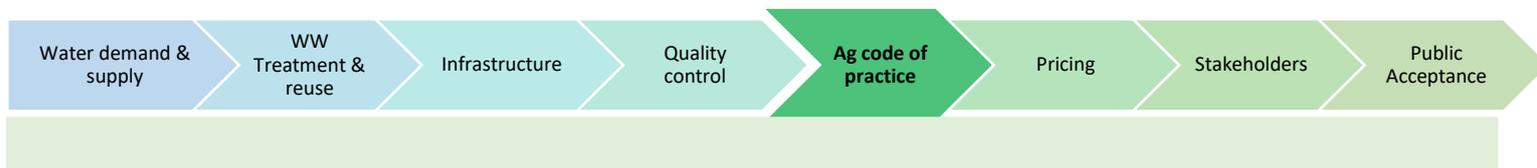




The Success Story of Cyprus

Fact Sheet 5 - Code of practice for agricultural irrigation



KEYS FOR SUCCESS – Lessons learned from the success stories of Cyprus and Israel

SUWANU EUROPE is a H2020 project aiming to promote the effective exchange of knowledge, experience and skills among practitioners and relevant actors on the use of reclaimed water in agriculture. This factsheet is part of a total of 17 factsheets that describe the successful reclamation practices of Israel and Cyprus in order to learn and boost implementation of solutions adapted to the European context. Our ultimate goal is to enhance acceptance and awareness to an alternative source of an increasingly scarce resource, water.

Agricultural irrigation in Cyprus is governed by the Cyprus Code of Good Agricultural Practice (GAP) (No. 263/2007). Under this Code, the included guidelines mark the way of safe irrigation with reclaimed water.

The main provisions of the Code include, among others (Table 1):

- ◆ Restrictions on the type of crops irrigated: Irrigation of crops is allowed, except for leafy vegetables, bulbs and condyles that are eaten raw (e.g. lettuce, carrot, celery, parsley).
- ◆ Safety precautions for the proper use of reclaimed water:
 - The use is prohibited by unauthorized persons.
 - Marking pipes with red line.
 - Clear signaling to alert the public that the reclaimed water is undrinkable.
 - Hydrants and distribution systems should have protection.
- ◆ Irrigation practices according to the methods of irrigation (subsurface/drip/sprinklers) and to the kind of crops (Picture 1).
- ◆ Main uses (in order of “preference”)
 - Forest trees
 - Fodder crops
 - Fruit-tree orchards
 - Green areas
 - Vegetables



Picture 1 – Image of an irrigated field area of alfalfa crop with reclaimed water in Nicosia, Cyprus

Table 1 – Cyprus Code of GAP– PART IV: Use of recycled water for irrigation purposes.

TYPE OF CROPS AND IRRIGATION PRACTICES APPLIED
For grass and green areas with free use from the public irrigation must be done at night and when there are no persons on the premises. The permitted irrigation practices include subsurface or drip irrigation and sprinklers with low-pressure and high-intensity rainfall, depending on the soil type.
For grass, green areas with limited use, agricultural crops and livestock farming , the permitted irrigation practices include subsurface, drip and controlled surface irrigation as well as folding sprinklers, low-pressure sprinklers and high-pressure sprinklers (in case of complete absence of wind)
For vineyards , drip irrigation and sprinklers are used. In cases that the fruit is wet, irrigation is interrupted two weeks before harvest. The harvest of grapes from the ground is prohibited.
For tree crops the permitted irrigation practices include drip and controlled surface irrigation as well as sprinklers. Important note: In cases that during the irrigation the fruit is wet, irrigation must be interrupted at least one week before harvest. It is also not allowed to collect fruit from the ground, except in the case of nuts.
For vegetables eaten raw , drip and subsurface irrigation are permitted. Important note: Measures should be taken to ensure that fruits do not come into contact with reclaimed water.
For vegetables eaten cooked , the sprinkler, subsurface and drip irrigation techniques are permitted.
It is forbidden to irrigate with reclaimed water leafy vegetables, bulbs and condyles that are eaten raw (e.g. lettuce, carrot, celery, parsley).

In small reclamation facilities, specific terms for waste disposal are applied (P.E. below 2000 P.E.). Based on these, reclaimed water may be reused for irrigation or stored in reservoirs for further use. The exact areas to be irrigated need to be identified and disposal and use of reclaimed water should be in accordance to the Cyprus Code of GAP (Table 2).

Table 2 – Specifications for the quality of reclaimed water used for irrigation purposes for UWTPs below 2000 P.E. the Cypriot Regulation KDP 269

	Species allowed to be irrigated	BOD ₅ (mg/L)	Suspended Solids (mg/L)	<i>E. coli</i> / 100 mL	Intestinal worms ***
1	All crops and green areas with restricted use (a)	10*	10*	5*	N/L
2	Green areas and cooked vegetables (b)	10*	10*	15**	N/L
		15**	15**	50*	
3	Green areas with restricted use by the public	20*	30*	100*	N/L
		30**	45**	200*	
4	Fodder crops	20*	30*	1000*	N/L
		30**	45**	1000*	
5	Industrial crops	50*	-	5000**	-
		70**	-	3000*	

* 80% of the samples, 24 samples/year

** Max acceptable value

*** sampling frequency once a year/summer months

(a) No vegetables with leaves, bulbs and condyles eaten raw

(b) Potatoes, Beetroots

The improved irrigation efficiency via the use of reclaimed water in Cyprus, has been achieved by the responsible authorities and specifically by the Cyprus Water Development Department through the following means:

- ◆ Cropping patterns selected and proposed to farmers to ensure efficient utilization of water at farm level based on water supply reliability, project economics, land resources, climatic conditions.
- ◆ Water allocated to agriculture using a quota system and penalty charges for over-consumption.
- ◆ Irrigation water in government schemes distributed through modern and highly efficient systems (e.g. closed pipes, drippers, sprinklers).
- ◆ Improved irrigation systems currently cover 95% of total irrigated area (annual water savings are of the order of 75 MCM).

Conveyance efficiencies: 90-95% | Field application efficiencies: 80-90%.

CLOSING REMARKS

Specific regulatory guidelines in the framework of the Cyprus Code of GAP, has enabled the strict monitoring of the quality of reclaimed water used for irrigation, as well as the compliance of the stakeholders to high quality criteria for use of reclaimed water for crop irrigation which may be intended for human consumption.

REFERENCES:

Water Development Department (WDD), Information and Data on Water Resources, Water Use and Wastewater Treatment Plants Provided by the Water Development Department, Cyprus, 2019.

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