A power series $F(x)$ is said to satisfy a $k$-Mahler difference equation, for a natural number $k \geq 2$, if it is the solution to a non-trivial homogeneous linear difference equation with polynomial coefficients of the form

$$
\sum_{i=0}^{d} p_i(x) F(x^{k^i}) = 0.
$$

Loxton and van der Poorten asked whether a function satisfying a $k$-Mahler and $l$-Mahler difference equation for two multiplicatively independent natural number $k$ and $l$ is necessarily rational. We show that this is indeed the case and we raise some questions with a view towards the goal of proving hypertranscendence of irrational solutions to Mahler difference equations. This is joint work with Boris Adamczewski. (Received January 28, 2019)