

**PHYTOCLIMATIC CHARACTERISATION AND HOMOLOGATION OF NATURAL
FORESTS OF *PINUS BRUTIA* IN TURKEY**

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SUMMARY

The taxonomic phytoclimatic diagnosis of ten Turkish meteorological stations representative of a number of *Pinus brutia* natural forests sites is performed using the ALLUE-ANDRADE (1990) method. Results were compared with Spanish climates in order to orientate the employment of this species for reafforestation purposes in Spain. The predominant phytoclimatic subtypes proved to be IV₂ (Mediterranean littoral zone), IV₃ and IV₄ (inner Taurus valleys), and IV(VI)₁ (transitional stands influenced by conditions occurring in the Anatolia steppe region).

INTRODUCTION

Although various aspects of the species have been dealt with in certain detail, papers referring to the phytoclimatic ambit of *Pinus brutia* forests are still scarce. Amongst them, we have the studies on phytosociology and ecology of the stands located in Southern Anatolia developed by QUEZEL & PAMUKCUOGLU (1973) and AKMAN, BARBERO & QUEZEL (1978). Natural forests occurring in Northern Anatolia were studied by QUEZEL, BARBERO & AKMAN (1980). The theoretical results set out below have been verified on the basis of the composition of the underwood and related Flora described by these authors for the different forest types of this species. Obviously, this contribution to the phytoclimatic knowledge of Turkish *Pinus brutia* forests is necessarily limited as a function of the low number of meteorological stations analyzed, of the degree of representativity of sites to which they are close by and the extent to which the existence of these stands is conditioned by local climate compensations.

Given the broad phytoclimatic tolerance of these species, which is found scattered over much of Turkey in extremely disparate locations and conditions, a process of synthesis into homogeneous phytoclimatic groups is required. It is in this direction that the present research is oriented.

MATERIAL AND METHODS

A total of ten Turkish stations representative of *Pinus brutia* natural forests were used for the study. Their respective Walter-Gausson climodiagrams are shown in figure 1. The methodology is the same as was previously followed by GARCIA-LOPEZ, ALLUE & ALLUE (1990 a & b) in the phytoclimatic characterisation of circummediterranean cedar species and homologation with specific Spanish sites. So, the stations' diagnoses were based on the method as proposed by ALLUE-ANDRADE (1990). This author's Phytoclimatic System consists in numerical taxonomy determining the position of the stations studied with respect to a continuous, quantified range of plant-life forms. To do so, fourteen climatic factors of accredited causality were chosen, the list of which can be seen in table 1.

The basic tool of this type of diagnosis is an indicator of the matrix type -the spectrum- which, from the calculation of a group of characterising values -the scalars-, enables the climate of the station to be defined in a finely differentiated way. Other details of the method may be consulted in ALLUE-ANDRADE (1990).

RESULTS

The spectra relating to the study's stations appear in tables 2 to 11. As regards their general phytoclimatic conditions, they fall into four broad groups:

- 1. Littoral pine forests in southern Anatolia (Anamur, Antalya, Fethiye).** These grow in a phytoclimatic environment corresponding to subtype IV₂ (non-ilicic arboreous mediterranean type). They are low-altitude formations, normally occurring below 500 m, with heavy seasonal precipitation caused by moist winds from the Mediterranean, but with dry summer periods of over five months. The outstanding characteristic is heat. The physiognomy is one of open pine wood with thermophilous species in the underwood, analogous to those occurring in Spanish IV₂ zones, corresponding to the *Oleo-Ceratonion* phyto-sociological Alliance in which *Olea europaea*, *Pistacia lentiscus*, *Pistacia terebinthus*, *Arbutus andrachne* and *Ceratonia siliqua* predominate (QUEZEL & PAMUKCUOGLU, 1973). All the stations surveyed display a tendency towards climatic subtype IV₄, which takes over at higher altitudes or in valleys in the interior of the Taurus Mountains. This tendency is particularly marked in the case of Antalya, whose spectrum shows analogous values in the column pertaining to phytoclimate IV₄.

- 2. Pine forests in the interior valleys of the Taurus Mountains and pine forests in NW Turkey (Ermenek-Feke and Gelibou-Sarköy).** These grow in a phytoclimatic environment corresponding to subtype IV₄ (ilicic arboreous less dry Mediterranean type). The littoral pine forests which march towards the interior of

Anatolia through the great valleys that cut the Taurus Mountains (Gök Su, Ak Su, etc.), are subjected, at altitudes over 500 m, to a climate that is colder and drier but less arid than that of the littoral pine forests. These are dense woods, situated in a more strictly forest-like environment, from whose underwood are lacking the thermophilous species of the *Oleo-Ceratonion* proper to non-ilicic phytoclimatic subtypes, which give way to species typical of the *Quercion ilicis* Alliance, proper to true ilicic phytoclimatic subtypes, such as *Ruscus aculeatus*, *Smilax aspera*, *Asparagus acutifolius*, *Jasminum fruticans* and *Vitis vinifera*. Pine forests located in NW Turkey (Gelibolu, Sarköy), nearby *Quercus ilex* formations, are also close to this type.

3. Pine forests in the inner valleys of the Pontic Mountains (Erbaa, Niksar). These occur in a phytoclimatic environment corresponding to subtype IV₃ (ilicic arboreous drier mediterranean type). Pine forests located in a certain number of interior valleys of the Pontic Mountains grow under genuine mediterranean phytoclimatic subtypes drier than phytoclimate IV₄ from the inner valleys of the Taurus Mountains, because of foehn effects originated from moist winds coming from the Black Sea. Certain valleys inside the Taurus Mountains, especially dry, may also be close to this subtype (Sakarya). Many of the species in the underwood (*Pistacia atlantica*, *Jasminum fruticans*, *Phyllirea media*, *Juniperus oxycedrus*, etc.) belong to the *Quercion ilicis* Alliance. Subtype IV₄ is also the main phytoclimatic tendency, generally occurring at higher altitudes.

4. Presteppic pine forests in the Anatolian slopes and valleys of the Taurus Mountains. These grow in a phytoclimatic environment corresponding to subtype IV(VI)₁ (transitional towards deciduous broad-leaved arboreous Mediterranean type), usually occurring at altitudes located between subtypes IV₃ or IV₄ and subtype IV(VII) (transitional towards cold steppe Mediterranean type). These formations are very strongly influenced by presteppic conditions, with lower average temperatures and annual rainfall than the foregoing, but not always with a longer arid period. Pine forests located in the Anatolian slopes of the Pontic Mountains may also develop under this phytoclimatic subtype. Accompanying species belong both to typically Mediterranean forests and to marcescent broad-leaved formations. Among the last group we can find *Styrax officinalis*, *Quercus cerris*, *Quercus libani* and *Ostrya carpinifolia*. There is also an enrichment in the form of nemoral herbaceous species alongside woody species of the Garrigue type, as witness the marked tendency towards type VI(IV)₁ (nemoro-Mediterranean type with marcescent broad-leaved cold deciduous trees).

Figure 2 shows a number of graphs of altitudinal variation in vegetation including this species, modified on the basis of the graphs of ATALAY (1987).

- K, quotient resulting from the division of the area of the Gausson graph in which $2t_i > p_i$ by those in which $2t_i < p_i$.
- A, time-span, measured in months, during which the curve of monthly mean values, t_i , lies above the monthly precipitation curve, p_i , in a ombro-thermal Gausson-type graph (months on the X-axis and temperature and precipitation on the Y-axis, so that the values of p are at the same height as the expression in degrees of half their value). This factor correlates well with the actual configuration of water deficits and implies the condition $2t_i > p_i$ approximately.
- P, total annual precipitation.
- PE, minimum monthly summertime precipitation.
- HS, whole number of months in which mean minima < 0 .
- TMF, lowest monthly mean.
- T, annual mean.
- TMC, highest monthly mean.
- TMMF, mean value of minima in month with lowest mean (TMF).
- F, absolute minimum for the interval of years studied.
- OSC, annual mean of daily fluctuation.
- TMMC, mean of maxima in month having highest mean (TMC).
- C, absolute maximum for the period of years studied.
- HP, whole number of months in which absolute minimum < 0 while mean of minima > 0 .

Table 1

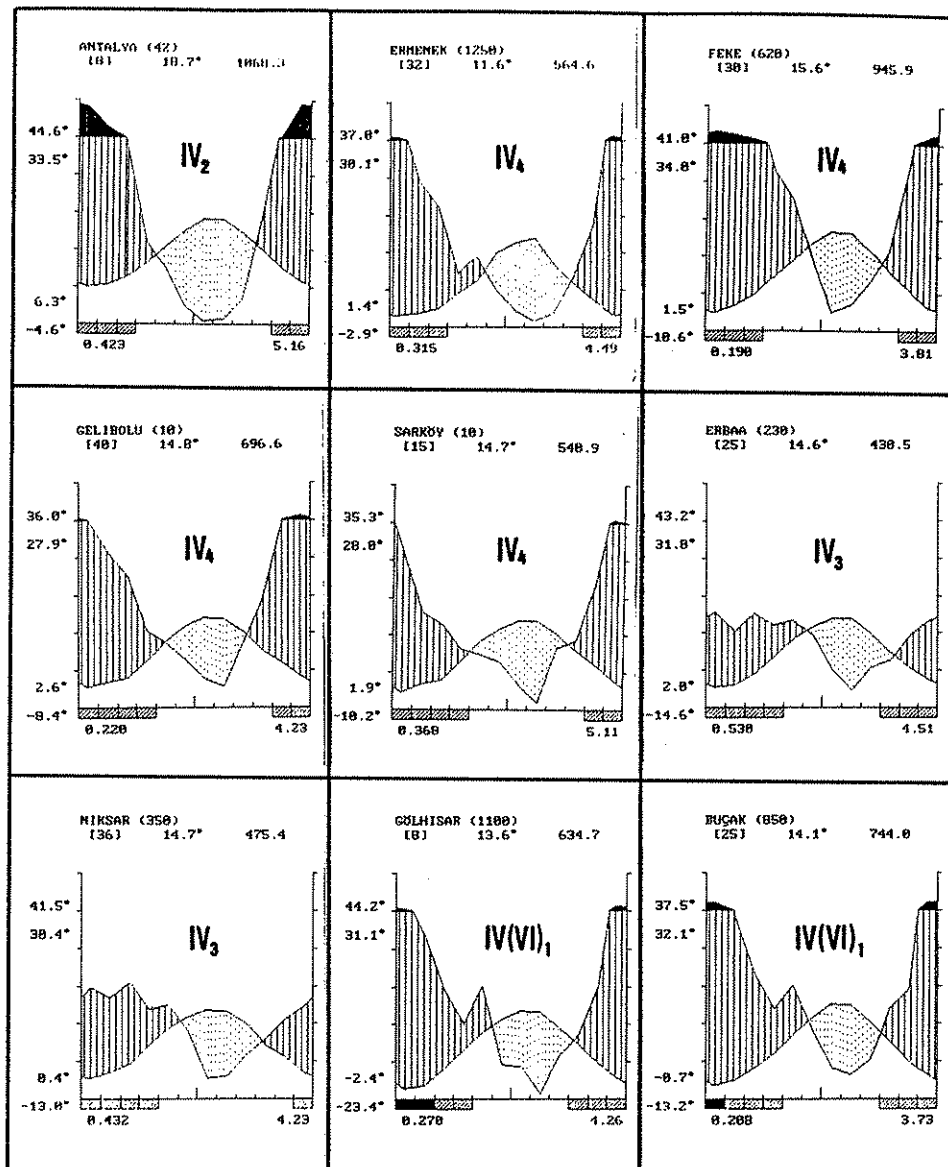


FIGURE 1

AMAZON Nº: 10 CS.: ; ALT.: 3 ARO/MAYOS: 32

PARAMETROS FITOCLIMATICOS

FACTORES: K A P PE HS TNP T TNC TNP P OSC TMC C HP
 VALORES: 0.472 5.60 1033.0 0.0 0 11.7 19.5 28.4 8.4 -4.7 9.3 33.8 44.2 2

PODER CARACTERIZADOR 0.17 0.25 0.14 0.17 0.08 0.25 0.50 0.25 0.20 0.10 0.06 0.13 0.11 0.11

JERARQUIA DISCRIMINANTE PUNTUAL 6 2 8 7 13 3 1 4 5 12 14 9 10 11

JERARQUIA DISCRIMINANTE GENERAL 1 2 3 4 5 6 7 8 9 10 11 12 13 14

TAXONOMIA FITOCLIMATICA INTEGRAL:

ARIDOS		MEDITERRANEOS						MEMORALES						OROBOREALOIDES		
SUBME-DIFER. ARIDO	SUB-ARIDO	GENUINOS			SUBMEMORALES			MEMOROMEDITERRANEOS			SUB-EST.	GENUINOS		SUBMEM. GENUI.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
III(IV)	IV(III)	VI	IV2	IV3	IV4	IV(VI)1	IV(VI)2	VI(IV)1	VI(IV)2	VI(IV)3	VI(IV)4	VI(VII)	VI(V)	VI	VIII(VI)	X(VII)
*****	-0.0A	0.1	1.0	0.9	0.9	0.9	-4.2#	0.5	-49.0#	-28.9#	-510.0#	-130.2#	-556.0#	-2226.8#	-2226.8#	*****
-130.2#	0.8	0.7	0.2	0.5	-0.2A	-0.1A	-15.0#	-15.0#	-15.0#	-15.0#	-63.5#	-30.4#	-30.4#	-30.4#	-20.1#	*****
-4137.8#	-35.1#	-67.7#	0.7	-137.5#	0.8	-2.8#	-4.0#	-6.3#	0.9	0.4	-1.3#	-0.9A	0.2	0.3	0.3	-6.0#
1.0	0.0	0.0	0.0	0.0	0.0	-0.2A	-0.9A	-0.1A	-0.5A	-0.3A	-9.0#	-1.6#	-0.6A	-1.9#	-1.1#	-95.5#
1.0	1.0	1.0	1.0	1.0	1.0	-1.8#	1.0	0.0	0.0	1.0	0.0	-1.0A	1.0	0.0	-5.3#	-160.0#
0.8	0.9	-2.3#	1.0	-2.3#	-2.3#	-9.3#	-0.6A	-3.5#	-3.0#	0.4	-1.6#	-3.6#	-1.7#	-31.1#	-12.2#	-960.0#
-1.2#	0.7	-1.8#	0.6	-1.4#	-0.2A	-4.4#	-0.4A	-1.9#	-2.9#	-2.2#	-5.5#	-3.9#	-6.8#	-14.7#	-8.2#	*****
-9.7#	1.0	-0.4A	0.9	0.4	0.6	-0.7A	-0.9A	-0.8A	-1.1#	-1.0#	-4.0#	0.2	-4.2#	-8.0#	-5.4#	-1128.0#
0.5	0.8	-2.0#	0.9	-1.8#	0.2	-10.2#	-1.3#	-2.2#	-3.0#	0.5	-0.9A	-11.2#	-0.4A	-9.5#	-12.1#	-755.3#
-0.6A	1.0	0.4	1.0	0.2	0.7	-2.1#	0.5	0.0	-0.1A	1.0	0.8	-1.4#	0.9	-4.6#	-1.4#	-45.2#
1.0	1.0	0.7	0.9	0.7	0.9	0.5	0.8	0.7	1.0	1.0	0.5	1.0	0.8	0.9	0.9	-13.4#
-15.4#	0.8	0.9	1.0	1.0	1.0	0.9	-0.1A	0.3	0.5	-0.2A	-1.4#	-0.0A	-2.1#	-4.7#	-1.8#	-711.5#
-2.1#	0.8	0.8	1.0	0.9	0.9	0.6	0.2	0.6	-0.0A	-0.7A	-0.1A	-0.0A	-1.7#	-0.4A	-173.2#	
0.9	1.0	0.5	1.0	-1.3#	0.8	-1.3#	0.6	-0.8A	-0.8A	1.0	0.5	-1.8#	0.7	-24.0#	-1.3#	-48.0#
6	12	9	14	9	11	4	5	6	5	7	4	2	5	3	2	0
1	1	1	0	0	2	3	5	3	3	3	2	4	3	0	1	0
7	1	4	0	5	1	7	4	5	6	4	8	8	6	11	11	14
*****	-1.80	-4.9#	0.79	-9.91	0.38	-4.25	-1.70	-2.07	-5.19	-3.03	-42.55	-13.81	-42.74	-168.30	-163.91	*****
*****	-0.23#	-0.79#	0.13G	-1.48#	0.02#	-0.95#	-0.41#	-0.50#	-1.06#	-0.67#	-7.64#	-2.60#	-7.52#	-28.70#	-27.72#	*****

ANTALYA Nº: 11 CS.: ; ALT.: 42 ARO/MAYOS: 8

PARAMETROS FITOCLIMATICOS

FACTORES: K A P PE HS TNP T TNC TNP P OSC TMC C HP
 VALORES: 0.423 5.16 1068.0 2.0 0 10.1 18.7 28.2 6.3 -4.6 10.0 33.5 44.6 5

PODER CARACTERIZADOR 0.17 0.17 0.14 0.13 0.08 0.25 0.20 0.25 0.11 0.10 0.06 0.10 0.11 0.07

JERARQUIA DISCRIMINANTE PUNTUAL 4 5 6 7 12 1 3 2 8 10 14 11 9 13

JERARQUIA DISCRIMINANTE GENERAL 1 2 3 4 5 6 7 8 9 10 11 12 13 14

TAXONOMIA FITOCLIMATICA INTEGRAL:

ARIDOS		MEDITERRANEOS						MEMORALES						OROBOREALOIDES		
SUBME-DIFER. ARIDO	SUB-ARIDO	GENUINOS			SUBMEMORALES			MEMOROMEDITERRANEOS			SUB-EST.	GENUINOS		SUBMEM. GENUI.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
III(IV)	IV(III)	VI	IV2	IV3	IV4	IV(VI)1	IV(VI)2	VI(IV)1	VI(IV)2	VI(IV)3	VI(IV)4	VI(VII)	VI(V)	VI	VIII(VI)	X(VII)
*****	-0.0A	0.1	0.9	0.8	1.0	0.9	-2.7#	0.7	-37.7#	-22.0#	-405.2#	-110.8#	-446.3#	-1788.3#	-1788.3#	*****
-159.8#	0.7	0.9	0.7	0.8	0.5	0.5	-11.2#	-11.2#	-11.2#	-11.2#	-52.6#	-25.6#	-25.6#	-25.6#	-16.9#	*****
-4478.1#	-38.7#	-74.5#	0.6	-154.6#	0.7	-3.4#	-4.9#	-7.4#	0.9	0.5	-1.9#	-1.3#	0.2	0.4	0.4	-3.6#
-3.0#	0.5	0.3	0.5	0.3	0.2	-0.5A	0.1	-0.1A	0.0	0.0	-8.0#	-1.4#	-0.5A	-1.7#	-1.0A	-90.9#
1.0	1.0	1.0	1.0	1.0	1.0	-1.8#	1.0	0.0	0.0	1.0	0.0	-1.0A	1.0	0.0	-5.3#	-160.0#
-3.0#	0.6	-0.6A	0.4	-0.6A	-0.6A	-5.5#	0.8	-1.9#	-1.7#	1.0	-0.3A	-2.0#	-0.1A	-21.1#	-8.6#	-771.8#
0.7	1.0	-0.9A	0.9	-0.6A	0.3	-3.3#	0.1	-1.4#	-2.2#	-1.2#	-4.1#	-3.0#	-5.2#	-12.1#	-6.9#	*****
-8.0#	1.0	-0.2A	1.0	0.4	0.7	-0.6A	-0.7A	-0.7A	-1.0A	-0.9A	-3.8#	0.2	-4.0#	-7.7#	-5.2#	-1101.2#
0.8	1.0	-0.1A	1.0	0.0	0.8	-24.6#	0.5	-0.8A	-1.4#	1.0	0.4	-7.3#	0.5	-5.8#	-7.8#	-575.0#
-0.5A	1.0	0.3	1.0	0.2	0.7	-2.1#	0.5	0.0	-0.1A	1.0	0.8	-1.4#	0.9	-4.5#	-1.5#	-45.6#
0.9	1.0	0.9	1.0	0.8	1.0	0.6	0.9	0.8	0.8	1.0	1.0	0.7	0.9	0.9	1.0	-42.6#
-13.0#	0.9	0.9	1.0	1.0	1.0	0.9	0.1	0.4	0.5	-0.1A	-1.2#	0.1	-1.3#	-4.4#	-1.6#	-687.1#
-2.6#	0.8	0.7	0.9	0.9	0.8	0.9	0.6	0.1	0.6	-0.3A	-0.8A	-0.2A	-0.1A	-2.0#	-0.5A	-184.0#
-4.4#	0.0	1.0	0.0	1.0	0.8	1.0	0.6	0.9	0.9	0.0	1.0	0.9	1.0	-3.0#	1.0	0.0
4	12	9	14	11	13	7	9	8	6	8	5	4	6	3	3	1
1	1	4	0	2	1	1	2	2	3	3	2	2	3	0	2	0
9	1	1	0	1	0	6	3	4	5	3	7	8	5	11	9	13
*****	-2.10	-5.02	0.77	-10.61	0.64	-2.59	-1.06	-1.45	-3.70	-2.15	-33.92	-10.88	-34.23	-133.91	-131.51	*****
*****	-0.30#	-0.75#	0.11G	-1.54#	0.07A	-0.37#	-0.19#	-0.26#	-0.65#	-0.38#	-5.67#	-1.79#	-5.76#	-22.43#	-21.95#	*****

TABLE 2 & TABLE 3

EREMEX

Nº: 8

CS.: :

ALT.: 1250

ARO/NºAROS: 32

PARAMETROS FITOCLIMATICOS

FACTORES:	K	A	P	PE	HS	TMP	T	TMC	TWMP	F	OSC	TWNC	C	HP
VALORES:	0.315	4.49	565.0	3.0	0	3.0	11.6	23.8	1.4	-2.9	8.2	30.1	37.0	5

PODER CARACTERIZADOR	0.17	0.17	0.17	0.11	0.08	0.14	0.13	0.09	0.14	0.14	0.06	0.08	0.06	0.07
JERARQUIA DISCRIMINANTE PUNTUAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14
JERARQUIA DISCRIMINANTE GENERAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14

TAXONOMIA FITOCLIMATICA

INTEGRAL:

ARIDOS		MEDITERRANEO								SEMORALES					OROBOREALOIDES	
SUBME-DIFER.	SUB-ARIDO	GENUINOS				SUBSEMORALES				SEMOROMEDITERRANEO			SUB-EST.	GENUINOS	SUBSEM. GENUI.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
III(IV)	IV(III)	IV	IV2	IV3	IV4	IV(VI)1	IV(VI)2	VI(IV)1	VI(IV)2	VI(IV)3	VI(IV)4	VI(VII)	VI(V)	VI	VIII(VI)	X(VIII)
*****	-0.1A	0.0	0.7	0.5	0.9	0.6	-0.2A	1.0	-18.0A	-9.8A	-216.7A	-61.0A	-247.1A	-991.3A	-991.3A	*****
-195.6A	0.5	1.0	1.0	1.0	1.0	1.0	-6.4A	-6.4A	-6.4A	-6.4A	-38.0A	-19.2A	-19.2A	-19.2A	-12.5A	*****
-879.1A	-2.9A	-7.5A	0.5	-4.4A	0.3	1.0	0.8	1.0	-0.8A	-1.1A	-0.3A	0.7	-1.1A	-2.4A	-2.1A	-88.9A
-8.0A	0.7	0.4	0.7	0.4	0.3	0.3	-0.3A	0.2	0.0	0.1	-7.5A	-1.3A	-0.5A	-1.6A	-0.9A	-88.7A
1.0	1.0	1.0	1.0	1.0	1.0	-1.8A	1.0	0.0	0.0	1.0	0.0	-1.0A	1.0	0.0	-5.3A	-168.0A
-81.8A	-23.4A	-0.4A	-12.3A	-0.7A	-0.6A	0.9	-10.8A	1.0	1.0	-8.0A	0.1	1.0	-1.0A	0.8	0.5	-184.0A
-60.2A	-8.9A	-0.6A	-5.4A	-0.3A	-0.4A	0.9	-1.2A	1.0	1.0	-0.4A	0.9	1.0	0.9	0.6	0.3	*****
-7.2A	-0.3A	1.0	0.6	0.9	0.9	0.9	1.0	0.7	0.7	0.8	0.3	0.1	-0.2A	-2.0A	-1.3A	-594.4A
-9.0A	-1.6A	0.7	-1.3A	0.7	0.5	-2.6A	-0.6A	0.9	0.7	-2.6A	0.6	-1.1A	0.9	-0.2A	-1.1A	-249.7A
0.7	1.0	-0.0A	1.0	-0.3A	0.5	-3.1A	-0.0A	-0.2A	-0.5A	1.0	0.5	-2.0A	0.7	-5.8A	-2.2A	-52.5A
0.7	1.0	0.4	0.7	0.4	0.8	0.1	0.6	0.3	0.3	0.8	0.9	0.0	1.0	0.4	0.7	0.6
1.0	0.7	0.8	0.8	0.7	0.7	1.0	1.0	0.8	1.0	0.8	0.3	0.9	-0.1A	-1.4A	-0.2A	-440.0A
0.5	0.8	0.0	0.1	0.5	0.6	0.2	0.8	1.0	0.8	0.4	0.9	0.9	1.0	1.0	1.0	-35.0A
-4.4A	0.0	1.0	0.0	1.0	0.8	1.0	0.6	0.9	0.9	0.0	1.0	0.9	1.0	-3.0A	1.0	0.0
5	8	10	11	10	12	11	7	12	10	8	10	8	7	5	5	2
0	2	3	0	3	2	0	4	1	2	1	1	1	3	1	2	0
9	4	1	3	1	0	3	3	1	2	5	3	5	4	8	7	12
*****	-2.25	-0.16	-0.85	0.09	0.52	0.04	-0.98	0.16	-1.39	-1.67	-18.36	-5.72	-18.77	-73.14	-72.39	*****
*****	-0.33A	-0.05A	-0.13A	-0.01A	0.05A	0.00A	-0.17A	-0.01A	-0.26A	-0.29A	-3.06A	-0.96A	-3.16A	-12.15A	-12.04A	*****



PERE

Nº: 9

CS.: :

ALT.: 620

ARO/NºAROS: 30

PARAMETROS FITOCLIMATICOS

FACTORES:	K	A	P	PE	HS	TMP	T	TMC	TWMP	F	OSC	TWNC	C	HP
VALORES:	0.190	3.81	946.0	10.0	0	5.0	15.6	26.5	1.5	-10.6	13.0	34.0	41.0	5

PODER CARACTERIZADOR	0.20	0.17	0.17	0.10	0.08	0.11	0.14	0.11	0.14	0.08	0.07	0.13	0.06	0.07
JERARQUIA DISCRIMINANTE PUNTUAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14
JERARQUIA DISCRIMINANTE GENERAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14

TAXONOMIA FITOCLIMATICA

INTEGRAL:

ARIDOS		MEDITERRANEO								SEMORALES					OROBOREALOIDES	
SUBME-DIFER.	SUB-ARIDO	GENUINOS				SUBSEMORALES				SEMOROMEDITERRANEO			SUB-EST.	GENUINOS	SUBSEM. GENUI.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
III(IV)	IV(III)	IV	IV2	IV3	IV4	IV(VI)1	IV(VI)2	VI(IV)1	VI(IV)2	VI(IV)3	VI(IV)4	VI(VII)	VI(V)	VI	VIII(VI)	X(VIII)
*****	-0.1A	-0.1A	0.1	-0.1A	0.5	0.3	1.0	0.9	-3.9A	-1.4A	-71.3A	-21.6A	-89.3A	-360.0A	-360.0A	*****
-235.5A	0.3	0.6	0.8	0.8	0.9	0.9	-2.8A	-2.8A	-2.8A	-2.8A	-25.5A	-13.5A	-13.5A	-13.5A	-8.0A	*****
-3350.1A	-26.6A	-52.1A	0.9	-99.2A	0.9	-1.5A	-2.0A	-3.9A	0.7	0.2	-0.0A	-0.0A	-0.0A	-0.1A	-0.0A	-14.4A
-99.0A	0.8	0.9	0.7	0.9	0.9	0.9	0.6	0.8	0.8	0.8	-4.6A	-0.8A	-0.2A	-1.0A	-0.5A	-73.8A
1.0	1.0	1.0	1.0	1.0	1.0	-1.8A	1.0	0.0	0.0	1.0	0.0	-1.0A	1.0	0.0	-5.3A	-168.0A
-49.4A	-12.9A	0.8	-7.0A	0.7	0.7	0.8	-4.5A	0.9	0.8	-3.5A	0.9	0.8	0.5	-1.6A	-1.0A	-308.8A
-8.7A	-0.6A	1.0	0.2	1.0	1.0	-0.1A	1.0	0.2	-0.2A	0.9	-0.2A	-0.4A	-0.5A	-4.4A	-2.8A	*****
0.5	0.8	0.6	1.0	0.9	1.0	0.3	0.2	0.0	-0.2A	-0.0A	-1.8A	0.2	-2.2A	-5.1A	-3.5A	-887.0A
-8.7A	-1.5A	0.7	-1.2A	0.7	0.5	-2.9A	-0.5A	0.9	0.7	-2.4A	0.6	-1.2A	0.9	-0.3A	-1.2A	-255.0A
-12.2A	-0.2A	1.0	0.3	1.0	1.0	0.2	0.9	0.7	0.8	-0.7A	1.0	0.2	0.8	-1.0A	0.4	-35.2A
-2.3A	0.8	0.9	0.9	1.0	0.8	1.0	0.9	0.9	0.9	0.3	0.5	0.9	-0.0A	0.6	0.8	-345.0A
-17.2A	0.8	0.8	1.0	1.0	1.0	0.9	-0.2A	0.3	0.4	-0.3A	-1.5A	-0.1A	-2.2A	-5.0A	-1.9A	-726.0A
0.6	1.0	1.0	0.9	1.0	1.0	0.9	1.0	0.8	1.0	0.9	0.3	0.8	0.6	0.5	0.5	-99.0A
-4.4A	0.0	1.0	0.0	1.0	0.8	1.0	0.6	0.9	0.9	0.0	1.0	0.9	1.0	-3.0A	1.0	0.0
3	8	12	12	12	14	10	9	12	10	7	7	6	6	3	4	1
0	1	0	1	0	1	0	1	0	2	3	2	5	4	3	3	0
11	3	1	2	1	0	3	3	2	2	4	5	3	4	8	7	13
*****	-2.61	-3.00	-0.04	-6.32	0.85	0.06	-0.19	0.04	-0.01	-0.51	-7.20	-2.48	-7.37	-28.17	-27.31	*****
*****	-0.41A	-0.55A	-0.01A	-1.10A	0.10A	-0.01A	-0.05A	-0.02A	-0.04A	-0.08A	-1.36A	-0.48A	-1.45A	-5.47A	-5.36A	*****

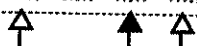


TABLE 4 & TABLE 5

GRILOLO Nº: 5 CS.: ; ALT.: 10 AÑO/NºAÑOS: 40

PARAMETROS FITOCLIMATICOS

FACTORES:	K	A	P	PE	HS	TMP	T	THC	THNP	P	OSC	THNC	C	HP
VALORES:	0.220	4.23	697.0	11.0	0	5.4	14.4	24.1	2.6	-0.4	7.9	27.9	36.0	6
PODER CARACTERIZADOR	0.17	0.17	0.14	0.10	0.08	0.11	0.09	0.09	0.13	0.09	0.07	0.08	0.08	0.08
JERARQUIA DISCRIMINANTE PUNTUAL	1	2	3	6	12	5	7	8	4	9	14	13	10	11
JERARQUIA DISCRIMINANTE GENERAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14

TAXONOMIA FITOCLIMATICA

INTEGRAL:

ARIDOS		MEDITERRANEOS								SEMORALES					OROBORCALOIDES						
SUBME-DITERR. ARIDO	SUB-DITERR. ARIDO	GENUINOS				SUBSEMORALES				SEMOROMEDITERRANEOS					SUB-EST.	GENUINOS		SUBSEM. GENUI.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
III (IV)	IV (III)	IV1	IV2	IV3	IV4	IV(VI)1	IV(VI)2	VI (IV)1	VI (IV)2	VI (IV)3	VI (IV)4	VI (VII)	VI (V)	VI	VIII (VI)	X (VIII)					
*****	-0.1A	-0.0A	0.3	0.1	0.6	0.4	0.8	0.9	-6.4A	-2.9A	-99.0A	-29.3A	-120.0A	-483.0A	-483.0A	*****					
-210.4A	0.4	0.9	1.0	1.0	1.0	1.0	-4.9A	-4.9A	-4.9A	-4.9A	-32.9A	-16.9A	-16.9A	-16.9A	-11.0A	*****					
-1554.9A	-8.7A	-18.6A	0.9	-23.8A	0.8	0.7	0.9	0.3	-0.1A	-0.6A	0.8	1.0	-0.7A	-1.5A	-1.2A	-56.1A					
-120.0A	0.7	0.9	0.5	1.0	0.9	1.0	0.7	0.8	0.8	0.9	-4.2A	-0.7A	-0.1A	-0.9A	-0.4A	-71.0A					
1.0	1.0	1.0	1.0	1.0	1.0	-1.8A	1.0	0.0	0.0	1.0	0.0	-1.0A	1.0	0.0	-5.3A	-168.0A					
-43.9A	-11.1A	0.9	-6.1A	0.8	0.8	0.6	-3.6A	0.8	0.7	-2.8A	0.9	0.7	0.7	0.7	-2.4A	-1.4A	-337.6A				
-15.5A	-1.7A	1.0	-0.5A	1.0	0.9	0.3	0.8	0.5	0.2	1.0	0.3	0.1	0.2	-3.0A	-2.0A	*****					
-5.1A	-0.1A	1.0	0.7	0.9	0.9	0.9	0.9	0.7	0.6	0.7	0.1	0.1	-0.4A	-2.3A	-1.5A	-624.0A					
-5.3A	-0.6A	1.0	-0.4A	1.0	0.8	-6.2A	0.4	0.7	0.4	-1.1A	0.9	-2.2A	1.0	-1.1A	-2.4A	-317.0A					
-6.6A	0.5	0.9	0.7	0.9	1.0	-0.5A	1.0	0.5	0.6	0.2	1.0	-0.3A	1.0	-2.1A	-0.2A	-32.0A					
0.6	0.9	0.3	0.6	0.3	0.7	0.0	0.6	0.2	0.1	0.7	0.9	-0.2A	1.0	0.2	0.6	-2.2A					
-3.7A	-0.3A	0.1	0.3	0.1	0.2	0.8	0.7	1.0	1.0	1.0	0.8	1.0	0.6	-0.0A	0.5	-309.3A					
-0.1A	0.7	-0.4A	-0.3A	0.3	0.4	-0.1A	0.7	1.0	0.7	0.0	1.0	0.8	1.0	1.0	1.0	-24.0A					
-8.0A	-1.0A	0.8	-1.0A	0.8	0.5	0.8	0.0	1.0	1.0	-1.0A	0.8	0.0	0.9	0.0	0.8	0.0					
2	6	11	9	13	14	10	12	13	11	8	11	7	9	4	4	1					
1	5	2	4	0	0	2	0	0	1	2	0	4	3	2	2	0					
11	3	1	1	1	0	2	2	1	2	4	3	2	8	8	13						
*****	-1.3A	-0.7A	-0.17	-1.0A	0.7A	-0.15	0.01	0.25	-0.3A	-0.55	-9.1A	-3.3A	-9.35	-36.57	-36.11	*****					
*****	-0.18A	-0.13A	-0.02A	-0.18A	0.08A	-0.02A	-0.02A	0.00A	-0.10A	-0.10A	-1.55A	-0.56A	-1.59A	-6.04A	-5.97A	*****					

SARKOT Nº: 4 CS.: ; ALT.: 10 AÑO/NºAÑOS: 15

PARAMETROS FITOCLIMATICOS

FACTORES:	K	A	P	PE	HS	TMP	T	THC	THNP	P	OSC	THNC	C	HP
VALORES:	0.368	5.11	541.0	4.0	0	4.7	14.7	24.0	1.9	-10.2	8.0	28.0	35.3	6
PODER CARACTERIZADOR	0.17	0.17	0.17	0.11	0.08	0.11	0.09	0.09	0.14	0.08	0.07	0.08	0.09	0.08
JERARQUIA DISCRIMINANTE PUNTUAL	1	2	3	5	12	6	7	8	4	10	14	13	9	11
JERARQUIA DISCRIMINANTE GENERAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14

TAXONOMIA FITOCLIMATICA

INTEGRAL:

ARIDOS		MEDITERRANEOS								SEMORALES					OROBORCALOIDES						
SUBME-DITERR. ARIDO	SUB-DITERR. ARIDO	GENUINOS				SUBSEMORALES				SEMOROMEDITERRANEOS					SUB-EST.	GENUINOS		SUBSEM. GENUI.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
III (IV)	IV (III)	IV1	IV2	IV3	IV4	IV(VI)1	IV(VI)2	VI (IV)1	VI (IV)2	VI (IV)3	VI (IV)4	VI (VII)	VI (V)	VI	VIII (VI)	X (VIII)					
*****	-0.0A	0.0	0.8	0.6	1.0	0.8	-1.3A	0.9	-26.8A	-15.2A	-301.9A	-83.6A	-337.6A	-1353.2A	-1353.2A	*****					
-162.3A	0.7	0.9	0.7	0.8	0.5	0.6	-10.8A	-10.8A	-10.8A	-10.8A	-51.4A	-25.1A	-25.1A	-25.1A	-16.5A	*****					
-776.8A	-2.2A	-5.9A	0.4	-2.3A	0.2	1.0	0.6	1.0	-1.0A	-1.2A	-0.6A	0.6	-1.1A	-2.6A	-2.2A	-95.7A					
-15.0A	0.8	0.5	0.9	0.5	0.4	0.4	-0.2A	0.3	0.1	0.3	-7.1A	-1.3A	-0.4A	-1.5A	-0.8A	-86.5A					
1.0	1.0	1.0	1.0	1.0	1.0	-1.8A	1.0	0.0	0.0	1.0	0.0	-1.0A	1.0	0.0	-5.3A	-168.0A					
-53.8A	-14.3A	0.7	-7.8A	0.5	0.6	0.9	-5.3A	0.9	0.8	-4.1A	0.8	0.8	0.3	-1.0A	-0.7A	-288.0A					
-18.4A	-1.9A	1.0	-0.6A	1.0	0.9	0.4	0.8	0.5	0.2	1.0	0.4	0.1	0.2	-2.8A	-1.9A	*****					
-5.8A	-0.2A	1.0	0.7	0.9	0.9	0.9	1.0	0.7	0.6	0.8	0.2	0.1	-0.3A	-2.2A	-1.5A	-614.0A					
-7.3A	-1.2A	0.8	-0.9A	0.8	0.7	-4.0A	-0.2A	0.8	0.6	-1.9A	0.7	-1.5A	0.9	-0.6A	-1.6A	-276.8A					
-11.1A	-0.1A	1.0	0.4	1.0	1.0	0.1	1.0	0.7	0.8	-0.5A	1.0	0.1	0.9	-1.2A	0.3	-26.3A					
0.6	0.9	0.3	0.6	0.3	0.7	0.0	0.6	0.2	0.2	0.7	0.9	-0.1A	1.0	0.3	0.6	-1.0A					
-3.2A	-0.2A	0.2	0.3	0.1	0.3	0.8	0.7	1.0	1.0	1.0	0.8	1.0	0.6	-0.1A	0.4	-314.7A					
-0.7A	0.6	-0.8A	-0.6A	0.1	0.3	-0.3A	0.5	0.9	0.5	-0.4A	1.0	0.7	1.0	1.0	1.0	-17.5A					
-8.0A	-1.0A	0.8	-1.0A	0.8	0.5	0.8	0.0	1.0	1.0	-1.0A	0.8	0.0	0.9	0.0	0.8	0.0					
2	5	12	9	13	14	11	9	13	11	6	10	8	9	4	5	1					
1	5	1	4	0	0	1	2	0	1	3	1	2	2	2	2	1					
11	4	1	1	1	0	2	3	1	2	5	3	4	3	8	7	12					
*****	-1.21	0.10	-0.36	0.44	0.64	0.04	-0.82	-0.12	-2.34	-2.17	-25.32	-7.80	-25.56	-99.22	-98.62	*****					
*****	-0.14A	-0.02A	-0.04A	0.04A	0.07A	0.00A	-0.15A	-0.06A	-0.42A	-0.36A	-4.23A	-1.30A	-4.29A	-16.50A	-16.39A	*****					

TABLE 6 & TABLE 7

EDDA' N°: 2 CS.: ; ALT.: 230 AÑO/AÑOS: 25

PARAMETROS FITOCLIMATICOS

FACTORES:	K	A	P	PE	HS	TMP	T	TMC	TMP	P	OSC	TMC	C	HP
VALORES:	0.530	4.51	431.0	9.0	0	5.4	14.6	23.8	2.0	-14.6	12.2	31.8	43.2	7
PODER CARACTERIZADOR	0.17	0.17	0.25	0.10	0.08	0.11	0.09	0.09	0.34	0.06	0.07	0.09	0.09	0.11
JEARQUIA DISCRIMINANTE PUNTUAL	2	3	1	7	13	5	8	9	4	12	14	10	11	6
JEARQUIA DISCRIMINANTE GENERAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14

TAXONOMIA FITOCLIMATICA INTEGRAL:

ARIDOS		MEDITERRANEOS								SEMIOCIDALES					OROBORBALOIDES		
SUBME-DIFER.	SUB-ARIDO	GENUINOS				SUBSEMIOCIDALES				SEMIOCIDALES			SUB-EST.	GENUINOS	SUBSEM. GENUI.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
II(I)	III(II)	IV	IV2	IV3	IV4	IV(VI)	IV(VI)2	VI(IV)1	VI(IV)2	VI(IV)3	VI(VII)	VI(VII)2	VI(VII)3	VI(VI)	VI	VIII(VI)	X(VIII)
*****	-0.0A	0.1	1.0	1.0	0.7	1.0	-6.3F	0.1	-64.1F	-38.4F	-649.6F	-174.6F	-701.3F	-2008.0F	-2008.0F	*****	*****
-194.4F	0.5	1.0	1.0	1.0	1.0	1.0	-6.5F	-6.5F	-6.5F	-6.5F	-38.4F	-19.3F	-19.3F	-19.3F	-12.7F	*****	*****
-388.7F	0.3	-0.9A	-0.1A	0.8	-0.4A	0.7	-0.6A	0.6	-1.7F	-1.7F	-2.6F	-0.1A	-1.5F	-3.6F	-3.0F	-129.8F	*****
-80.0F	0.9	0.9	0.9	0.9	0.8	0.9	0.5	0.7	0.7	0.7	-5.0F	-0.8A	-0.2A	-1.0F	-0.6A	-75.8F	*****
1.0	1.0	1.0	1.0	1.0	1.0	-1.8F	1.0	0.0	0.0	1.0	0.0	-1.0A	1.0	0.0	-5.3F	-168.0F	*****
-43.3F	-11.1F	0.9	-6.1F	0.8	0.8	0.6	-3.6F	0.8	0.7	-2.8F	0.9	0.7	0.7	-2.4F	-1.4F	-337.6F	*****
-17.4F	-2.0F	1.0	-0.7A	1.0	0.9	0.4	0.8	0.6	0.3	1.0	0.5	0.2	0.3	-2.7F	-1.8F	*****	*****
-7.2F	-0.3A	1.0	0.6	0.9	0.9	0.9	1.0	0.7	0.7	0.8	0.3	0.1	-0.2A	-2.0F	-1.3F	-594.4F	*****
-7.0F	-1.1F	0.9	-0.8A	0.9	0.7	-4.2F	-0.1A	0.8	0.6	-1.8F	0.8	-1.6F	0.9	-0.6A	-1.7F	-202.4F	*****
-26.5F	-2.1F	0.9	-0.8A	0.7	0.7	0.9	0.1	1.0	1.0	-3.5F	0.6	0.8	0.1	0.3	0.9	-14.8F	*****
-1.1F	0.9	1.0	1.0	1.0	0.9	1.0	1.0	1.0	1.0	0.6	0.7	1.0	0.3	0.9	0.9	-236.2F	*****
-2.8F	1.0	1.0	1.0	0.9	0.9	1.0	0.8	0.6	0.8	0.4	-0.4A	0.6	-0.9A	-2.7F	-0.8A	-556.7F	*****
-1.0A	0.9	0.9	1.0	1.0	1.0	1.0	0.8	0.4	0.8	0.4	-0.3A	0.3	0.2	-1.1F	-0.1A	-147.8F	*****
-12.4F	-2.2F	0.5	-2.2F	0.0	0.0	0.0	-1.0A	0.9	0.9	-2.2F	0.5	-1.8F	0.7	1.0	0.0	-8.0F	*****
1	7	13	8	14	13	12	8	13	11	7	8	7	8	4	3	0	0
1	2	1	4	0	1	0	3	0	0	0	2	3	3	1	3	0	0
12	5	0	2	0	0	2	3	1	3	7	4	4	3	9	8	14	0
*****	-0.95	0.72	-0.25	0.85	0.70	0.23	-0.87	0.13	-4.65	-3.72	-49.43	-13.97	-51.37	-202.95	-202.48	*****	*****
*****	-0.10F	0.06A	-0.03F	0.10G	0.07A	0.02F	-0.16F	-0.01F	-0.82F	-0.61F	-8.25F	-2.33F	-8.58F	-33.00F	-33.71F	*****	*****



NIKSAL N°: 3 CS.: ; ALT.: 350 AÑO/AÑOS: 36

PARAMETROS FITOCLIMATICOS

FACTORES:	K	A	P	PE	HS	TMP	T	TMC	TMP	P	OSC	TMC	C	HP
VALORES:	0.432	4.23	475.0	11.0	0	5.3	14.7	23.7	0.4	-13.0	11.1	30.4	41.5	5
PODER CARACTERIZADOR	0.17	0.17	0.17	0.10	0.08	0.11	0.09	0.09	0.13	0.09	0.06	0.08	0.07	0.07
JEARQUIA DISCRIMINANTE PUNTUAL	1	2	3	6	10	5	7	8	4	9	14	11	12	13
JEARQUIA DISCRIMINANTE GENERAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14

TAXONOMIA FITOCLIMATICA INTEGRAL:

ARIDOS		MEDITERRANEOS								SEMIOCIDALES					OROBORBALOIDES		
SUBME-DIFER.	SUB-ARIDO	GENUINOS				SUBSEMIOCIDALES				SEMIOCIDALES			SUB-EST.	GENUINOS	SUBSEM. GENUI.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
II(IV)	III(III)	IV	IV2	IV3	IV4	IV(VI)	IV(VI)2	VI(IV)1	VI(IV)2	VI(IV)3	VI(IV)4	VI(VII)	VI(VI)	VI	VIII(VI)	X(VIII)	
*****	-0.0A	0.1	0.9	0.8	1.0	0.9	-2.9F	0.7	-39.7F	-23.2F	-423.6F	-115.6F	-465.6F	-1865.2F	-1865.2F	*****	*****
-210.4F	0.4	0.9	1.0	1.0	1.0	1.0	-4.9F	-4.9F	-4.9F	-4.9F	-32.9F	-16.9F	-16.9F	-16.9F	-11.0F	*****	*****
-528.0F	-0.5A	-2.5F	0.1	0.8	-0.2A	0.8	-0.0A	0.9	-1.4F	-1.5F	-1.7F	0.2	-1.4F	-3.2F	-2.7F	-115.5F	*****
-120.0F	0.7	0.9	0.5	1.0	0.9	1.0	0.7	0.8	0.8	0.9	-4.2F	-0.7A	-0.1A	-0.9A	-0.4A	-71.8F	*****
1.0	1.0	1.0	1.0	1.0	1.0	-1.8F	1.0	0.0	0.0	1.0	0.0	-1.0A	1.0	0.0	-5.3F	-168.0F	*****
-45.2F	-11.6F	0.9	-6.4F	0.8	0.8	0.6	-3.8F	0.8	0.7	-3.0F	0.9	0.7	0.6	-2.2F	-1.3F	-330.2F	*****
-16.4F	-3.9F	1.0	-0.6A	1.0	0.9	0.4	0.8	0.5	0.2	1.0	0.4	0.1	0.2	-2.8F	-1.9F	*****	*****
-8.0F	-0.3A	1.0	0.6	0.8	0.8	1.0	1.0	0.8	0.7	0.8	0.3	0.1	-0.2A	-1.9F	-3.3F	-584.6F	*****
-12.9F	-2.7F	0.2	-2.1F	0.2	0.1	-0.6A	-1.8F	1.0	0.9	-4.1F	0.1	-0.3A	0.6	0.4	-0.3A	-199.7F	*****
-20.2F	-1.3F	1.0	-0.3A	0.9	0.9	0.7	0.6	0.9	1.0	-2.2F	0.8	0.6	0.5	-0.1A	0.8	-18.6F	*****
0.2	1.0	1.0	1.0	1.0	1.0	0.8	1.0	1.0	1.0	0.9	0.9	0.9	0.7	1.0	1.0	-120.0F	*****
0.8	0.8	0.8	0.8	0.7	0.8	1.0	1.0	0.8	0.9	0.7	0.2	0.9	-0.2A	-1.6F	-0.3A	-459.6F	*****
0.3	1.0	1.0	0.9	1.0	1.0	1.0	1.0	0.7	1.0	0.9	0.1	0.7	0.5	-0.2A	0.4	-109.3F	*****
-4.4F	0.0	1.0	0.0	1.0	0.8	1.0	0.8	0.9	0.9	0.0	1.0	0.9	1.0	-3.0F	1.0	0.0	*****
4	7	13	10	14	13	12	9	13	11	8	10	9	8	3	4	1	
0	3	0	2	0	1	1	1	0	0	0	0	3	3	3	3	0	
10	4	1	2	0	0	1	4	1	3	6	4	2	3	8	7	13	
*****	-0.95	0.50	-0.18	0.85	0.78	0.56	-0.41	0.35	-2.71	-2.34	-32.65	-9.24	-34.23	-135.47	-134.75	*****	
*****	-0.12F	0.04F	-0.02F	0.09G	0.06A	0.06F	-0.10F	0.01F	-0.50F	-0.39F	-5.46F	-1.56F	-5.73F	-22.52F	-22.42F	*****	



TABLE 8 & TABLE 9

GOLHISAR Nº: 6 CS.: ; ALT.: 1100 ARO/NºPAROS: 8

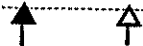
PARAMETROS FITOCLINATICOS

FACTORES:	X	A	P	PE	HS	THP	T	TMC	THMP	P	OSC	THMC	C	HP
VALORES:	0.270	4.26	635.0	3.0	2	2.8	13.6	23.7	-2.4	-23.4	13.6	31.1	44.2	5
PODER CARACTERIZADOR	0.17	0.17	0.14	0.11	0.14	0.17	0.09	0.09	0.17	0.17	0.08	0.09	0.11	0.07
JERARQUIA DISCRIMINANTE PUNTUAL	1	2	6	8	7	3	10	11	4	5	13	12	9	14
JERARQUIA DISCRIMINANTE GENERAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14

TAXONOMIA FITOCLINATICA

INTEGRAL:

ARIDOS		MEDITERRANEOS								MEMORALES					OROGRAFALOIDES					
SUBME-DIFER.	SUB-ARIDO	GENUINOS				SUBMEMORALES				MEMOROMEDITERRANEOS					SUB-EST.	GENUINOS		SUBMEM. GENUI.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17				
III(IV)	IV(III)	IV1	IV2	IV3	IV4	IV(VI)	IV(VI)2	VI(IV)	VI(IV)2	VI(IV)3	VI(IV)4	VI(VII)	VI(V)	VI	VII(VI)	X(VIII)				
*****	-0.1A	-0.0A	0.5	0.3	0.8	0.5	0.4	1.0	-11.9#	-6.1#	-155.3#	-44.6#	-181.3#	-728.0#	-728.0#	*****				
-208.7#	0.5	0.9	1.0	1.0	1.0	1.0	-5.1#	-5.1#	-5.1#	-5.1#	-33.5#	-17.1#	-17.1#	-17.1#	-11.2#	*****				
-1213.7#	-5.7#	-12.8#	0.7	-12.9#	0.6	0.9	1.0	0.7	-0.4A	-0.8A	0.4	0.9	-0.8A	-1.9#	-1.6#	-70.6#				
-8.0#	0.7	0.4	0.7	0.4	0.3	0.3	-0.3A	0.2	0.0	0.1	-7.5#	-1.3#	-0.5A	-1.6#	-0.9A	-86.7#				
*****	*****	*****	*****	*****	*****	*****	*****	0.9	*****	0.9	*****	0.0	0.6	0.0	0.9	-1.3#	-80.0#			
-85.5#	-24.6#	-0.5A	-12.9#	-0.8A	-0.7A	0.8	-11.5#	1.0	1.0	-8.5#	-0.1A	1.0	-1.2#	0.9	0.6	-173.2#				
-28.9#	-3.9#	0.7	-2.0#	0.8	0.6	0.8	0.4	0.8	0.6	0.8	0.9	0.6	0.8	-1.3#	-1.0A	*****				
-8.0#	-0.3A	1.0	0.6	0.8	0.8	1.0	1.0	0.8	0.7	0.8	0.3	0.1	-0.2A	-1.9#	-1.3#	-584.6#				
-26.9#	-6.5#	-2.3#	-5.3#	-2.3#	-1.5#	0.7	-6.8#	0.7	0.9	-9.9#	-2.1#	0.9	-0.5A	1.0	0.9	-89.3#				
-75.7#	-9.5#	-0.8A	-5.1#	-2.1#	-1.1#	0.2	-4.8#	0.8	0.3	-14.1#	-1.7#	0.8	-3.2#	0.7	0.2	-1.1#				
-3.5#	0.7	0.8	0.9	0.7	1.0	0.8	0.9	0.8	-0.1A	0.3	0.9	-0.4A	0.4	0.7	-440.0#					
-0.5A	0.9	0.9	0.9	0.8	0.9	1.0	0.9	0.7	0.9	0.6	-0.1A	0.7	-0.5A	-2.1#	-0.5A	-507.0#				
-2.1#	0.8	0.8	1.0	0.9	0.9	0.9	0.6	0.2	0.6	-0.0A	-0.7A	-0.1A	-0.0A	-1.7#	-0.4A	-173.2#				
-4.6#	0.0	1.0	0.0	1.0	0.8	1.0	0.6	0.9	0.9	0.0	1.0	0.9	1.0	0.0	0.0	0.0				
0	6	8	9	9	10	14	8	13	11	5	6	10	3	5	5	1				
1	2	3	0	1	1	0	1	0	1	3	3	1	7	0	4	0				
13	6	3	5	4	3	0	5	1	2	6	5	3	4	9	5	13				
*****	*****	*****	*****	*****	*****	*****	0.79	*****	0.32	-0.70	*****	-14.14	-3.98	-14.56	-53.91	-53.05	*****			
*****	*****	*****	*****	*****	*****	*****	0.09C	*****	0.03#	-0.14#	*****	-2.34#	-0.68#	-2.43#	-8.92#	-8.83#	*****			



BUÇAK Nº: 7 CS.: ; ALT.: 850 ARO/NºPAROS: 25

PARAMETROS FITOCLINATICOS

FACTORES:	X	A	P	PE	HS	THP	T	TMC	THMP	P	OSC	THMC	C	HP
VALORES:	0.208	3.73	744.0	13.0	1	3.5	14.1	25.3	-0.7	-13.2	12.4	32.1	37.5	6
PODER CARACTERIZADOR	0.20	0.17	0.14	0.10	0.14	0.13	0.09	0.09	0.14	0.09	0.07	0.09	0.06	0.08
JERARQUIA DISCRIMINANTE PUNTUAL	1	2	3	7	4	6	8	9	5	10	13	11	14	12
JERARQUIA DISCRIMINANTE GENERAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14

TAXONOMIA FITOCLINATICA

INTEGRAL:

ARIDOS		MEDITERRANEOS								MEMORALES					OROGRAFALOIDES					
SUBME-DIFER.	SUB-ARIDO	GENUINOS				SUBMEMORALES				MEMOROMEDITERRANEOS					SUB-EST.	GENUINOS		SUBMEM. GENUI.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17				
III(IV)	IV(III)	IV1	IV2	IV3	IV4	IV(VI)	IV(VI)2	VI(IV)	VI(IV)2	VI(IV)3	VI(IV)4	VI(VII)	VI(V)	VI	VII(VI)	X(VIII)				
*****	-0.1A	-0.1A	0.2	-0.0A	0.5	0.4	0.9	0.9	-5.3#	-2.3#	-87.4#	-26.0#	-107.2#	-431.6#	-431.6#	*****				
-240.5#	0.2	0.5	0.8	0.7	0.8	0.8	-2.4#	-2.4#	-2.4#	-2.4#	-24.2#	-12.9#	-12.9#	-12.9#	-8.3#	*****				
-1841.6#	-11.4#	-23.7#	0.9	-34.2#	0.9	0.5	0.7	-0.2A	0.1	-0.4A	1.0	1.0	-0.5A	-1.2#	-1.0A	-46.2#				
-168.0#	0.3	1.0	0.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	-3.5#	-0.5A	-0.1A	-0.7A	-0.3A	-67.8#				
*****	*****	*****	*****	*****	*****	0.0	*****	0.6	0.6	*****	1.0	0.0	0.8	0.9	-3.0#	-120.0#				
-73.0#	-20.5#	0.0	-10.9#	-0.2A	-0.1A	1.0	-9.0#	1.0	1.0	-6.7#	0.3	1.0	-0.6A	0.5	0.2	-212.2#				
-22.8#	-2.9#	0.9	-1.3#	0.9	0.8	0.7	0.6	0.7	0.4	0.9	0.7	0.4	0.6	-1.9#	-1.4#	*****				
0.2	0.4	0.9	0.9	1.0	1.0	0.7	0.7	0.4	0.2	0.4	-0.7A	0.2	-1.2#	-3.6#	-2.4#	-749.8#				
-17.8#	-4.0#	-0.6A	-3.2#	-0.6A	-0.6A	0.7	-3.5#	1.0	1.0	-6.1#	-0.6A	0.3	0.3	0.8	0.3	-151.1#				
-20.9#	-1.4#	1.0	-0.4A	0.9	0.8	0.7	0.5	0.9	1.0	1.0	-2.4#	0.8	0.6	0.4	-0.1A	0.8	-18.1#			
-1.4#	0.9	1.0	0.9	1.0	0.9	1.0	1.0	1.0	1.0	0.5	0.7	1.0	0.2	0.8	0.9	-261.4#				
-4.1#	1.0	1.0	1.0	0.9	1.0	1.0	0.7	0.6	0.8	0.4	-0.5A	0.5	-1.0#	-3.0#	-1.0A	-578.7#				
0.7	0.8	0.2	0.2	0.6	0.7	0.4	0.9	1.0	0.9	0.8	0.8	1.0	0.9	0.9	0.9	-41.3#				
-8.0#	-1.0A	0.8	-1.0A	0.8	0.5	0.8	0.0	1.0	1.0	-1.0A	0.8	0.0	0.9	0.0	0.0	0.0				
2	6	10	8	9	11	14	10	12	12	6	8	11	7	6	6	1				
0	2	2	2	3	2	0	6	1	0	2	3	1	3	2	3	0				
12	6	2	4	2	1	0	4	1	2	6	3	2	4	6	5	13				
*****	*****	*****	*****	*****	*****	0.67	*****	0.52	0.07	*****	-7.91	-2.40	-8.52	-32.22	-31.80	*****				
*****	*****	*****	*****	*****	*****	0.07G	*****	0.05#	-0.04#	*****	-1.53#	-0.49#	-1.68#	-6.36#	-6.32#	*****				

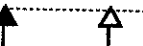


TABLE 10 & TABLE 11

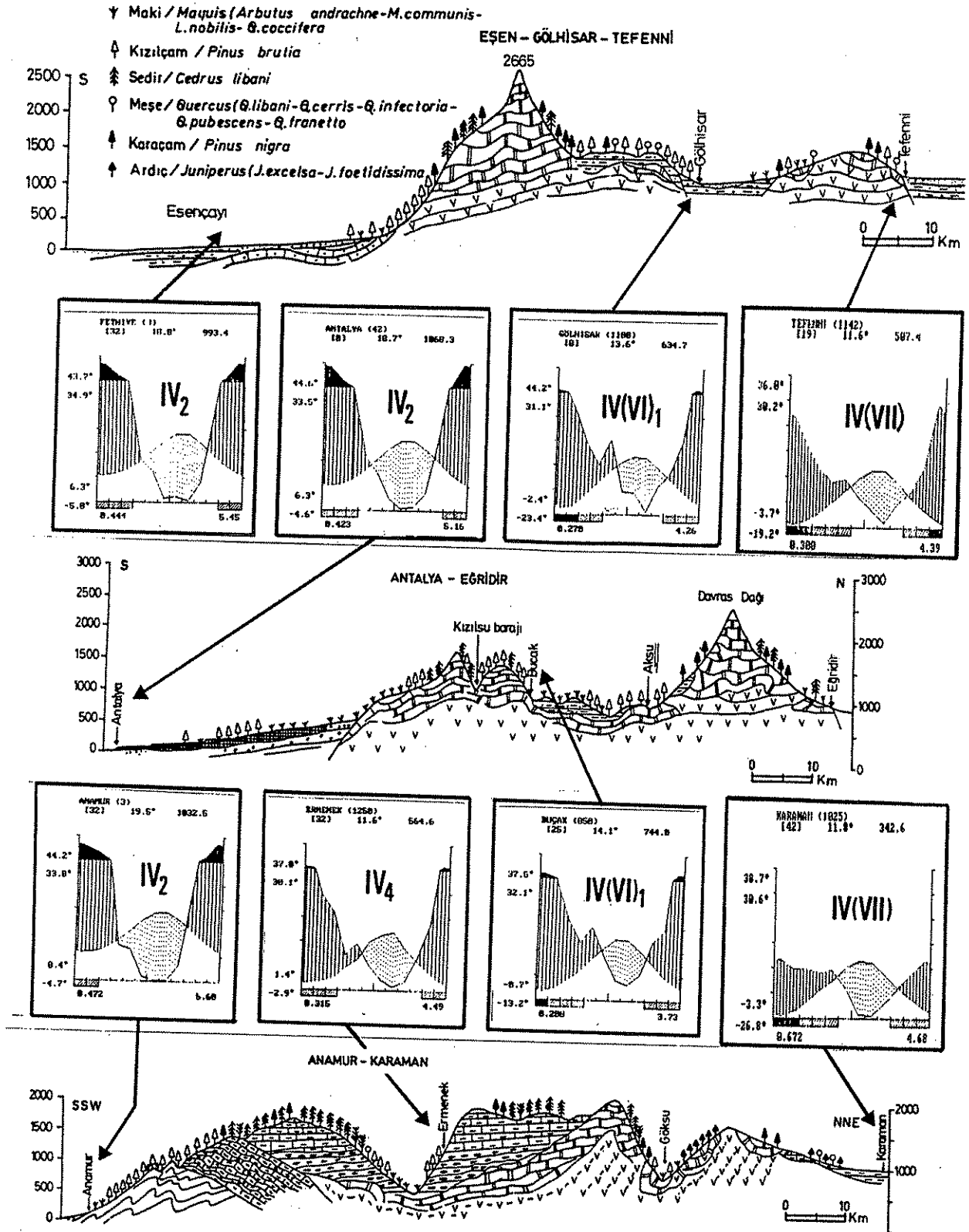


FIGURE 2

CONCLUSIONS

1. The species *Pinus brutia* exists in a wide variety of climatically continuous environments: IV₂, corresponding to a non-ilicic arboreous physiognomy; IV₃, IV₄ and IV(VI)₁, corresponding to genuine ilicic arboreous media, the first two exclusive and the third one transitional towards nemoro-Mediterranean marcescent physiognomies.
2. Its existence in phytoclimatic subtypes as different as IV₂ and IV(VI)₁ implies a gradient -IV₂, IV₃, IV₄ and IV(VI)₁- falling from longer to shorter duration of summer aridity, from more to less annual amount of rainfall and from more to less heat.
3. The species doesn't seem to occur in phytoclimates with arid periods of less than three months. In such cases it is replaced by other pine species such as *Pinus nigra*, in association with marcescent *Quercus* species.
4. In the Iberian Peninsula there are phytoclimate subtypes strictly homologous with those forming the natural habitat of *Pinus brutia* in Turkey. The underwood species in these areas are the same as or vicariants of the Turkish species. There is therefore tremendous potential for exchange of such vegetable material between Turkey and Spain. For this purpose, a more exhaustive study is needed.

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