

b-Abiotic characteristics

- Climate
- Soil type
- Drainage
- Topography
- Savory Depression
- others

3) Examples of the Physiognomy of the Algerian palm grove

- Ziban palm grove - Oued Righ palm grove
- Nemamcha palm grove - M'zab palm grove

4) Criteria for creating a modern oasis

A. On the vegetative level

- Choice of a varietal profile
- Choice of associated crops
- Choice of cultivation systems (stratified, polycultures)

B. Land development

- Soil type
- Drainage
- Silting
- Irrigation systems
- Soil depth
- Others

5-Ecological problems of oases

- Silting
- Salinization
- Rising water
- Clearing
- Agricultural changes
- others

6-Sustainable development of oases

- Water management
- Desalination
- Organic fertilization
- Rationale for pesticide use
- Organic Agriculture
- Others

Personal work :

Evaluation method:1EMD + PERSONAL WORK

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 1

Title of the UET:

Subject title: Communication

Credits: 2

Coefficients:2

Teaching objectives Exploitation of English scientific documents and deepen the student's knowledge of production and protection techniques in English.

Recommended prior knowledgeEnglish, IT

Content of the subject

- 1 introduction
- 2 botany
- 3 varieties and country of origin
- 4 uses and contents
- 5 aspect of plant cultivation
 - 5.1 site requirements
 - 5.2 seeds and seedling
 - 5.3 Methods of planting
 - 5.4 Diversification strategies
 - 5.5 Nutrient and organic fertilization management
- 6 Biological method of plant protection
 - 6.1 diseases
 - 6.2 pests
 - 6.3 rodents
- 7 crop monitoring and maintenance
- 8 harvesting and post harvesting treatment

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:Amedium-length exam, with a grade from the EMD

References(Books and handouts, websites, etc.).

S2

Title of the Master: Phoeniculture and date valorization techniques

Semester: 2

Title of the UEF:

Title of the subject: Cultivation management of date palm 2

Credits: 4

Coefficients: 2

Teaching objectives The content of the module aims to help students learn all the production techniques applied during the vegetative cycle of the palm tree as well as the ways of maintaining palm groves.

Recommended prior knowledge

Content of the subject

1. -Date palm distribution areas

2 - Ecological requirements

- Hygrometry
- Wind
- Precipitation
- Temperatures (emergence of husks, flowering, pollination)
- Thermal index

3 – Maintenance of the palm grove

- Weeding
- grooming
- collection of harvest waste

4 - production techniques

- Weaning
 - o Weaning techniques
 - o Classes of weaned suckers (unweaned suckers, djabars, rekkabs and gourmands)
 - o Weaning time
- Planting
 - o Care of suckers before and after planting
 - o Setting up a nursery
 - o Planting suckers
 - o Planting time
 - o Conditions for a good recovery
 - o Planting density
 - o Planting system (Pits, trenches, “Daïr” basins)
- Fertilization
 - o Organic
 - o Mineral
 - o Fertigation

- Irrigation
 - Irrigation systems (localized, submersion, planks)
 - Calculation of the irrigation dose (ETP, ETR, RU; RFU)
 - Calculation of the salt leaching dose
- Pollination
 - Pollen collection
 - Pollination time
 - Manual, semi-mechanized and mechanized pollination
 - Germination power
 - Floral receptivity
 - Pollen conservation
- Limiting and chiseling
- Enemies of the date palm
 - Pests (examples: date moths, white mealybug, etc.)
 - Diseases (Examples: fusarium wilt, khamedj, etc.)
 - Others
- Bagging
 - Type of bagging materials
 - Bagging period
- Harvest
 - Harvest period
 - Harvesting techniques

5 -Constraints of Algerian phoeniciculture

6 – general notions about organic phoeniciculture

Exits :

- Outing: educational outing to the oases of Oued Righ

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD + PERSONAL WORK

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 2

Title of the UEF:

Title of the subject: Integrated conservation of date palm plant genetic resources

Credits: 4

Coefficients: 2

Teaching objectives Allow the student to know the important role of date palm plant genetic resources in evolution and sustainable development. To feel the need for the conservation of this Phoenicultural heritage by using different methods, particularly biotechnological. There is no better conservation than to promote PD RPGs after characterization and evaluation of the different cultivars. The student will learn through morphological, biochemical and molecular indicators to better understand the biodiversity of the PD.

Recommended prior knowledge The student must have basic knowledge of botany, genetics, molecular biology and statistics.

Content of the subject

1. Concept and issues
2. Status of date palm RPGs
3. Genetic erosion
4. PD RPG
 - 4.1. In the world
 - 4.2. In Algeria
5. Biotechnology approaches to conservation of PD PGRs
 - 5.1. Concepts and context
 - 5.2. Integration of biotechnologies into PD PGR conservation programs
 - 5.3. Role of biotechnology in the sustainable use of DP PGRs
 - 5.4. Conservation
 - 5.4.1. In situ
 - 5.4.2. Ex situ
 - 5.4.3. Static and dynamic
 - 5.5. RPG Acquisition Procedures
 - 5.5.1. Exploration
 - 5.5.2. Exchange
 - 5.6. Methods of acquisition
 - 5.6.1. Grains
 - 5.6.2. Vegetative propagation
6. Characterization and evaluation of PD RPGs
 - 6.1. Natural variation
 - 6.2. Relationship, evaluation and characterization of PD RPGs
 - 6.2.1. Morphological approach
 - 6.2.2. Biochemical approach
 - 6.2.3. Cytological approach

6.2.4. Molecular approach

6.2.4.1. Introduction

6.2.4.2. Case study: date palm biodiversity revealed by SSR molecular markers.

Practical work

TP 1: morphological characterization of the palm.

TP 2: morphological characterization of the inflorescence

A field trip

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD+TP+PERSONAL WORK.

References(Books and handouts, websites, etc.).

- HARRIT, MM, 1991, Ecology and genetic variation of four hardwoods of Brazil's Atlantic Forest region, PhD thesis, North Carolina State University, USA. Regeneration (somatic embryogenesis from the organism to the molecule

Improvement of cultivated plant species (objectives and selection criteria) ASSY-BAH, B. and ENGELMANN, F., 1992b, Cryopreservation of mature embryos of coconut (*Cocosnucifera* L.) and subsequent regeneration of plantlets, *Cryo-Letters*,

Title of the Master: Phoeniculture and date valorization techniques

Semester: 2

Title of the UEF:

Title of the subject: Water and soil management in an oasis environment 2

Credits: 6

Coefficients: 3

Teaching objectives a first part is intended for the study of climate characterization parameters and the study of water needs for reasoned water management. A second part is devoted to the characterization of the soils of oasis environments and highlight the mechanisms for better land restoration.

Recommended prior knowledge

Content of the subject

Soil management

1- Characterization of soils in oasis environments

- Salty soils
- Limestone soils
- Gypsum soils
- Alluvial soils
- Sandy soils
- others

2- Sustainable management of oasis soils

- Leaching of salts
- Organic contributions
- Salt-tolerant crop practices
- Gypsum intake
- Choice of crops
- others
- Establishment of the Caussen Ombrothermal diagram
- Classification of soil water

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method EMD+TD+PERSONAL WORK

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 2

EU Title: F

Title of the subject: Date palm diseases

Credits: 4

Coefficients: 2

Teaching objectives The objectives sought through this module are multiple:

- To provide the student with a theoretical basis for the different types of date palm diseases;
- Have the student learn to observe the symptoms in situ to avoid probable confusion
- To carry out a clinical examination and establish a diagnosis of a disease in the field.

Recommended prior knowledge

- 1- Anatomical and morphological characteristics of mushrooms
- 2- Host-parasite relationships, reproduction and survival of parasites.

Content of the subject

I - CRYPTOGAMIC DISEASES

1-THE BAYOUD

- a) General
- b) Origin and geographical extensions
- c) Economic importance
- d) Symptoms
- e) Causal agent
- f) Means of struggle

2-The Khamedj

- a) General
- b) Geographical distribution
- c) Economic importance
- d) Symptoms
- e) Causal agent
- f) Means of struggle

3-Dipolodia disease

- a) General
- b) Geographical distribution
- c) Economic importance
- d) Symptoms
- e) Causal agent
- f) Struggle

4-Root rot

- a) Geographical distribution
- b) Economic importance
- c) Symptoms
- d) Causal agent
- e) Struggle

II - Bacterial and phytoplasma diseases

5-“Lethal Yellowing”

- a) Geographical distribution
- b) Economic importance
- c) Symptoms
- d) Causal agent
- e) Struggle

III - Non-parasitic diseases

11-BLACKNOSE

- a) Geographical distribution
- b) Symptoms
- c) Struggle

12-Crosscuts

- a) Geographical distribution
- b) Symptoms
- c) Struggle

IV – UNDETERMINED DISEASES

13-The disease of the “leaning heart”

- a) Geographical distribution
- b) Symptoms
- c) Causal agent
- d) Struggle

14-Al Wijam

- a) Geographical distribution
- b) Symptoms
- c) Causal agent
- d) Struggle

Practical work

TP1: Observation and identification of phytopathogenic fungi under a microscope.

TP2: Determination of spore concentration by counting cells.

TP2: Isolation by the single-spore subculturing technique.

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD+ TP+ PERSONAL WORK

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester :

Title of the EMU:

Title of the subject: oasis production systems 3: Arboriculture

Credits: 3

Coefficients:2

Content of the subject

1. General

a. Life cycle

- Annual life cycle
- Evolutionary life cycle

b. Biology of a fruit tree

- Root system
- Trunk
- Leaf
- Flower
- Fruit

2. Necessary conditions for creating a nursery

3. Different multiplication methods

a/ Sexual multiplication

- Sowing

b/ Asexual multiplication

- Dogging
- Layering

4. Crop calendar

- Olive growing - Fig tree - Viticulture
- Others (Citrus, Pomegranate, Apricot, etc.)
- Production alternation phenomena

5. Laydown maintenance techniques

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD + PERSONAL WORK

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester :

EU title: Methodology

Title of the subject: oasis production systems 4: plasticulture

Credits: 4

Coefficients:2

Teaching objectives(Describe what skills the student is supposed to have acquired after passing this subject – maximum 3 lines).

Prior knowledge recommended (*brief description of the knowledge required to be able to follow this course – Maximum 2 lines*).

Content of the subject

1. General

A -History on the introduction of plasticulture in oases

B -Different types of greenhouse

- Plastic greenhouses (tunnel, caterpillar greenhouse, multichapel and canary greenhouse)
- Glass greenhouses

C -Techniques for installing a greenhouse

2. -Creation of a nursery

3. Cultivation management in greenhouses

- Tomato
- Chili and pepper
- Eggplant
- Cucumber
- Zucchini
- Melon and watermelon

4. Other crops

- The cultivation of Henna
- The culture of Corete
- Okra culture

5. Place and sustainability of plasticulture in an oasis environment

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD+ Output report + OTHERS

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 2

Title of the EMU:

Title of the subject: Animal production in an oasis environment

Credits: 1

Coefficients: 1

Teaching objectives The intensification of agricultural production in oases necessarily requires an agriculture-livestock association, both for a better balance of family microfarms and for an increase and maintenance of soil fertility. The objective of this unit is to analyze the interactions that may exist between plant and animal production operations in a particular environment, the oasis environment.

Recommended prior knowledge

Content of the subject

Introduction

1. The oasis concept

2. Current situation in Algeria

3. Role and function of livestock, the different associations in the oasis

4. Agricultural production in the oases

4.1 Production and quality of fodder

4.1.1 Others

5. Livestock production

5.1 Goat breeding

5.2 Sheep breeding

5.3 Camel breeding

5.4 Cattle breeding

5.5 Small farms

6. Example of intensive breeding in oases: the D'Mane sheep.

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:- EMD+ Output report to be exposed + OTHERS

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 2

Title of the UED:

Establishment: Mohamed Khider University, Biskra

Title of the master's degree: Phoeniculture and date valorization techniques

Academic year: 2016/2017:

Page53

Semester: 2

Title of the UET:

Title of the subject: Introduction to modeling

Credits: 2

Coefficients: 2

Teaching objectives The objective is to lead the student to take into account a growing number of parameters whose need for integration is evident. To describe not only the plant and its biophysical environment, but also less predictable or quantifiable parameters. The student, through this tool which is modeling which makes it possible to process this mass of information, will be able to both understand the functioning of soil-plant-climate systems and design and evaluate new cropping systems which would be impossible to implement. point through experimentation.

Recommended prior knowledge The student must have basic knowledge of biology, mathematics, computer science and statistics.

Content of the subject

Introduction to modeling

1.1. General concepts of modeling

1.2. Types of models:

- a) Mechanistic,
- b) stochastic,
- c) empirical

1.3. Construction of crop models

1.4. Database, Calibration, validation, simulation

1.5. Example of simple and complex models in agronomy

1.6. Application of modeling in agriculture

2. Use of regionalized variables in biology

3. Software suites applied to plant growth, development and architecture and epidemiology.

Practical work

TP1: handling of IT tools and Excel software.

TP2: example of application of an agronomic model.

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD+TP+PERSONAL WORK

References(Books and handouts, websites, etc.).

- Arora, VK and PR Gajri (1998). "Evaluation of a crop growth-water balance model for analyzing wheat responses to climate- and water-limited environments." *Field Crops Research* 59(3): 213-224.
- Barbottin, A. (2004). Use of a crop model to evaluate the behavior of genotypes: Relevance of the use of Azodyn to analyze the variability of yield and protein content of soft wheat. UMR Agronomy INRA/AgroParisTech. Paris, AgroParisTech. Doctoral thesis.
- Béguin, P. and A. Weill-Fassina (1997). From the simulation of work situations to the simulation situation. *simulation in ergonomics: know, act, interact*. P. Béguin and A. Weill-Fassina. Toulouse, Octarès: 5-28.
- d'Aquino, P., M. Etienne, O. Barreteau, C. Le Page and F. Bousquet (2001). Support modeling: the use of multi-agent simulations in decision-making processes on the management of natural resources. *Modeling of agroecosystems and decision support*. E. Malézieux, G. Trébuil and M. Jaegger, CIRAD / INRA: 373-390.

Title of the Master: Phoeniculture and date valorization techniques Semester: S2

EU Title: Transverse

Title of the subject: Legislation

Credits: 01

Coefficients: 01

Teaching objectives: The course will mainly focus on environmental regulations in Algeria

Recommended prior knowledge:

Law, environment, legislation.

Content of the material:

1. General introduction.
 - 1.1. Overview of all the legislation in this area.
 - 1.2. Application of environmental law.
 - 1.3. Citizen participation.
2. The main legal instruments.
 - 2.1. Plans in land use planning.
 - 2.2. Limited interference and emission values.
 - 2.3. Impact studies: procedure and legal consequences.
 - 2.4. Inventories: protected landscapes, sites and biotopes.
3. National regulations.
 - 3.1. The environmental code.
 - 3.2. Decrees and application circulars.
4. The laws of conservation and classification on the scale of the biosphere.

Personal work : Seminar, outing (National parks: Tonga El-Kala, Belezma Batna)

Mevaluation code: examination, continuous monitoring

Reference:

S3

Title of the Master: Phoeniculture and date valorization techniques

Semester: 3

Title of the UEF:

Title of the subject: Technological valorization of dates

Credits: 4

Coefficients: 2

Teaching objectives Allow the student to have fundamental knowledge of the different application technological in the field of date processing and to acquire the basic techniques for determining the quality criteria of dates.

Recommended prior knowledge

Content of the subject

1-traditional valorization of dates

- **Date flour**
- **robs**

2-Date packaging technologies

- 2-1-Disinsection
- 2-2-Storage
- 2-3-Sorting
- 2-4-Conditioning

3-Date quality criteria

3-1-Physical criteria

- Dimension
- Color
- Density
- Consistency

3-2-Biochemical criteria

- pH
- acidity
- Sugar
- Humidity
- Ash
- Brix quality index

3-3-Microbiological criteria

- Bacterial and fungal flora

3-4-Sensory criteria

- tastes
- Smell
- Color
- Texture
- Taste test

4-factors of production

- Mineral nutrition
- Bagging
- Phytosanitary treatment
- Harvest
- Storage

5-Date processing technologies

1. Sugar

- Washing
- Triage
- Pitting
- Hot extraction
- Purification
- Filtration
- Concentration
- Syrup

2. Alcohol

- Production of *saccharomyces cervisiae* in Fed-Batch
- Alcoholic fermentation
- Alcohol production itself

3. Vinegar

- Batch fermentation
- Continuous fermentation

4. Honey

- Reception
- Control
- Storage
- Juicing
- Clarification and decolorization of juice

5. Dough, jam, pastry, others

6. pharmaceutical products.

Practical work

- **TP1:**pH measurement; acidity
- **TP2:**measurement of total and reducing sugars
- **TP3:**ash and mineral salts

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD+TP+PERSONAL WORK

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 3

Title of the UEF:

Title of the subject: Modeling of the architecture of the Date Palm

Credits: 4

Coefficients: 2

Teaching objectives Allow the student to get even closer to the date palm, observe it and measure its morphological markers down to the smallest details and identify the different relationships linking them. This would subsequently allow it to better distinguish the different cultivars, or even determine the main selection traits over time for quality cultivars in arid environments..

Recommended prior knowledge The student must have basic knowledge of biology, mathematics, computer science and statistics.

Content of the subject

1. Usefulness and application of plant architecture and growth modeling:
2. General information on plant architecture:
3. Architectural models according to Hallé, Oldeman and Edelin:
4. Phyllotaxis, parasitic parasites on the date palm
5. Descriptors of the palm, vein and pinnae
6. Descriptors of male and female inflorescences
7. Root observation methods
8. Transformation of aerial vegetative archiving data and use of the PRINCIPLES model
9. Transformation of arch reproductive data and use of the PRINCIPLES model
10. Digitization and transformation of arch root data and use of the DigR TP model

Practical work :

1. Descriptors of the vegetative part
2. Descriptors of the inflorescence part
3. Phyllotaxis
4. Transformation of aerial vegetative archiving data and use of the PRINCIPLES model
5. Transformation of arch reproductive data and use of the PRINCIPLES model
6. Digitization and transformation of arch root data and use of the DigR TP model

Personal work : it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method: EMD+ TP+ PERSONAL WORK.

References(Books and handouts, websites, etc.).

El Houmaizi MA, 2002. Modeling the architecture of the date palm (Phoenix dactylifera L.) and application to the simulation of the radiation balance in oases. Final thesis postgraduate study, Cadi-Ayyad University, Marrakech in Morocco;

Halle F. and Oldeman R A., 1970. Essay on the architecture and growth dynamics of tropical trees. Paris, Masson 178p;
Barthelemy D. and Caraglio Y., 2007. "Plant Architecture": A dynamic, multilevel and comprehensive approach to plant form, structure and ontogeny", *Annals of Botany*, 99:375-407;
LECOUSTRE R. and JEAGER M. 1989. Modeling of architecture and geometry by *Elaeis Guineensis*.

Title of the Master: Phoeniculture and date valorization techniques

Semester: 3

Title of the UEF:

**Title of the subject: Plant biotechnologies and molecular tools
Applied to Date Palm**

Credits: 6

Coefficients: 3

Teaching objectives Allow the student to have fundamental knowledge on the different applications of plant biotechnologies and the use of molecular tools in date palm improvement. And this according to the research objectives determined in response to the problems proposed, in particular by socio-economic partners.

Recommended prior knowledge The student must have basic knowledge of cell biology, genetics and basic molecular biology of the date palm.

Content of the subject

Chapter I: General

1. Reminder of the main attempts at genetic improvement of PD around the world
2. State of play on the genetic improvement of the date palm.
3. Constraints and challenges of genetic improvement of DP
4. Objectives of PD improvement
5. Genetics and improvement of PD

Chapter II: Biotechnologies applied to PD

6. DP biotechnologies
 - 6.1. Tissue culture
 - 6.2. Micropropagation
 - 6.2.1. Via somatic embryogenesis
 - 6.2.2. Via Organogenesis
 - 6.2.3. Using inflorescence explants
 - 6.3. Somaclonal variation
 - 6.4. Cell and protoplast culture
7. Case study: In Vitro Selection for resistance to abiotic stress

Chapter III: Molecular markers

8. Molecular markers:
 - 8.1. Molecular detection of somaclonal variation
 - 8.2. Molecular markers for Bayoud resistance
 - 8.3. Molecular detection of somaclonal variation

Tutorials

TD1:Molecular detection of somaclonal variation

TD2:Molecular detection of somaclonal variation

Evaluation method:EMD+TD+TARAVIL STAFF.

References(Books and handouts, websites, etc.).

- Biotechnology
- Regeneration (somatic embryogenesis from the organism to the molecule
- Improvement of cultivated plant species (objectives and selection criteria)
- GUERRA, MP and HANDRO, W., 1991, Somatic embryogenesis in tissue cultures of *Euterpeedulis* Mart. (Palmae), in AHUYA, R. (Ed.), *Woody Plant Biotechnology*, pp. 189–196, New York: Plenum Press.
- VIANA, AM and MANTELL, SH, 1998, Somatic embryogenesis of *Ocoteacatharinensis* an endangered tree of the Mata Atlântica (S.Brazil), in JAIN, MJ, GUPTA, PK and NEWTON,RJ (Eds), *Somatic Embryogenesis in Woody Plants, Volume 4*, Dordrecht: Kluwer Academic Publishers.

Title of the Master: Phoeniculture and date valorization techniques

Semester: 3

Title of the UEF:

Title of the subject: Conservation and packaging of dates

Credits: 4

Coefficients:2

Teaching objectives This course allows the student to know the classic and artificial cold preservation methods., **the technical route of packaging, the influence of storage conditions on the development of pathogens and micro-organisms and consequently on the alteration of the quality of dates and the criteria to be learned for the standardization of dates.**

Recommended prior knowledge Pathogens – stock pests – storage system

Content of the subject

Chapter No. 1: storage and preservation

I. Methods for storing dates

1. Classic conservation methods
2. Preservation methods using artificial cold
 - a/ Conservation in a cold room with a normal atmosphere
 - b/ Conservation in a controlled atmosphere cold room
 - c/ Role of cold for conservation

II. Processing and packaging of dates

1.Storage

- Insecticide treatment

.2. Sorting and calibration

- Trendy dates
- Date in bulk and good quality
- Second quality date

3.Cleaning

4.Disinfestation

5.Drying and rewetting

6.Drying

- Fumigation with methyl bromide

7. Packaging and filling

-Types of Packaging

1. Trays (small boxes)
2. Boxes and crates
3. Special paper bags (bulk dates)
4. Boxes and cartons (15-20 kg)
5. Bag

8. Storage

9-Marking

Chapter No. 2: Effects of conservation on the quality of dates

I. Factors degrading the quality of dates

- a/ Elemental deficiencies
- b/ Attacks by insects and diseases
- c/ Poor storage conditions
- d/ Alternations of storage temperatures

2. Alteration of the quality of dates

- a/ Physical alteration
- b/ Chemical alteration
- c/ Biochemical alteration
 - Enzymatic browning
 - Non-enzymatic browning

d/ Microbiological alteration

- Yeast
- Mold
- Bacterium

e/ Parasitic alteration

Chapter No. 3: Standardization of dates

1-Commercial quality of fruits

- Fruit shape and appearance
- Fruit size
- The degree of maturity
- The extent of the damage

2-The quality of packaging

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD, output report

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniciculture and date valorization techniques

Semester: 3

Title of the EMU:

Title of the subject: Innovation in an oasis environment

Credits: 3

Coefficients: 2

Teaching objectives

Prior knowledge recommended (*brief description of the knowledge required to be able to follow this course – Maximum 2 lines*).

Content of the subject

Chapter 1: Innovation and sustainable development

(Definition, importance, types, link to innovation and SD, etc.)

Chapter 2: Theoretical foundation of innovation

(Theoretical framework relating to the diffusion of innovations)

Chapter 3: Agricultural policy and innovation:

How to promote innovation in agriculture?

(Case of extension and subsidies).

Chapter 4: Case studies: Analysis of the main types of innovations influencing oasis production systems

- Technological innovation :
 - Participatory inventory of innovations in an oasis territory
 - localized drip irrigation
 - the challenges of mechanization in phoeniciculture
- Institutional innovation:
 - Geographical indication (GI) of the Deglet-Nour date from Tolga
 - Innovation and oasis agro-tourism (territorial marketing, etc.)

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:EMD+ TD+ PERSONAL WORK.

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 3

Title of the EMU:

Title of the subject: Instrumental analysis

Credits: 4

Coefficients: 2

Teaching objectives To understand the physicochemical phenomena which constitute the basis of chromatography (liquid and gas) and electrophoresis to develop analytical methods using chromatography (GC, HPLC) to use the main techniques independently of instrumental analysis.

Recommended prior knowledge *Some notions of physics and chemistry.*

Content of the subject

- 1 pH meter
- 2 Conductivity meter
- 3 Calorimeter and spectrophotometer
- 4 Flame and atomic absorption photometer
- 5 Auto analyzer
6. Others

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:

- Course: Number of EMD: 1
- Practical and/or supervised work
- PERSONAL WORK

References(Books and handouts, websites, etc.).

Title of the Master: Phoeniculture and date valorization techniques

Semester: 3

Establishment: Mohamed Khider University, Biskra

Title of the master's degree: Phoeniculture and date valorization techniques

Academic year: 2016/2017:

Page68

Title of the EMU:

Title of the subject: bibliographic search

Credits: 2

Coefficients: 1

Teaching objectives This module allows the student to acquire the basic notions of bibliographic research and to communicate the content of their final dissertation in a written and oral manner.

Recommended prior knowledge French English, IT, Powerpoint,

Content of the subject

1. MODULE CONTENT

A. COURSE

CHAPTER I: BIBLIOGRAPHICAL RESEARCH

1- Methodological approach

2- Information dissemination media and channels

CHAPTER II: WRITING

1- of a memoir

2- of an article

Personal work : it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method: EMD+ PERSONAL WORK

References (Books and handouts, websites, etc.).

- Introduction to Research Methodology: Practical Guide; Mounir M. Touré– 2007
- Summary of research methods and experimental research; Louis Laurencelle– 2005
- Thesis and dissertation methodology; Sophie Boutillier, Alban Goguel d'Allondans, Dimitri Uzunidis- 2005

Title of the Master: Phoeniculture and date valorization techniques

Semester: 3

Title of the UED:

Title of the subject: Organic Agriculture

Credits: 2

Coefficients: 2

Teaching objectives Know the main elements of the regulations that apply to organic farming. Know the economic issues and conditions of its development. Know the contributions of organic farming on the different aspects of product quality. Enable students to analyze the technical, economic and social implications, the advantages and difficulties of this development of organic agriculture, to identify the conditions for success and reflect on proposals on concrete cases.

Prior knowledge recommended (*brief description of the knowledge required to be able to follow this course – Maximum 2 lines*).

Content of the subject

Introduction

- The concept of sustainable development
- Use of phytosanitary products in agriculture
- History and definitions of organic farming

Chapter I: Interest in organic farming

Section1: ecological motivations

Section2: socio-economic motivation

Section3: nutritional motivations

Chapter II: objectives and principles of organic farming

Section1: objectives of organic farming

Section2: principles of organic farming

Chapter III: management of organic farming

Section1: conversion to organic farming

Section2: fertilization in organic farming

Section 3: pest control in organic farming

Section 4: irrigation water management

Evaluation method: EMD + PERSONAL WORK

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

Evaluation method:knowledge checks and continuous checks (EMD, TP) + PERSONAL WORK.

References(Books and handouts, websites, etc.).

- Conversion to organic farming

- Organic market gardening
- Sustainable development of urban agriculture in French-speaking Africa (issues, concepts and methods)

Title of the Master: Phoeniculture and date valorization techniques

Semester: 3

EU Title: Transverse

Subject title: Entrepreneurship and project management

Subject title: Entrepreneurship and project management

Credits: 1

Coefficients: 1

Teaching objectives

The objective in Entrepreneurship is therefore to offer students a global vision of the different facets of entrepreneurship, its challenges, its risks and its characteristics.

Recommended prior knowledge

Management, Economics-statistics

Chapter 1: The notion of entrepreneur and entrepreneurship

Definition of Entrepreneurship

Entrepreneur characteristics:

Entrepreneurship in the economy

GEM Case Studies

Chapter 2: The entrepreneurial approach

What is an opportunity?

Innovation

Why innovate and the obstacles to innovation

Key drivers of innovation

Market analysis

Chapter 3: The evolution of the company

The growth

The internationalization of the company

Chapter 4: Idea, creation, development and after?

The transmission

Recovery

Failure and second chances

Chapter 5: The business plan and partners

The Business Plan

The partners

Analysis of an entrepreneurial theme with groups of students

Personal work :it can be: Presentations, reports, bibliographic research, surveys, essays, others.

-Analysis of an accounting balance sheet- Preparation of technical sheets –

Calculates costs and cost prices and margins

Concept of yield and productivity and value

Mevaluation code:continuous assessment + examination + PERSONAL WORK

References

Entrepreneurship, Michel Coster, Pearson Education, 2009

Soparnot R.,2012-Business organization and management

Collection: Les Topos, Dunod - 2nd edition - 128 p.Soparnot R.,2009-Business management, Strategy. Structure. Organization.

V- Agreements or conventions

Yes

NO

(If yes, transmit the agreements and/or conventions in the paper training file)

STANDARD LETTER OF INTENT

(In the case of a master's degree co-sponsored by another university establishment)

(Official paper on the header of the university establishment concerned)

Subject: Approval of co-sponsorship of the master's degree entitled:

The university (or university center) hereby declares that it co-sponsors the above-mentioned master's degree throughout the accreditation period of this master's degree.

To this end, the university (or university center) will assist this project by:

- Giving his point of view in the development and updating of teaching programs,
- Participating in seminars organized for this purpose,
- By participating in defense juries,
- By working to pool human and material resources.

SIGNATURE of the legally authorized person:

FUNCTION :

Date :

STANDARD LETTER OF INTENT

Establishment: Mohamed Khider University, Biskra

Title of the master's degree: Phoeniculture and date valorization techniques

Academic year: 2016/2017:

Page74

(In the case of a master's degree in collaboration with a company in the user sector)

(Official company letterhead)

OBJECT :Approval of the project to launch a master's degree course entitled:

Dispensed to:

The company hereby declares its willingness to demonstrate its support for this training as a potential user of the product.

To this end, we confirm our support for this project and our role will consist of:

- Give our point of view in the development and updating of educational programs,
- Participate in seminars organized for this purpose,
- Participate in defense juries,
- Facilitate as much as possible the reception of interns either as part of end-of-study theses or as part of tutored projects.

The means necessary to carry out the tasks incumbent on us to achieve these objectives will be implemented on a material and human level.

Mr. (or Madam).....is designated as external coordinator of this project.

SIGNATURE of the legally authorized person:

FUNCTION :

Date :

OFFICIAL STAMP or COMPANY SEAL