drought stress result and it enabled plant to significantly grow its grain under the droughtconditions.

WUE

The interactive effect of NPK fertilizers and withholding irrigation on WUE was presented in Table (9). Addition of NPK led to increase WUE

By 121.0, 140.2 and 276.7 % in fresh weight basis but in dry weight basis it increased by 152.0, 313.4 and 66.2 % when plants irrigated regularly, withholding the 2nd irrigation and withholding the 4th irrigation respectively.

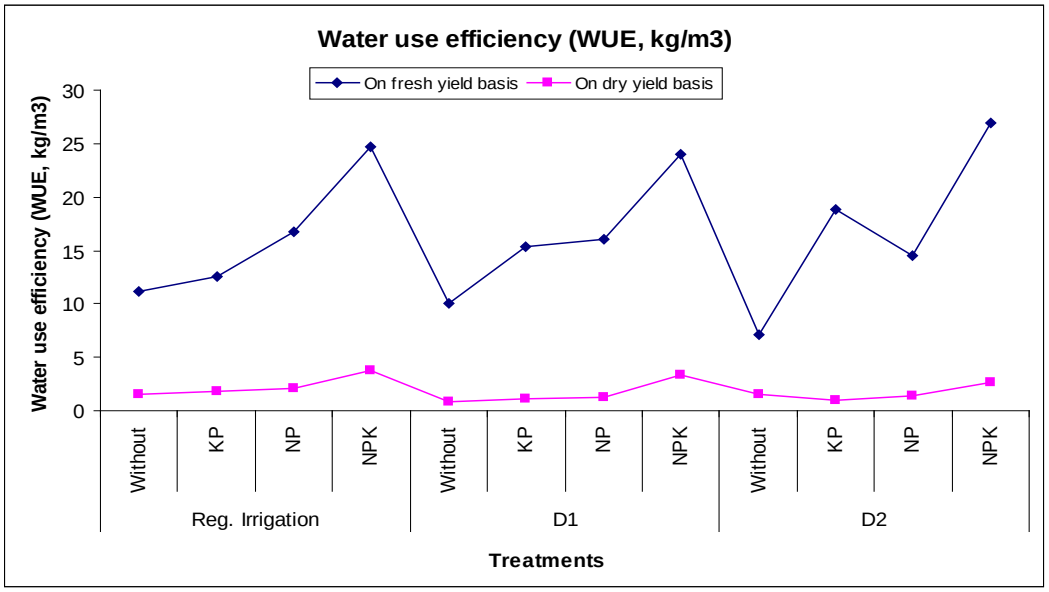
Water use efficiency increased markedly by addition of NPK fertilizers in comparable with NP, KP or without numeral fertilizers. This was true under different water regime used. Table (9) and Fig. (5). It could be mentioned that generally we can detected improving in WUE with the fertilizer treatments and the higher effects were by NPK combined fertilizer under different irrigation treatments furthermore, Siam 2002 found that.

Using Sakha 102 variety and M_2 will save 40.32% of irrigation water requirements and the grain yield will decrease with 3.23% if we cultivated one million feddan by Sakha 102 variety and watering at every 6 days will save 2800 million m^3 water every yer using for irrigation in the new soils instead using Giza 176 variety and watering every 4 days (M_1).

Table 9: Water use efficiency as affected by fertilization and drought (Average of two season)

Drought (Withholding of irrigation)	Fertilization	Water use efficiency (WUE, kg/m3)	
		On fresh yield basis	On dry yield basis
Without Reg. Irrigation	Without	11.16	1.52
	KP	12.55	1.81
	NP	16.76	2.14
	NPK	24.67	3.83
2nd irrigation	Without	10.00	0.82
	KP	15.28	1.18
	NP	15.99	1.31
	NPK	24.02	3.39
4th irrigation	Without	7.14	1.57
	KP	18.90	0.99
	NP	14.55	1.38
	NPK	26.91	2.61

W= Without mineral fertilizers
KP = P205+k20
NP = N+P2O5
NPK = N+P2O5+K2O



Without (Reg.Irrig) D1= Withholding 2nd irrigation D2 =Withholding 4th irrigation
1-Without mineral fertilization. 2- KP: 31 kg/fed P205+ 48 kg/fed k20. 3- NP: 60 kg/fed N+31kg/fedP2O5. 4- NPK: 60 kg/fed N+31kg/fed P2052+ 48kg/fed K20.

Figure 5: Water use efficiency as affected by fertilization and drought(Average of two seasons)

Li, *et al*. (2004)used four treatments which were (total water applied): rich water (RW), 400 mm; moderate water (MW), 300 mm; low water (LW), 100 mm, and natural water (NW), 212 mm. Four nutrition conditions were set up for each water treatment: high fertilizer (HF) 372 kg ha^{-1}, moderate fertilizer (MF) 248 kg ha^{-1}, low fertilizer (LF) 124 kg ha^{-1} and without fertilizer application (CK). Both soil water content and water use efficiency (WUE) increased with increasing applied water. The mean WUE were 6.37, 5.61, 5.08 and 4.40 kg ha^{-1} mm^{-1} in RW, MW, NW and LW, respectively. WUE increased by increasing applied N and P fertilizer. Compared with LW treatment, MW and RW resulted in stronger seedlings, larger and deeper root system, and higher leaf area index (LAI). For RW, MW and NW, the maximum of root biomass increased 96.4, 56.6 and 21.6%, respectively, compared with that for LW.El-Motagaly (2004) found that at the first harvest, water use efficiency (WUE) of beets was significantly increased at 50 and75% K+ substitution at 70% WHC for cultivar Evita. Under water stress conditions, WUE increased significantly at 25 and 50% K+ substitution for both cultivars (Fig. 27). At the second harvest, WUE increased significantly at 25 and 75% K+ substitution for both cultivars at 70% WHC for cultivar Evita at 40-70% WHC (Fig. 28). It is evident that at 70%

WHC, ET was found to be higher in Na+-treated plants than K+-treated plants. However, this was not observed under water stress condition.

Graciano, *et al*. (2005**)** concluded that water and nutrients are two of the most important factors controlling thegrowth of trees. Numerous studies show that fertilization is most effective when trees are not water-stressed and that irrigation is most effective when nutrients are not scarce andconclude that water stress tolerance strategies are altered by fertilization depending on soil properties, and that fertilization with P is recommended in black soils even if a moderate drought is likely to occur, but on sandy soils fertilization is recommended only under good water supply.

Hain and Zou (2009) concluded that total water consumption and water consumption rate of maize were significantly impactedby different fertilization and increased with application of chemical fertilizer and organic manure, results showed total water consumption of maize were 485.82mm, 494.83mm and 509.91mm for NF, NP and NPM, respectively, They concluded that soil water supply buffered and regulated soil water condition, and played an important role on guaranteeing crop yield; fertilizer application, can enhance soil water supply, increase crop yield and water use efficiency, especially organic manure application.,

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