Overview of Arecaceae architecture

Architectural models Phyllotaxis angles and arrangements



Overview of Arecaceae architecture

Architectural models



















































Overview of Arecaceae architecture

Phyllotaxis angles and arrangements



Fibonacci and Phyllotaxy

Fibonacci

1	1	2	3	5	8	13	21	121393	196418	317811

The above series of numbers is a Fibonacci sequence, the series begins with two value 1 cells then followed by 2, after 2, numbers are obtained by adding the two previous numbers.

Theoretical phyllotaxis arrangements

1	1	2	3	5	8	13	21	121393	196418	317811
	1/1	1/2	1/3	2/5	3/8	5/13	8/21	46368/121393	75025/196418	121393/317811

The series of above ratios is a result of following the previous sequence, the series starts with 1 then 1/2, then 1/3 after 2, the reports are obtained, as the numerator the number located 2 columns preceding and as denominator the number of the column.

Corresponding phyllotaxis angles

1	1	2	3	5	8	13	21	121393	196418	317811
	1/1	1/2	1/3	2/5	3/8	5/13	8/21	46368/121393	75025/196418	121393/317811
	360	180	120	144	135	138,46	137,14	137,51	137,51	137,51

The series of angles corresponding to the arrangements is calculated by multiplying the numerator of reports by 360 ° (or 2Л); this angle is the angle formed by these 2 consecutively emitted leaves. Value 137.51 is the "golden value" of Fibonacci.





Phyllotaxis type 1/1





Growth and Architecture of Plants - Modeling and Simulation

LA RECHERCHE AGRONOMIQUE POUR LE DÉVEL OPPEMENT

Phyllotaxis type 1/1 : 365,0°







Phyllotaxis type 1/1 : 365,0°















Phyllotaxis type 1/2 : 183,0°















Phyllotaxis type 1/2

Dypsis decaryi









LA RECHERCHE AGRONOMIQUE POUR LE DÉVELOPPEMENT Overview of Arecaceae's Architecture - phyllotaxis arrangements and angles Phyllotaxis type 1/3 : 122,5°







Phyllotaxis type 1/3 : 122,5°







Phyllotaxis type 1/3



Neodypsis decaryi

Acoelorraphe wrightii











Phyllotaxis type 2/5:141,0°1













Overview of Arecaceae's Architecture - phyllotaxis arrangements and angles Phyllotaxis type 2/5



Cocos nucifera

Areca catechu









Phyllotaxis type 3/8 : 136,7°













Overview of Arecaceae's Architecture - phyllotaxis arrangements and angles Phyllotaxis type 3/8



Elaeis guineensis

Phoenix dactylifera





Phyllotaxis type 3/8 : 136,7° et 137° 136,7 epar1 epar2 epar3 epar4 epar5 epar6 epar7 epar8 appril appril appril appril appril appril appril appril 137,0











Overview of Arecaceae's Architecture - phyllotaxis arrangements and angles Phyllotaxis type 3/8 : 136,7°, -136,7° et 133,3°

Order 8 parastiches



Order 13 parastiches









The order 13 parastiche is reversed relative to the order 8 parastiche and is highly visible

The order 13 parastiche is in the same direction as the order 8 parastiche and is inconspicuous





MOdeling of Growth, Architecture and Flowering of *Phoenix dactylifera* Growth and topology

of date palm aerial végétative system















































The PRINCIPES Palm - Tree Graph Model





Merci de votre attention



