

M

Module 3.2-4 Right source of nitrogen improves irrigated potato yield and nitrogen use efficiency in China.

Potato (*Solanum tuberosum* L.) is one of the main cash crops in Inner Mongolia. In recent years, the area of irrigated potato increased greatly. Farmers also increased nitrogen (N) fertilizer rates, striving to maximize tuber yield. This resulted in high cost and low N use efficiency. Selecting a better source of N to match the timing of N supply with that of crop demand could reduce N input and increase N use efficiency. Controlled-release N fertilizers regulate the release of fertilizer N over time, and can improve N use efficiency by synchronizing the supply of N with crop demand. They can also reduce application rates and labor costs. Controlled-release N appears best suited to irrigated potato systems, where N release can be regulated by soil moisture content. Experiments conducted in irrigated potato in Inner Mongolia from 2009 to 2011 indicate that, at the same N rate, controlled-release urea (CRU) resulted in better yield and higher N use efficiency than regular urea (RU). At 75% of the recommended N rate, CRU produced a similar yield and higher N use efficiency compared with RU at the recommended rate (**Table 1**).

Table 1. Effect of controlled-release urea (CRU) on irrigated tuber yield and N use efficiency compared with regular urea (RU), Inner Mongolia (mean of 3 years, 2009 to 2011). **Source:** Li and Jin, 2012.

Treatment [†]	Tuber yield, t/ha	AEN, kg/kg [‡]	REN, % [§]
CK	30.2 d	-	-
100% CRU	38.6 a	33.3 ab	45.3 ab
100% RU	36.4 b	24.5 bc	32.1 c
75% CRU	37.0 ab	35.6 a	52.3 a
75% RU	34.6 c	22.4 c	40.6 bc

[†]CK = without N; 100% CRU = recommended N applied as CRU; 100% RU = recommended N rate applied as RU.

[‡]AEN = Agronomic efficiency of N, kg increase in tubers per kg of applied N

[§]REN = Recovery efficiency of N, increase in plant N uptake as % of applied N.

Fertilizer N, P, and K were applied basally in all treatments.

Means within the same column followed by the same letter are not significantly different at $p = 0.05$.

References

Li, S. and J. Jin. 2012. Better Crops, 96 (1): 20-23.

Submitted by Shutian Li, IPNI China, March 2014.

