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كل الحقوق محفوظة للمدرسة الوطنية العليا للري.

**Abstract :** This study concerns the irrigation perimeter of Upper Cheliff (Plains of El Khemis and El Amra-Abadia, located in northwestern Algeria), it deals with the main indices related to the exploitation of Large Irrigated Perimeters of the Cheliff valley which has its main adductor, the Cheliff wadi, with over a length of 730 km. Through the results of applying indices measuring both network efficiency (E1) and parcel efficiency (E2) for the period 2010-2019 for the plains of the Upper Cheliff perimeter, the Irrigation Water Use Efficiency Index ( $WUE = E1 * E2$ ) tracks water-saving efforts. It is in the order of 38% and 36% for the plains of El Khemis and El Amra-Abadia respectively. This figure remains low and strongly influenced by the losses from direct releases in long-distance wadis, water thefts, inefficient and poorly maintained networks, lack of counting, and wastage. Indeed, reducing leakage in irrigation systems could generate a considerable volume of water that would reduce the pressure on the existing resource and reduce the water deficit until 2030. Saving much of the lost or wasted water is technically feasible and would cost far less than the cost of producing water to meet additional future water needs. Also, the area under cultivation changed during the period 2011-2019. Potato, cereal, and fruit trees have shown a significant evolution in the upper Cheliff area. Finally, the challenges to be taken in the coming years are considerable. On the one hand, it is a question of dealing with the constraints of climate change and on the other hand, making a considerable effort to improve the yields of our irrigation systems.

**Keywords :** Upper Cheliff, Northwestern Algeria, irrigated perimeters, WUE, efficiency, climate change.

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