

IRRIGATION REGIMES, YIELD AND FIBER PROPERTIES OF UPLAND COTTON GROWN IN SOUTHERN ITALY

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INTRODUCTION

Though cotton crop has been progressively abandoned in Italy and it isn't considered strategic in UE any more, in some European countries (Spain and Greece) it plays a prominent role between the irrigated industrial crops. In those countries, conditions for crop maintenance depends on his intrinsic competitiveness, that is to say on the achievement of high productive and qualitative levels and on an adequate valorisation of applied water. Those conditions are absolute in short-season regions, in which the necessary earliness of crop can penalise lint yield and quality profile.

Is long time agreed that water restrictions and sudden variations in soil water availability delay canopy growth and determine intense shedding of squares, flowers and young bolls. Nevertheless, bolls sensitivity to shedding decreases as bolls are more than 2 cm in diameter.



Fig.1- A view of the experimental field.

MATERIALS and METHODS

In 1999 and 2000, 6 irrigation regimes, differentiated during flowering period and obtained combining 2 restoring levels of ET_c (100% and 75%) with 3 phenological stages for the last irrigation (NAWF=7, cut-out and First Open Boll, FOB) were compared. The aim was to make clear if late season water stresses can determine better crop earliness without yield losses and worsening of fiber properties.

The trial was carried on in Policoro (40°13' N, 16°45' E, 15 m a.s.l.), using a randomised block design with 4 repetitions. 'Lachata' cv (SPA), managed with the Spanish technique, that involves early sowing under transparent plastic mulch, was tested.

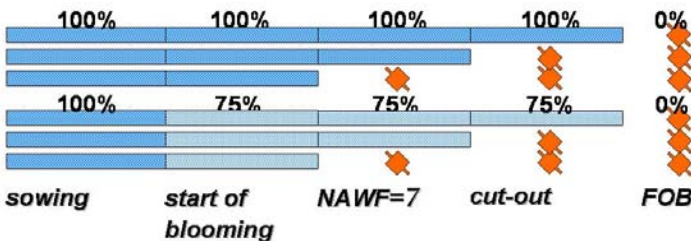


Fig. 2 - ET_c restoring levels applied.



Fig. 3 - Harvest time greatly influence cotton quality.

RESULTS and CONCLUSIONS

Yields were not modified by irrigation withdrawal time (fig. 4), indicating that production was determined by water applied before treatments differentiation. However, bolls localisation along canopy profile was modified.

Fig. 4 - Irrigation regime and yield localisation.

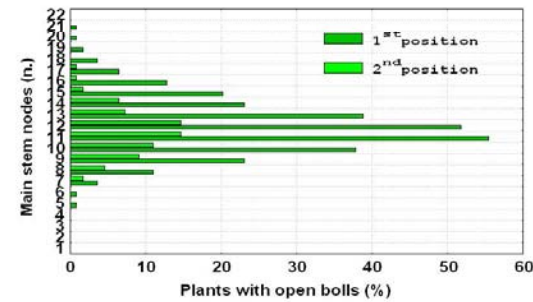
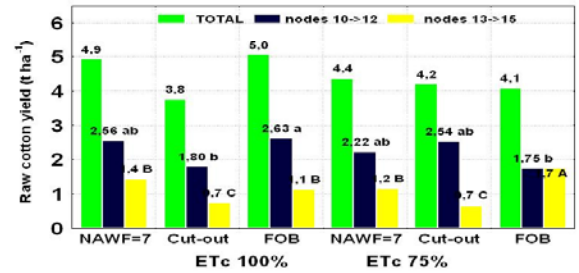
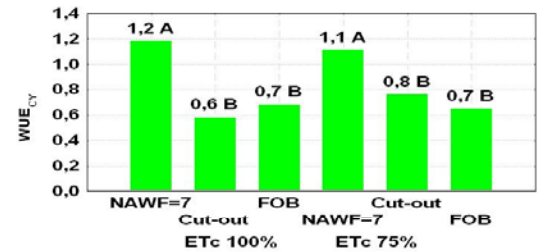


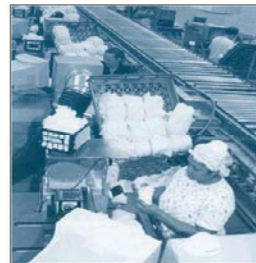
Fig. 5 - Distribution and position of bolls.

At both ET_c restoring levels WUE_{CY} was higher when irrigations were terminated at NAWF=7 (fig. 6).

Fig. 6 - Water Use Efficiency of commercial yield.



ET_c restoring levels and phases for the last irrigation did not affect technological fiber properties, but, on the whole, these were very favourable for spinning (tab. 1).



Parameter	Value
ML (mm)	23,3
UHM (mm)	28,2
SFI (%)	9,4
uniformity (%)	82,9
strength (g tex ⁻¹)	29,9
elongation (%)	8,0
micronaire (µg inch ⁻¹)	4,3
reflectance (rd%)	75,6
yellowness (+b)	8,8

Tab. 1 - Fiber characteristics (HVI measurements)

In conclusion, high yielding cotton crops associated with positive fiber parameters can be achieved by a ¾ restoration of ET_c at blooming, with the last irrigation at NAWF=7.

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