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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
Geneva

TECHNICAL WORKING PARTY FOR FRUIT CROPS

Forty-Sixth Session
Mpumalanga, South Africa, August 24 to 28, 2015

ADDENDUM TO

EXPERIENCES WITH NEW TYPES AND SPECIES

Document prepared by the Office of the Union

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1. The Annex to this document contains a presentation on the Argan tree (*Argania spinosa* (L.) Skeels) made by an expert from Morocco at the forty-sixth session of the Technical Working Party for Fruit Crops (TWF).

[Annex follows]





ARGAN TREE
***Argania spinosa* (L.) Skeels**

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The National Office for Food Safety, Ministry of
Agriculture and Fisheries
MOROCCO


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HISTORY

- the Argan tree (*Argania spinosa* L.), endemic to southwestern Morocco,
- The Argan tree is formally known in Morocco. The Phoenicians (10 th centuries BC) have probably experienced or at least used Argan oil
- The muslim botanist, scientist, pharmacist and physician Ibn Baytar was the first one to write about the Argan tree and its oil. He described in his botanical encyclopedia in the thirteenth century



- Morocco's Argan forests cover about 800,000 hectares near the Souss Valley, an area framed by the Atlas Mountains, Atlantic Ocean and Sahara Desert, which hosts roughly 21 million trees and has been given UNESCO protection as a 'biosphere reserve





CLASSIFICATION

- Order: Ericales
- Family: Sapotaceae
- Genus: Argania
- Species: spinosa
- Synonymy: Sideroxylon spinosum, Argania sideroxylon
- Vernacular name: arganier (French), argane, argan, Moroccan iron-wood tree, arbre des femmes.



USE

- Fruits are used to extract a highly nutritional oil ho has a multitude of uses, both culinary and cosmetic, and long list of medicinal properties (for cardiovascular diseases and hypertension, as well as for its anti-inflammatory, analgesic, and cholesterol-lowering effects)
- *Argania spinosa* plays a vital role in resisting the ever-creeping Sahara Desert
- The peel, pulpy flesh and leaves are used as fodder
- The wood is used in construction and utensils at local level and produces an excellent charcoal.



BOTANIC DESCRIPTION

- *Argania spinosa* is a medium-sized, thorny, evergreen tree, 8-10 m high, occasionally attaining 21 m with main trunk 1 m in diameter. Its knotty trunk can sometimes have several criss-crossed stems.





- Leaves small, clustered, lanceolate, evergreen, tough, paler on the underside
- Inflorescence axillary; flower greenish-yellow, hermaphrodite



- The fruit of the argan tree is (as for walnut tree or almond tree) a stone-fruit, with pulp covering a lignified endocarp (the nut) containing one to three kernels (the seeds) from which an highly appreciated edible oil is extracted by traditional, manual techniques
- Fruit green to yellow-brown at maturity






Cultivation

- The Argan tree has the potential to thrive on marginal, infertile dry land.
- This tree can be propagated by
 - seeds
 - vegetative propagation: cuttings, grafting and layering
 - In-vitro techniques




- The argan tree is monoecious and allogamous and exhibits high genetic diversity
- This diversity can both be preserved for ecological purposes and used through domestication


 **Observed Characteristics for DUS Test**

- **Tree: shape**
 - spherical
 - erected
 - other
- **Tree: vigor**
 - weak
 - medium
 - strong
- **Tree: growth habit**
 - upright
 - spreading
 - drooping
- **Tree: Trunk area**
 - fluted
 - strongly Fluted


Tree: shape: spherical




growth habit: upright




growth habit: drooping




growth habit: spreading




 **Observed Characteristics for DUS Test**


- **Shoot : apical dominance**
 - Absent
 - Present
- **Shoot : density of spines**
 - Small
 - Medium
 - Large
- **Shoot : type of development**
 - a. en N
 - b. right
- **Shoot : type of branching**
 - Drooping
 - Erected
- **Shoot : density of branching**
 - Weak
 - Medium
 - Strong
- **Shoot : internode**
 - Short
 - Medium
 - Long
- **Shoot : insertion angle**
 - #30°
 - # 60°
 - > 60°




type of development: N




type of development: right





Internode: long





- **Leaf: density**
 - Weak
 - Medium
 - Strong
- **Leaf blade: size**
 - small
 - medium
 - Large
- **Leaf blade: color of upper side**
 - light green
 - Green
 - dark green
 - other
- **Leaf: shape**
 - Oblong
 - Lanceolate
 - "spatula"
- **Leaf blade: shape of apex**
 - Acute
 - Rounded
 - Other
- **Leaf blade: shape of base**
 - Cuneiform
 - other


shape of apex:
Rounded



"spatula"


Lanceolate:
Acute apex




Lanceolate




- **Leaf blade: length**
 - Short
 - Medium
 - Long
- **Leaf blade: width**
 - narrow
 - medium
 - broad
 -
- **Leaf blade: ratio length/width**
 - small
 - medium
 - Large
- **Leaf blade: stomatal density on the underside**
 - Weak
 - Medium
 - Strong
- **Petiole: length**
 - Short
 - long




- **Flower: insertion**
 - in the axils of leaves
 - On the nodes of branches
 - On both
- **Flower: Time of flowering**
 - Early
 - Late
 - phased
- **Plant: self-Incompatibility**
 - Total
 - partial
 - absent
- **Flower: Petal: color**
 - White
 - Light yellow
 - yellow








- **Fruit: color at maturity**
 - Brown
 - dark brown
 - very dark brown
 - black
 - dark black
- **Fruit: shape**
 - elongated
 - Fusiform
 - oval apiculate
 - rounded
 - globular
- **Fruit: length**
 - Short
 - Medium
 - Long
- **Fruit: width**
 - small
 - Medium
 - Large
- **Fruit: ratio length/width**
 - small
 - Medium
 - Large




Fusiform




elongated




rounded




oval apiculate



globular

	
<ul style="list-style-type: none">• Stone: weight<ul style="list-style-type: none">– low– Medium– High• Stone: shape<ul style="list-style-type: none">– rounded– Fusiform– Elliptic– sharp elliptical• Stone: length<ul style="list-style-type: none">– Short– Medium– Long• Stone: width<ul style="list-style-type: none">– small– Medium– Large	<ul style="list-style-type: none">• Stone: ratio length/width<ul style="list-style-type: none">– small– Medium– Large• Stone: number of almond lodge<ul style="list-style-type: none">– one– two– three• Stone: resistance to cracking<ul style="list-style-type: none">– Weak– Medium– strong• Stone: shell: thickness<ul style="list-style-type: none">– thin– Medium– Thick

	
<ul style="list-style-type: none">• Kernel: weight<ul style="list-style-type: none">– low– Medium– High• Kernel: length<ul style="list-style-type: none">– Short– Medium– Long• Kernel: width<ul style="list-style-type: none">– small– Medium– Large• Kernel: ratio length/width<ul style="list-style-type: none">– small– Medium– Large• Kernel: shape<ul style="list-style-type: none">– Elliptic– flattened– Others	<ul style="list-style-type: none">• Kernel: number<ul style="list-style-type: none">– one– two– three– >3• Kernel: color<ul style="list-style-type: none">– White– Light yellow– Yellow– others• Kernel: Oil content<ul style="list-style-type: none">– Low– Medium– High• Kernel: ratio kernel weight / Stone weight<ul style="list-style-type: none">– low– Medium– High