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Long term field behaviour of the loquat cvs. Gold Nugget and Algerie in Málaga (Spain)

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SUMMARY – In a 12 year field trial, with 10 crops, cvs. Algerie and Gold Nugget, both on seedling rootstocks, were compared in the coastal area of Málaga. The soil was a non-calcareous well drained decomposed shale. Trees were drip irrigated until they were 8 years of age and were microsprinkled later on; water quality was good. A randomized block design was used with 4 trees per cultivar and block, and 7 replicates. Fruits were practically scab-free because the area was well ventilated and preventive treatments were applied in the wet periods. Considering the whole experimental period, Gold Nugget had slightly bigger trunk growth. In the first 4 crops vegetative growth, yield and tree efficiency per unit trunk cross-sectional area were higher in the case of Algerie. In later years yield and efficiency were similar for both cultivars. Mean fruit weight was higher in Gold Nugget in all years of the trial. In the last six crops the mean difference was 6.2%. Algerie ripened earlier except for the last two crops. The percentage of fruits affected by purple spot was higher in Algerie in six of the seven last years of the trial. In affected fruits the percentage of epidermis with purple spots was higher in Algerie in all years.

Key words: Loquat, Gold Nugget, Algerie, Spain, growth, tree efficiency, quality.

RESUME – *"Comportement au champ à long terme des cultivars de néflier Gold Nugget et Algérie à Malaga (Espagne)". Les cvs. Algérie et Gold Nugget ont été comparés dans un essai en plein champ pendant 12 années, et 10 récoltes, sur la côte de Málaga (Espagne). Le sol était schisteux non calcaire et bien drainé. Les arbres furent irrigués goutte-à-goutte pendant les premiers dix ans et par microirrigation après avec de l'eau de bonne qualité. Le dispositif statistique était des blocs au hasard, avec 4 arbres par cultivar et bloc et 7 répétitions. Les fruits étaient pratiquement indemnes de tavelure parce que la zone était bien ventilée et des traitements préventifs furent appliqués pendant les périodes pluvieuses. Pour l'ensemble de la période expérimentale Gold Nugget avait une croissance végétative légèrement supérieure à Algérie. Pour les 4 premières années la croissance végétative, récolte et productivité par unité de section du tronc étaient supérieures pour Algérie. Pour la période postérieure la récolte et la productivité étaient pareilles pour les deux cultivars. Le poids moyen des fruits de Gold Nugget était supérieur toutes les années d'expérimentation. Pour les dernières 6 récoltes la différence moyenne était de 6.2%. Algérie était toujours plus précoce sauf pour les deux dernières récoltes. Le pourcentage des fruits affectés par la tache violette était supérieur pour Algérie dans six des sept dernières récoltes de l'expérience. Pour les fruits affectés le pourcentage d'épiderme violet était toujours supérieur chez Algérie.*

Mots-clés : *Néfles, Gold Nugget, Algérie, Espagne, croissance, productivité, qualité.*

Introduction

Algerie and Gold Nugget are the two most popular cvs. in Spain. Gold Nugget covers most of the planted area in the Granada and Malaga provinces with a few small plantings of Algerie. A long term field comparison of both has not been done previously. Gold Nugget was introduced in Spain from California by Rancho California (Almuñécar, Granada). It probably is the cultivar described as Gold Nugget, Thales or Placentia Giant by Condit (1915). Algerie, imported from Algeria, has been traditionally planted in the growing area of Callosa d'Ensarriá (Alicante) (Bononad and Escribá, 1968) where it is also known as Argelí or Argelino.

Materials and methods

The trees were planted in spring 1979 at Estación Experimental "La Mayora" (Málaga, Spain). The soil, 50 cm deep over decomposed shale, is common in loquat plantings of eastern Málaga. Drainage was good, with less than 2% $C0_3Ca$ + $C0_3Mg$ and pH 7.2-7.5. Adult trees received yearly 100 kg of N

and 370 kg of K_2O. P was only applied sporadically. Young trees received the same amounts adjusted by tree size.

The trees on seedling rootstock and with an open vase formation were planted at 7 x 7 m distance. The design was on randomized blocks with 4 trees per cultivar and block and 7 replicates. Until 1986 half the trees were pruned after picking, in late May and the other half in November before flower bud break. In the last 5 years all trees were pruned in November. Fruits were hand thinned around mid January, after fruit set, leaving a maximum of 4 fruits per panicle. Weak panicles were eliminated. For the first 8 years each tree was irrigated with 4 drippers. Afterwards these were substituted by one microsprinkler wetting 12 m^2. Soil matric potential was kept between –5 and –30 KPa.

Yield and the number of picked, fallen and bird damaged fruits were registered for every picking Tree efficiency was calculated as total yield per unit trunk cross sectional area at 25 cm height, measured the previous winter. Precocity as the percentage of fruits picked at the first pickig relative to the total number of picked fruits. Purple spots, presence and percentage of affected skin, were recorded in approximately 14% of the fruits.

The ground was kept weed free with an autumn Simazine application and two spot treatments of Glyphosate in summer.

Results

Mean results and level of significance for the differences are presented in Tables 1 and 2. Up to 6 years of age yield and tree efficiency were generally higher for Algerie. In later years they were similar for both cultivars. Gold Nugget fruits were slightly larger. In the last six crops the mean weight difference was 6.2%.

Algerie ripened earlier tan Gold Nugget except for the last two years The percentage of fruis with purple spot was bigger in Algerie every year except one. In affected fruits the percentage of purple epidermis was also larger. In 1980, at the beginning of the productive period, Algerie trunks were 16% thicker showing an also large difference at planting time. In contrast, after 12 years, Gold Nugget trunks were 11% larger showing its more vigorous growth along the experiment (Fig. 1).

Table 1. Yield, tree efficiency and fruit weight

Year	Total yields (kg/tree)			Tree efficciency (g/cm^2)			Mean fruit weight (g)		
	Algerie	Gold Nugget	L.S.	Algerie	Gold Nugget	L.S.	Algerie	Gold Nugget	L.S.
1981	13	6	**	417	320	N.S.	36	37	N.S.
1982	15	7	**	323	203	**	42	43	N.S.
1983	23	15	**	384	331	N.S.	43	45	N.S.
1984	23	16	*	307	236	*	34	38	*
1985	37	34	N.S.	472	447	N.S.	34	35	N.S.
1986	41	38	N.S.	419	394	N.S.	36	42	N.S.
1987	43	47	N.S.	375	401	N.S.	36	36	N.S.
1988	51	58	N.S.	351	386	N.S.	37	39	N.S.
1989	52	55	N.S.	322	316	N.S.	45	45	N.S.
1990	74	72	N.S.	407	361	N.S.	32	36	N.S.

Conclusions

Algerie showed smaller vegetative growth but earlier fruit production and ripening than Gold Nugget. Only after 10 years of age ripenig time was similar for both cultivars. A longer study with mature trees would be necessary to confirm if relative ripening time varies with age. Gold Nugget fruits were slightly heavier. Since they also have a larger ecuatorial diameter/height ratio this may imply significant differences in commercial packout. Under the experimental conditions Algerie was more sensitive to purple spot. Due to the very low incidence of scab it was not possible to appreciate any differences between cultivars.

Table 2. Ripening time and incidence of purple spot

Year	% Fruits 1st picking			% Purple epidermis			% Affected fruits		
	Algerie	Gold Nugget	L.S.	Algerie	Gold Nugget	L.S.	Algerie	Gold Nugget	L.S.
1981	2	1	N.S.						
1982	17	8	N.S.	35	27	*	32	23	**
1983	10	7	N.S.						
1984	36	14	*	14	10	*	23	8	**
1985	24	21	N.S.	21	0	**	9	0	**
1986	25	24	N.S.	16	10	*	13	4	**
1987	32	22	N.S.						
1988	13	7	*	8	9	N.S.	1	1	N.S.
1989	17	23	N.S.	23	4	**	19	2	**
1990	43	44	N.S.	21	16	N.S.	12	8	N.S.

*Level of significance 95%; **Level of significance 99%; N.S.: non significant.

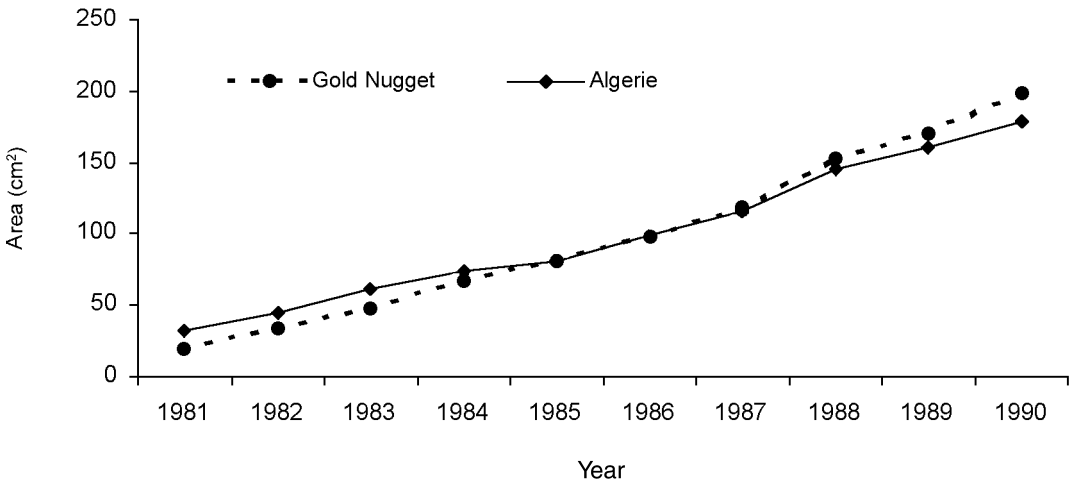

Fig. 1. Trunk cross sectional area.

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