

اسمدة متقدم 12

*resistances to radiation .

*necessity of irradiation sterilization .

Fertilization Management

*What is Nutrient Management ?

providing the needed nutrients with possible max. efficiency for achieving economically optimum yield under conditions of a given farming system without depleting soil fertility or harming the environment .

* To optimize the use of fertilizers , accurate information on the following points should be available :

- yield expectations

 - higher yields remove higher amounts of nutrients which should be replaced through fertilization.

- Characteristics of the existing farming system.

- The nutrients needed to be used as fertilizers.

- Water quality and irrigation system used.

- The economics of the system.

Basically, nutrient management is influenced by the crop yield expectation and the soil characteristics. So, different crops are fertilized differently , even if they are grown on the same soil. The same crop is ,also fertilized differently when grown on different soils. Thus , **the concepts of fertilizing the soil or the crop are not valid**. Introducing high yielding varieties also change the picture.

table – Differences in fertilizer doses (kg/ha) used in tomato according to variety (cultivar)

Cultivar	Average yield	N	P ₂ O ₅	K ₂ O
Hybrids (intensive)	120 – 150 t/ha and higher	200-300	150- 200	320-400
Normal Varieties	25-30 t/ha	150-200	100-150	50-150

*Balanced Nutrient Needs

Balanced nutrients management leads to increase the efficiency of all nutrients applied and ,thus, decreasing the amounts of fertilizers used .

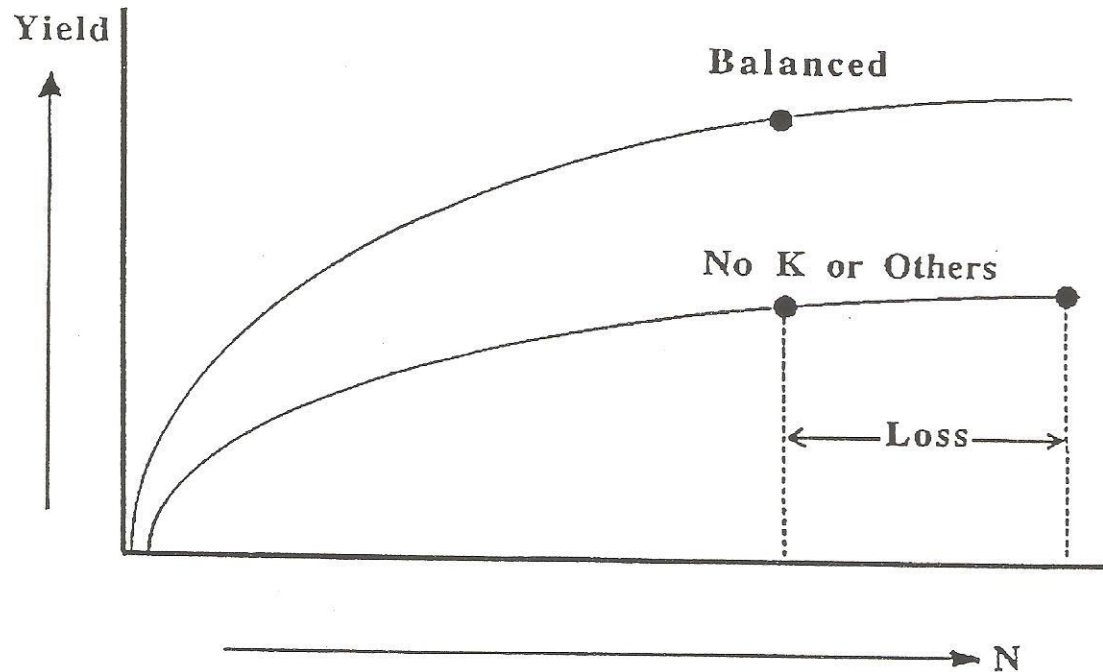


Fig. 1. Effect of balanced nutrient management on yield and efficiency of fertilizers.

Wheat fertilized with 240 kg N/ha on 3 levels of soil phosphate

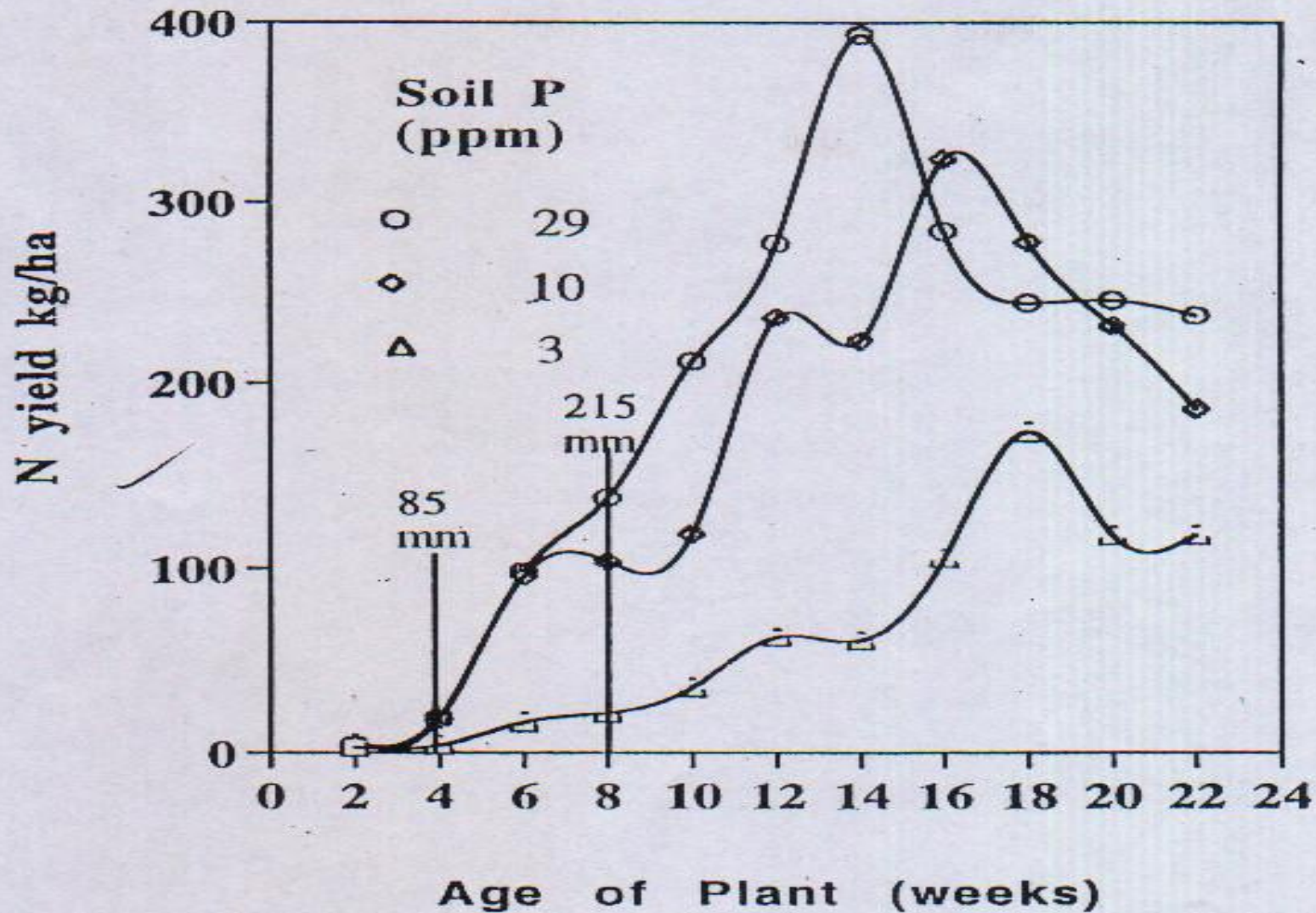


Table: Efficiency of fertilizers in citrus

	Kg/t fruit yield			Yield (kg/ha)
	N	P2O5	K2O	
Nutrient removed	2.0	0.5	3.2	
Nutrient applied - in old soil	17- 23	3.3- 4.3	0- 2.0	15-20
Nutrient recovery by the crop	9-12%	12-15%	Soil depletion	
2- In the expt. (fertigation)	3.8	1.7	5.2	25
Nutrient recovery by the crop	-	-	-	25
	53%	29%	61%	

Table : Amount of nutrients applied to produce one ton orange and average yield in some countries

	N	P ₂ O ₅	K ₂ O	Average yield (t/ha)
USA	2.3	1.5	2.5	> 48
Morocco	4.6	3.0	4.5	36-48
Egypt	19.5	4.0	0.5	14-20

Table : increase of macronutrients uptake in shoot after foliar spray of Zn+ Mn + Fe.

Crop	% increase			
	N	P	K	Mg
Wheat	25	18	12	6
Rice	20	15	17	5
Maize	20	14	50	10
Fababean	30	11	35	14
Soybean	40	15	25	12
Cotton	29	25	40	11

Table : Response of potato to optimizing fertilizer (less N + K + Micronutrients)

Dose (kg/ha)			Tuber yield (t/ha)
N	P2O5	K2O	
455	190	0	23 (100%) With out micronutrient
370	190	115	27 (120%) With out micronutrients
280	190	115	32(139%) With micronutrients

* Nutrients needed differ according to growth stage

Absorption curves show the period of high demand of the plants for a particular crop and provides very important information for efficient management of the nutrient supply over the growth period.

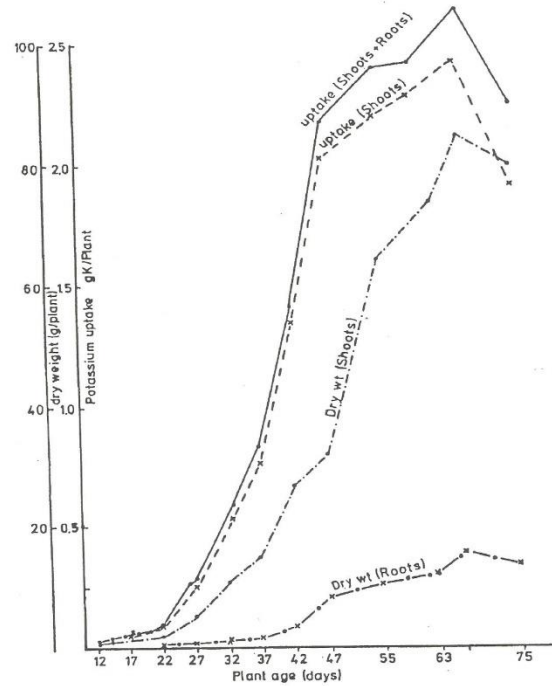
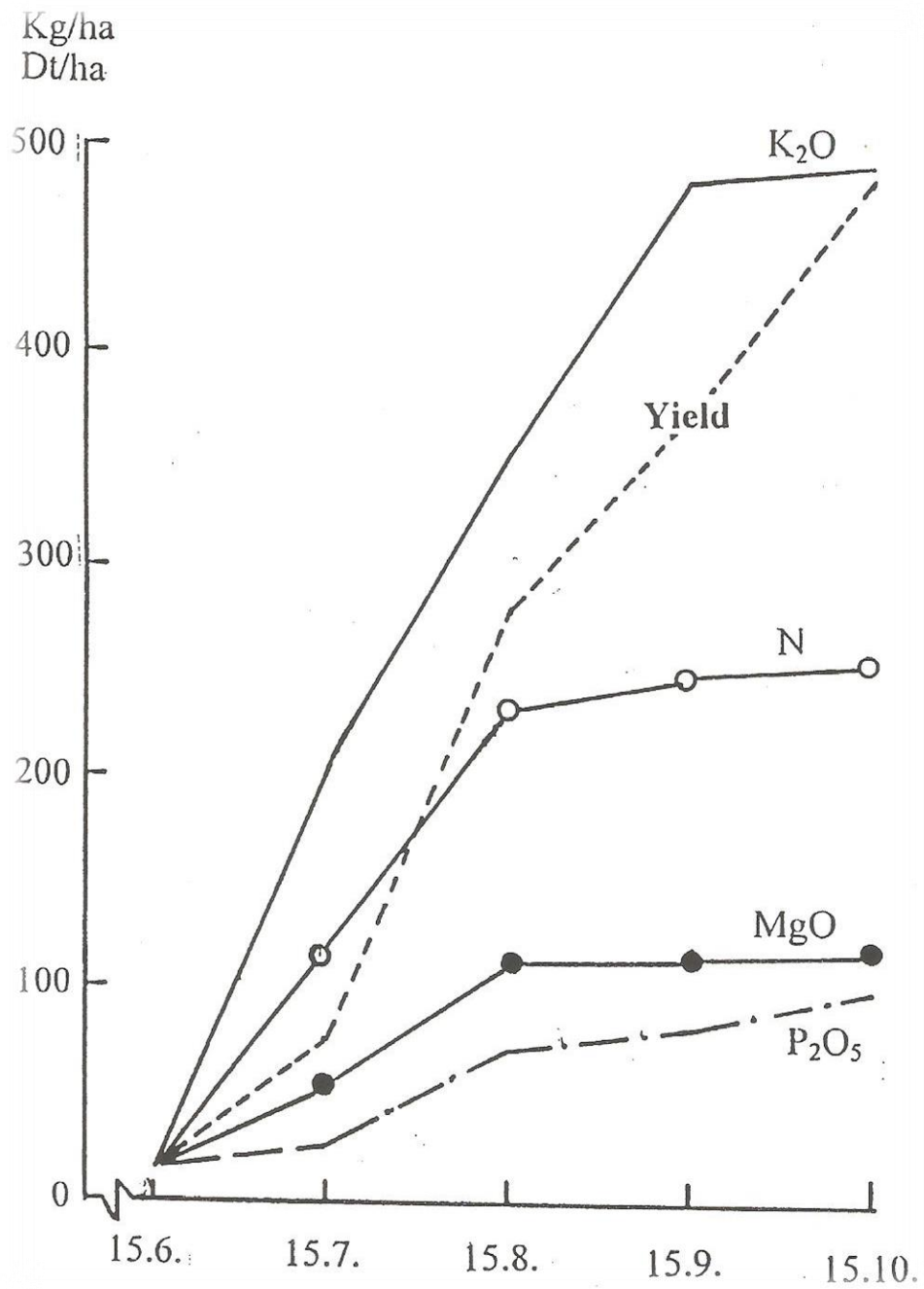


Fig. 4. Uptake curve for K by Maiz (Source : El-Fouly *et al.*, 1991)



* Estimation of fertilizers requirement

a- Deficiency symptoms

- can be used to determine the need of crop for a particular nutrient.
- deficiency symptoms of a nutrient may be masked by deficiency of other nutrient.
- hidden hunger.
- need expert person.
- do not give any quantitative information about fertilizers recommendation.