Can Cycling of Potassium from Crops and other Organic Residues be Integrated into Potassium Rate Recommendations ?

Ciro A. Rosolem, Antonio P. Mallarino & Thiago A. R. Nogueira

FACULDADE DE CIÊNCIAS AGRONÔMICAS
FCA · UNESP
VERITATIS: IN ITINERE

IOWA STATE UNIVERSITY

FCA
FACULDADE DE CIÊNCIAS AGRONÔMICAS
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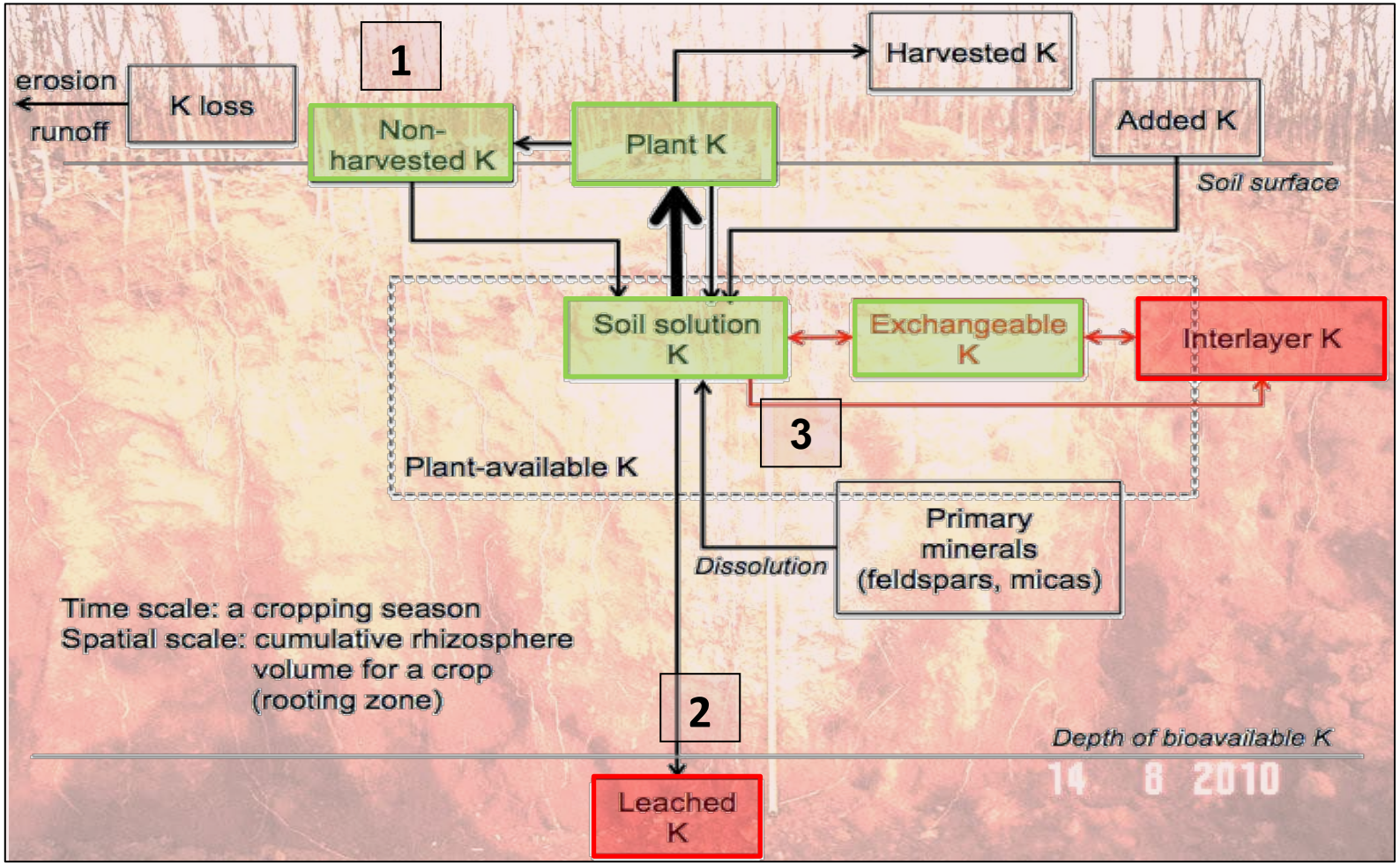
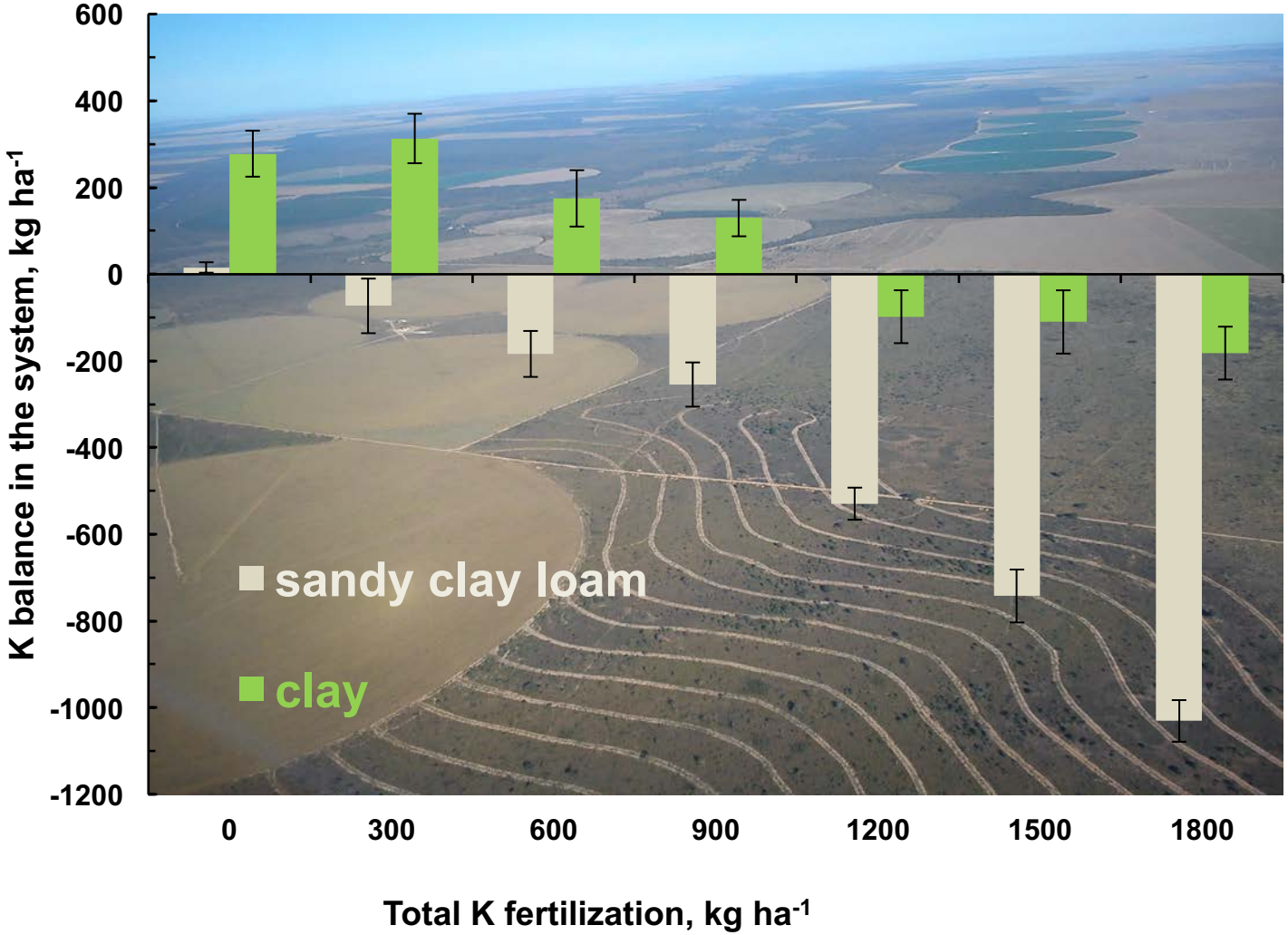
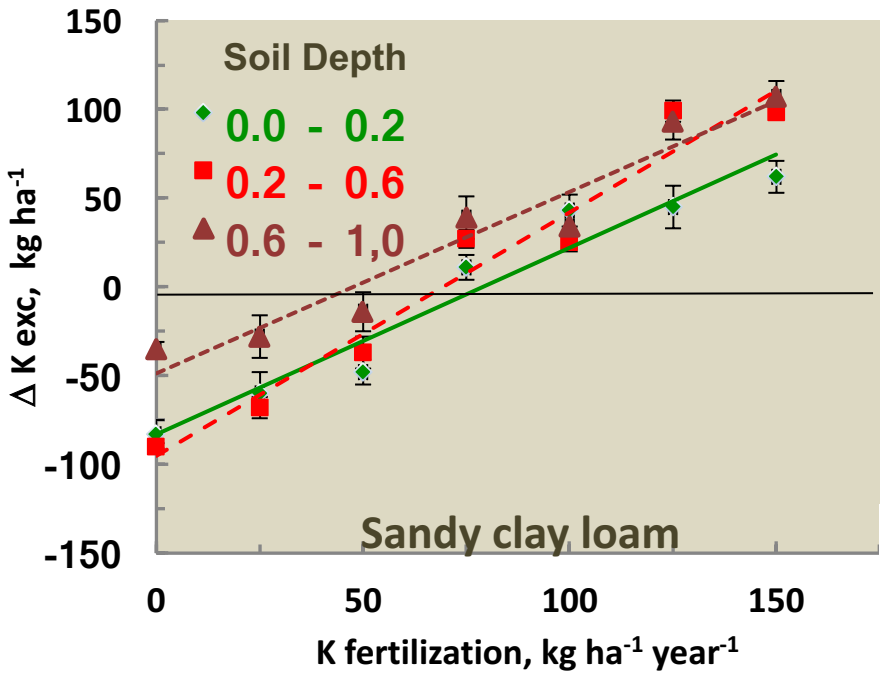
WHAT WE ARE LOOKING AT



HIGH K LOSS IN LIGHT TEXTURED SOILS
Exchangeable K balance in the soil profile (1.0 m) - 12 YEARS



Rosolem & Steiner 2017

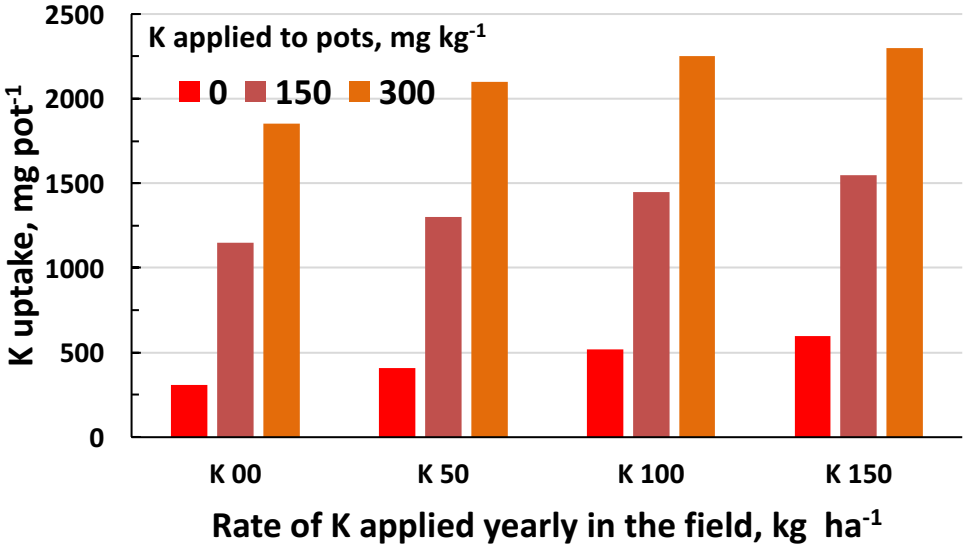


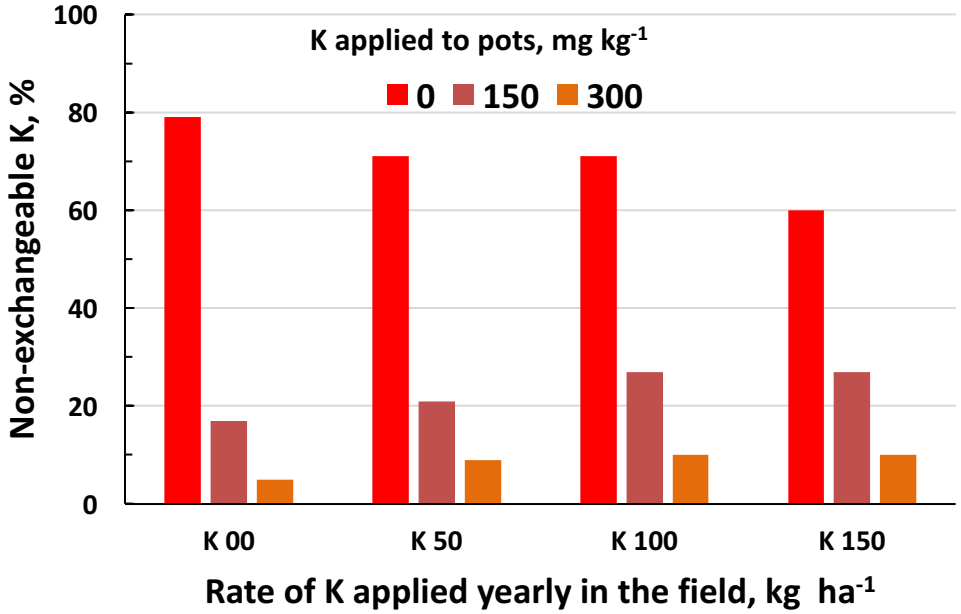
EXCHANGEABLE SOIL K DEPLETION IN SOIL

12 YEARS OF CROP ROTATION

Rosolem & Steiner 2017

NON-EXCHANGEABLE K DEPLETION- *B. Ruzisiensis*

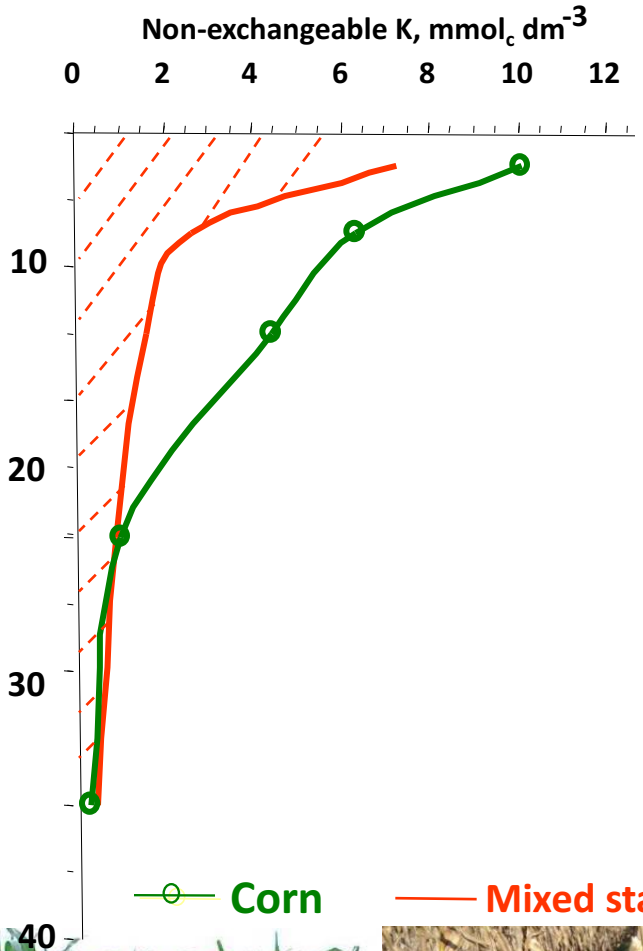




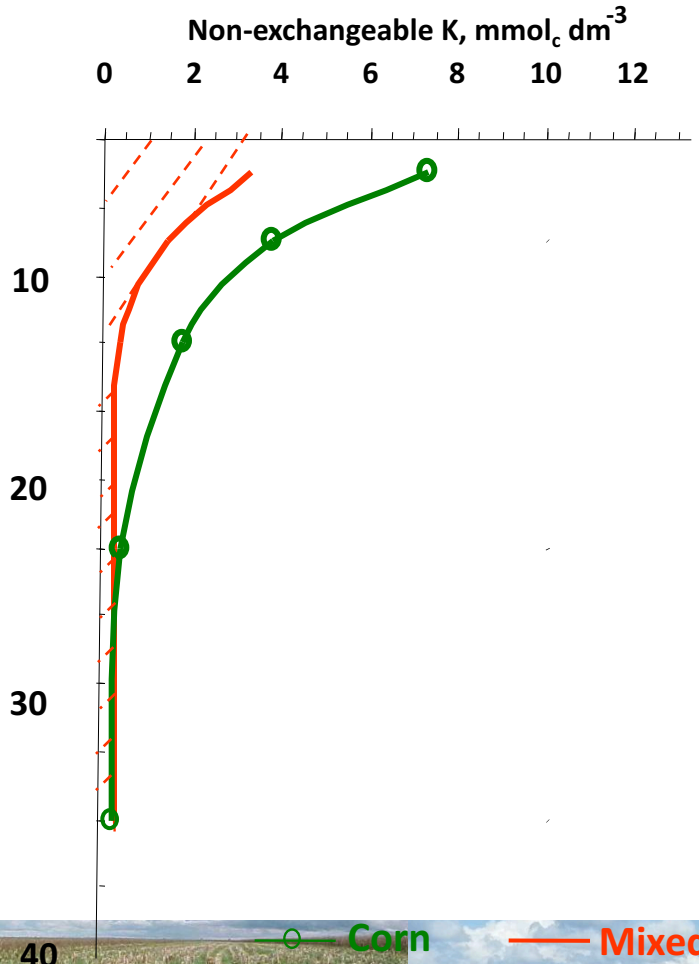
Rosolem et al., 2012

K CYCLING – Ruzigrass x Corn (Non-exchangeable K)

At Planting



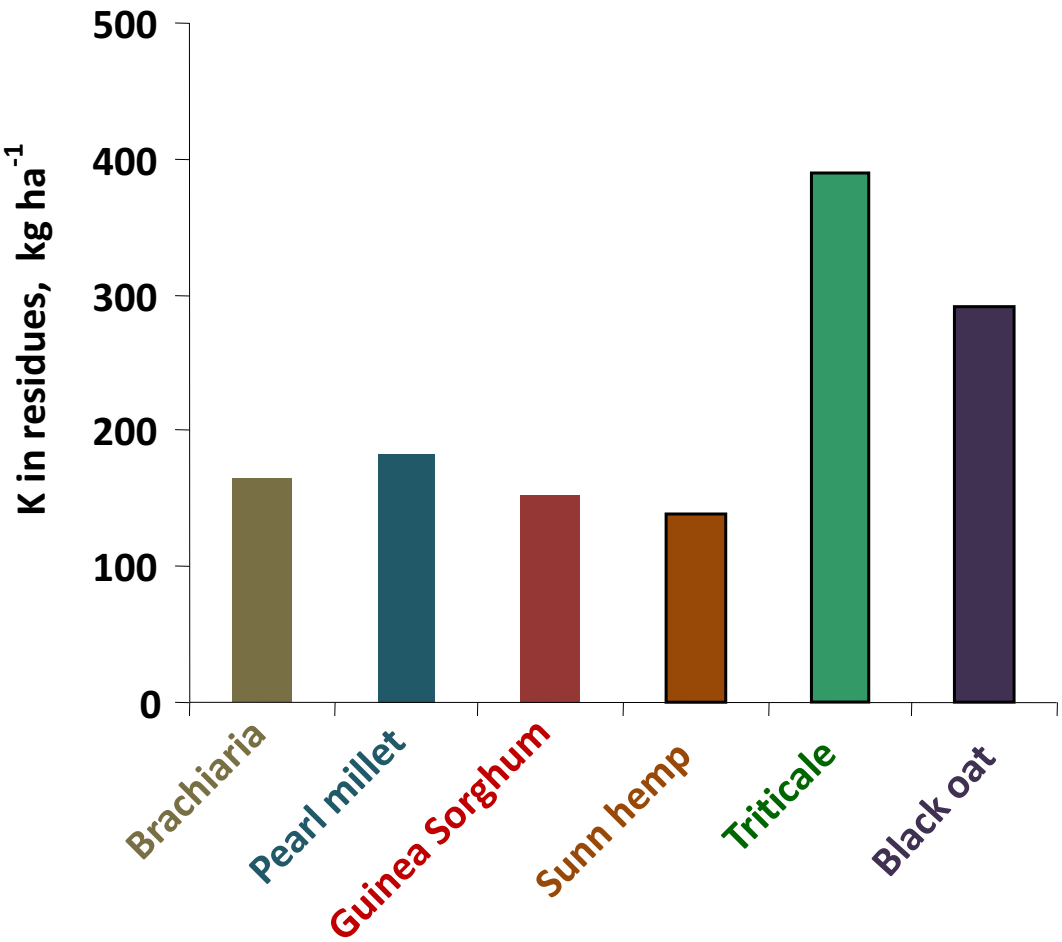
At harvest



Garcia et al., 2008

COVER CROPS AS K RESERVE IN CROPPING SYSTEMS

50 Days After Plant Emergence



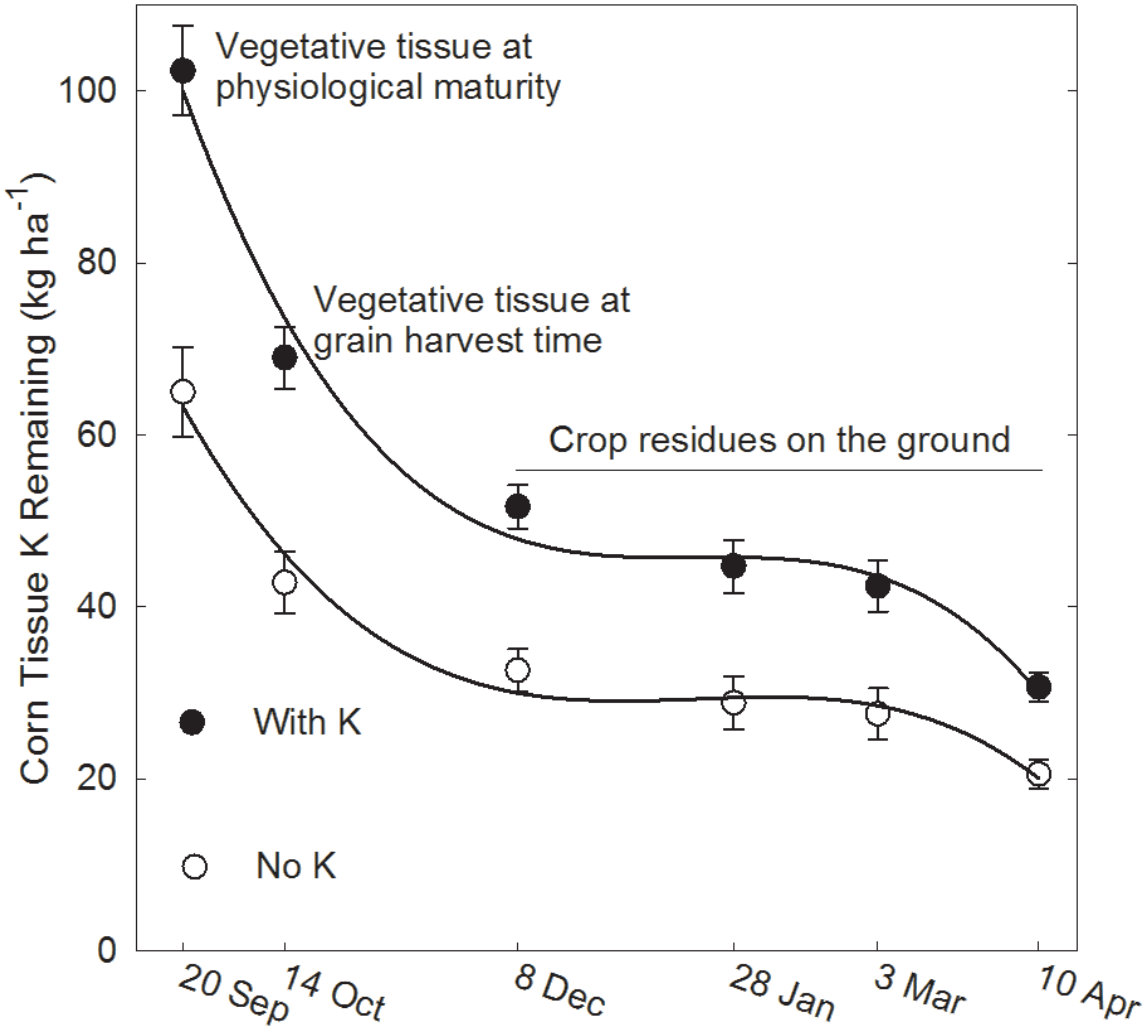
Calonego et al., 2001

COVER CROPS AS K RESERVE IN CROPPING SYSTEMS

Family	Average K	Range
	Kg t^{-1}	Kg t^{-1}
Legumes (n=15)	17	10-23
Grasses (n=18)	26	14-48
Others (n=6)	30	15-42

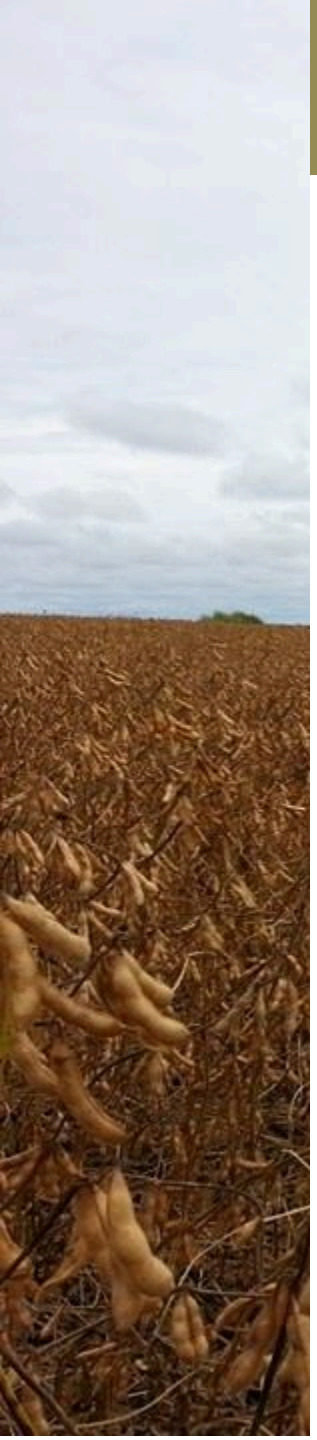


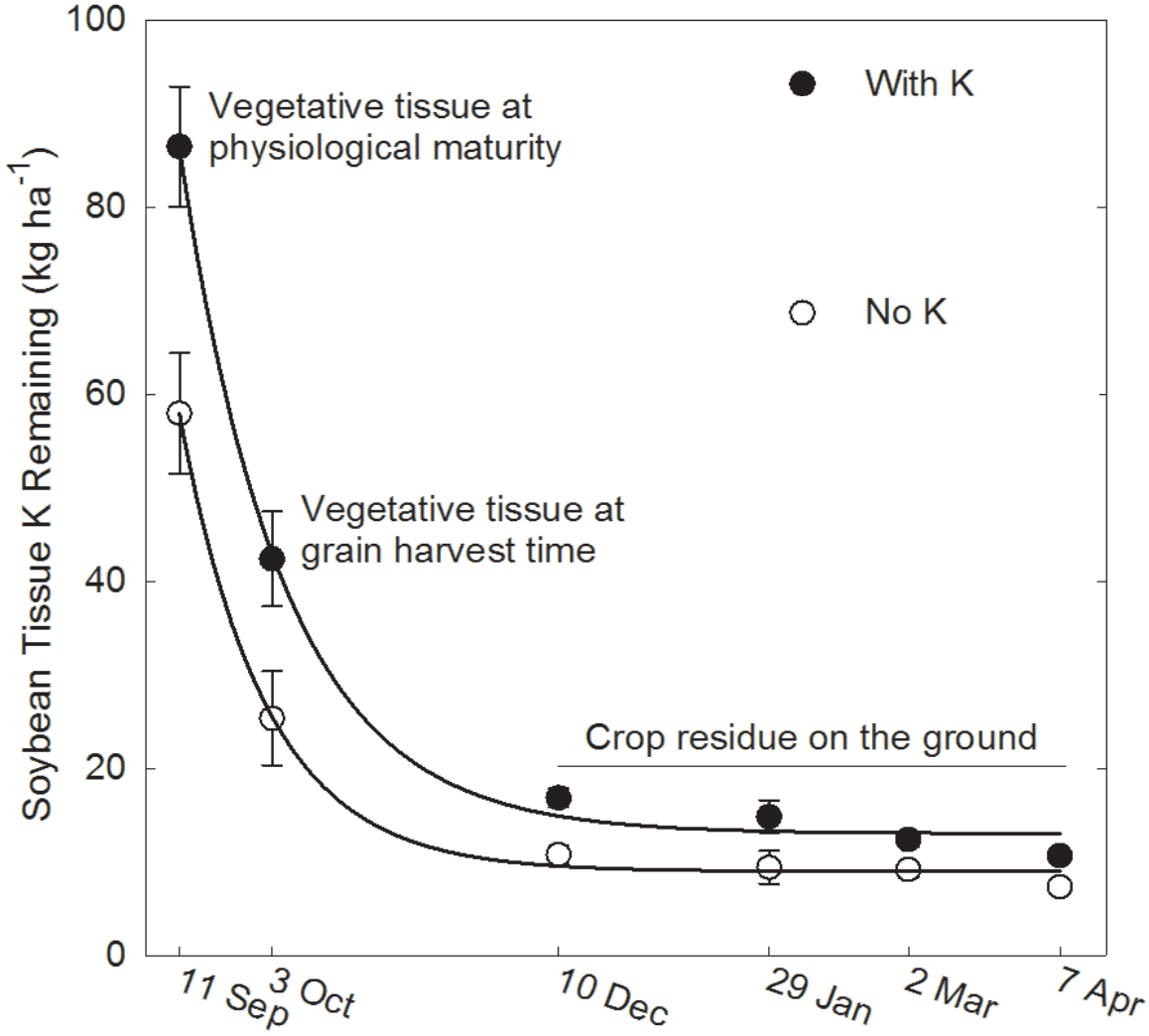
K IN CROPS OR RESIDUE (corn) (means across 33 site years).



Oltmans & Mallarino, 2015

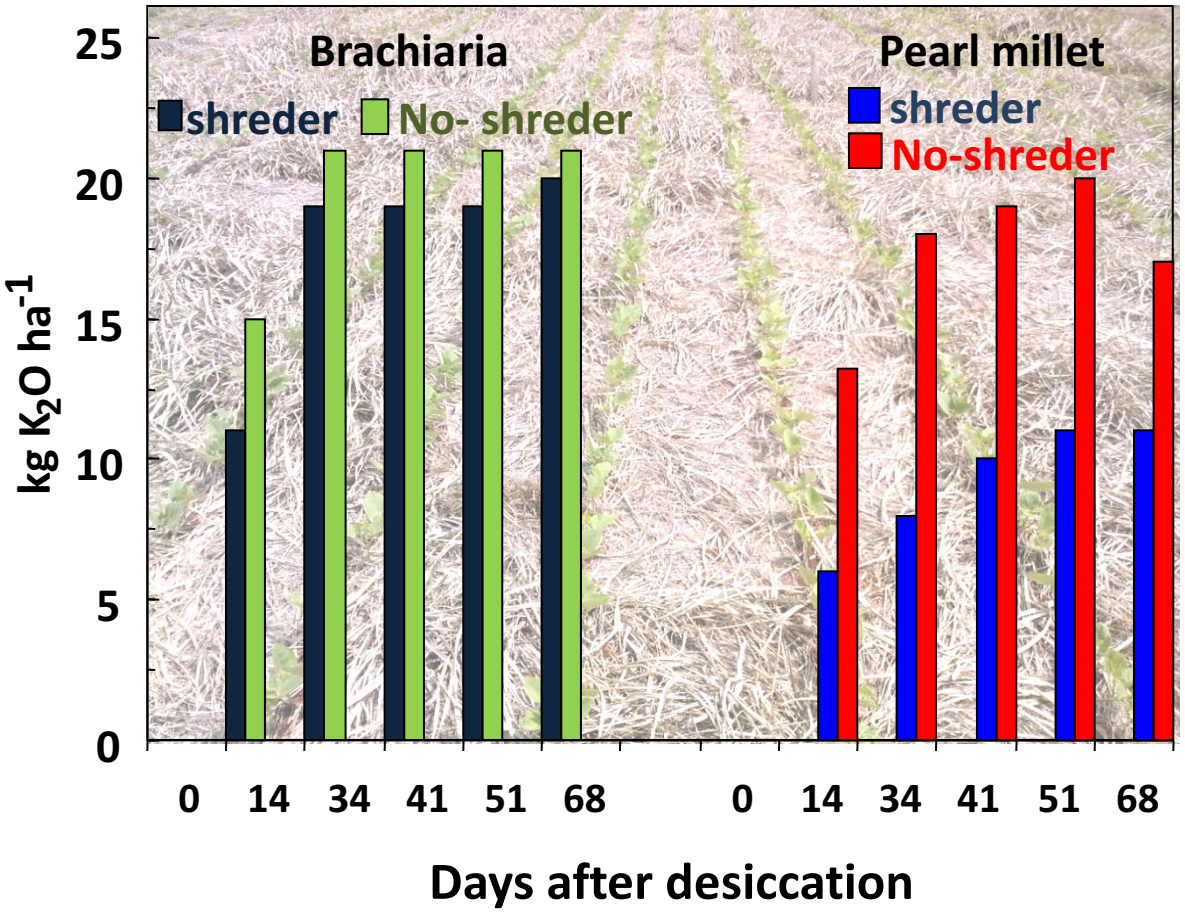
K IN CROPS OR RESIDUE (soybean)
(means across 14 site years)



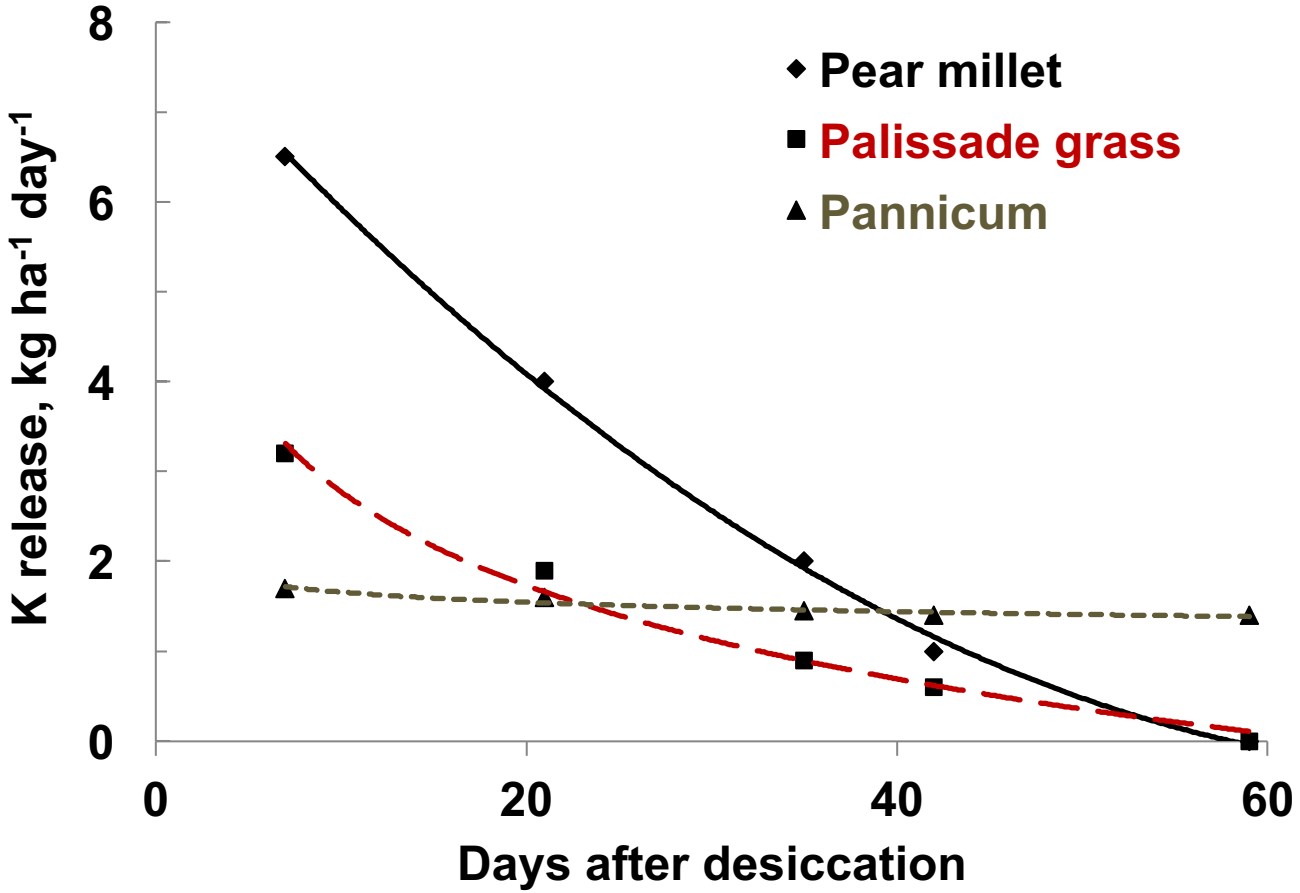


Oltmans & Mallarino, 2015

BACK TO THE SOIL

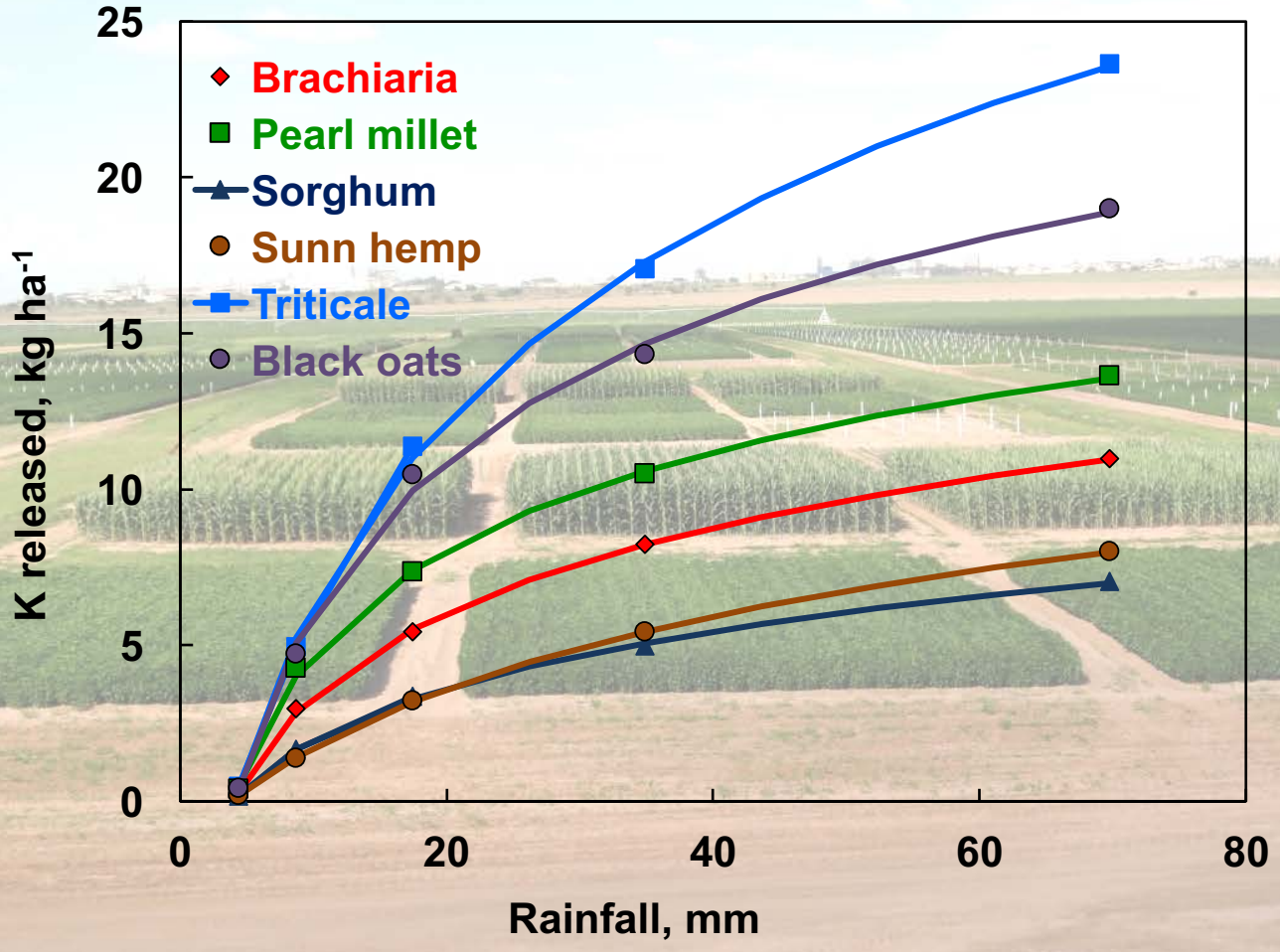


HIGH K RELEASE RATE IN FIRST DAYS AFTER DESICCATION



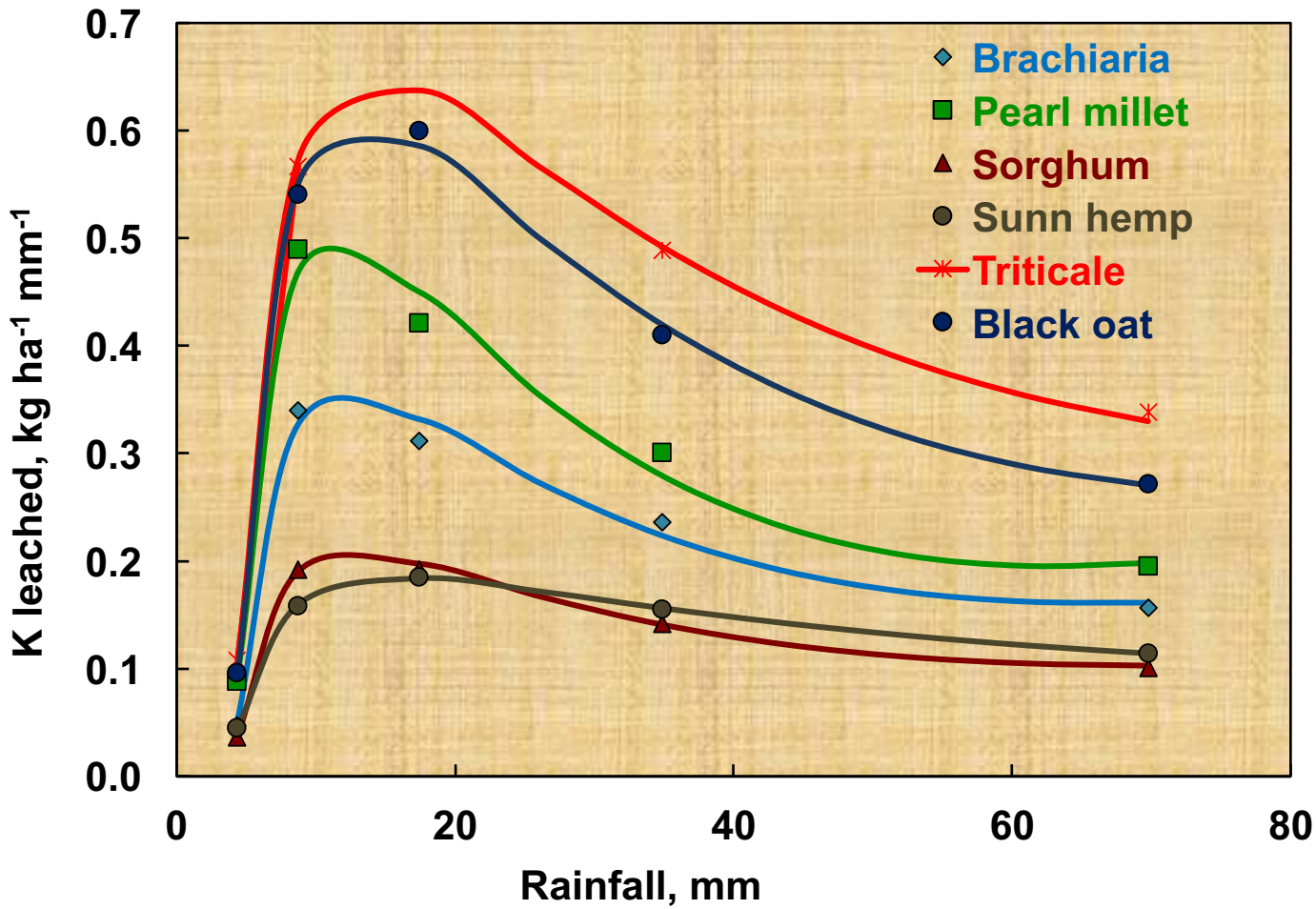
Crusciol et al. 2011

THE MORE RAIN, THE MORE K RECYCLED
(Accumulated K Released 8 Days After Desiccation)



Rosolem et al., 2003

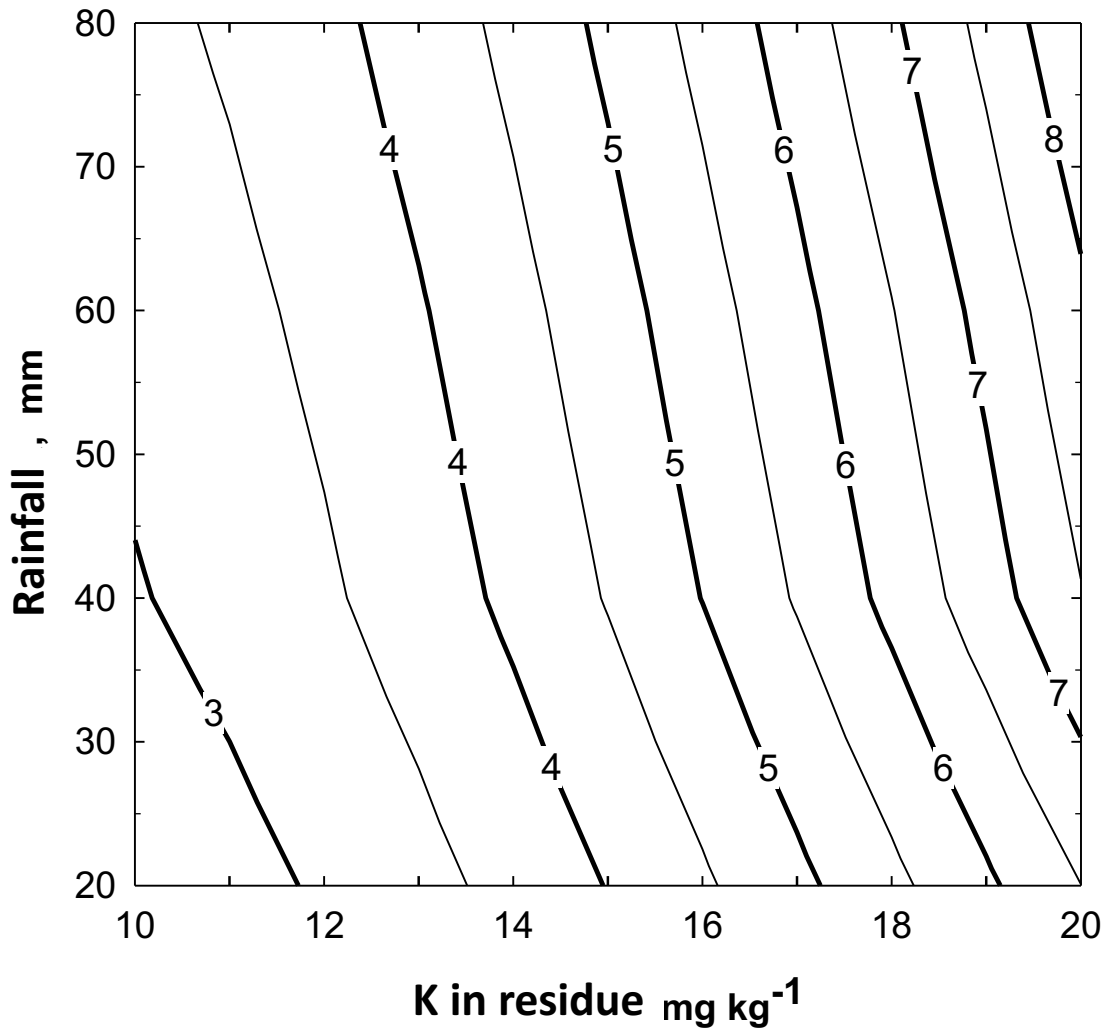
HIGHEST RATE OF K RELEASE WITH THE FIRST RAINS (Five Days After Desiccation)



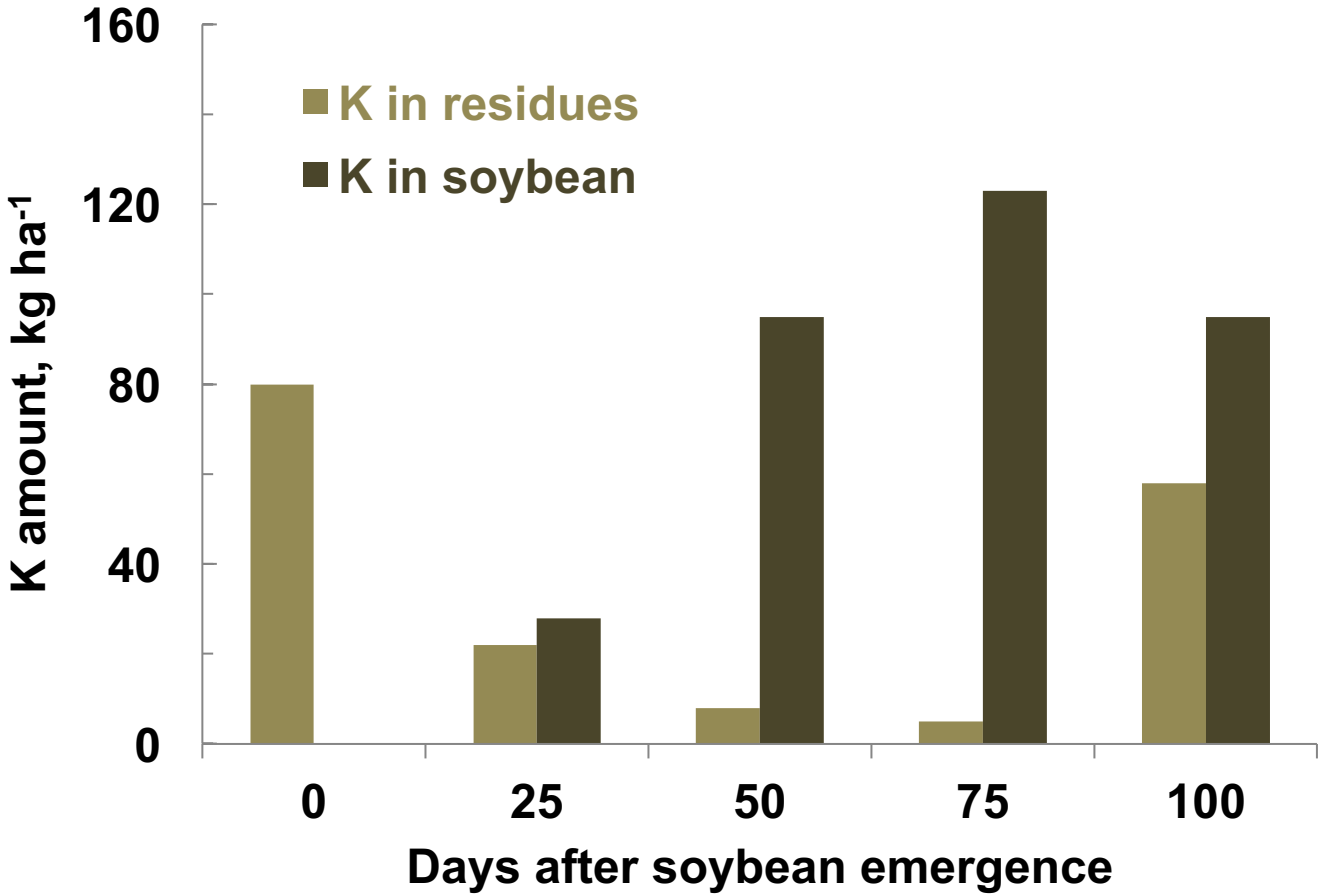
Rosolem, Calonego & Foloni (2003)

THE AMOUNT OF K RELEASED CAN BE CALCULATED

Isolines of K release rom pearl millet residues

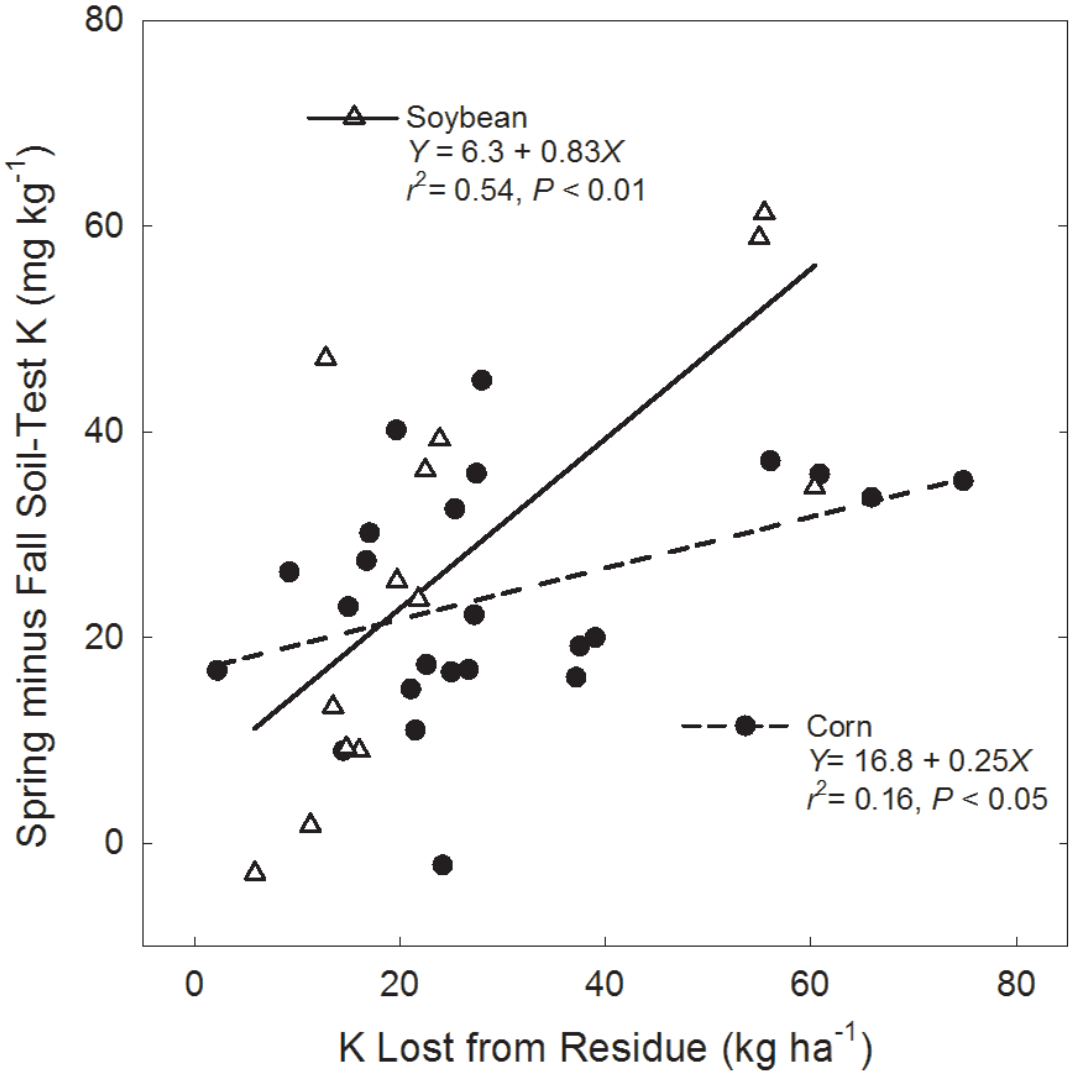


K WASHED FROM PEARL MILLET AND TAKEN UP BY THE NEXT SOYBEAN



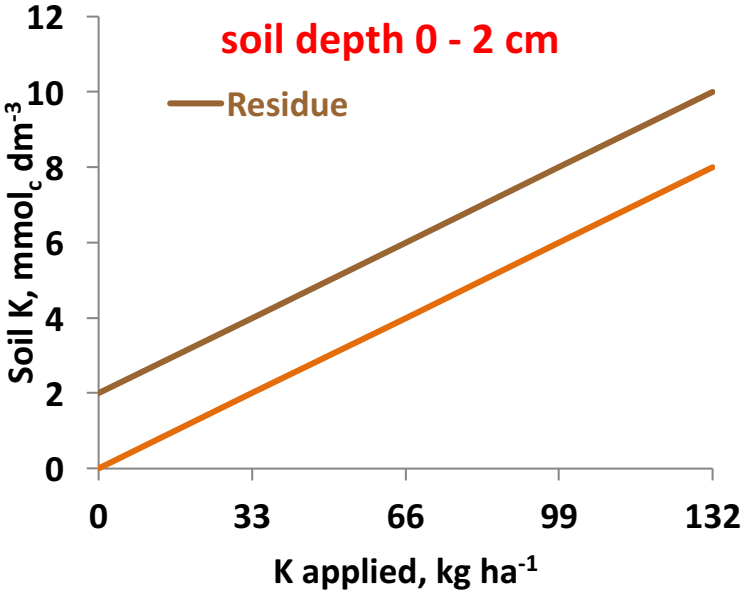
Foloni & Rosolem, 2004

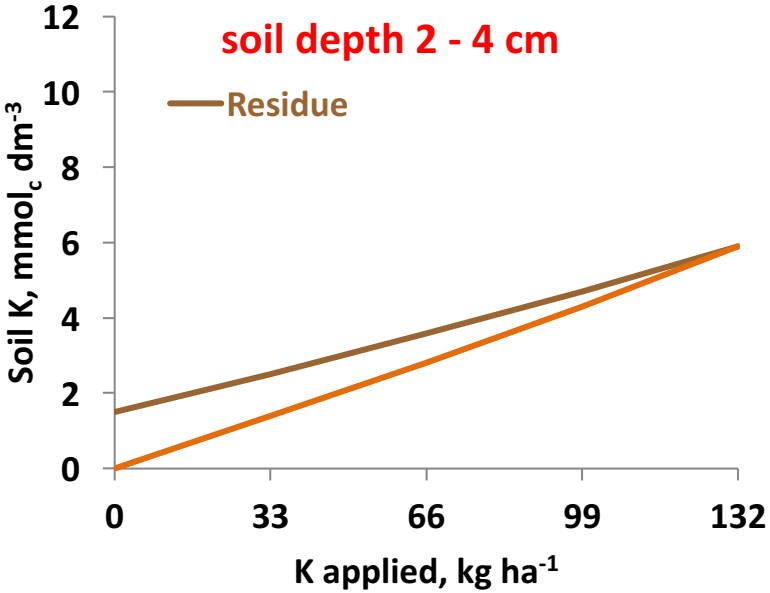
K LOST FROM CORN OR SOYBEAN RESIDUE IS FOUND IN THE SOIL

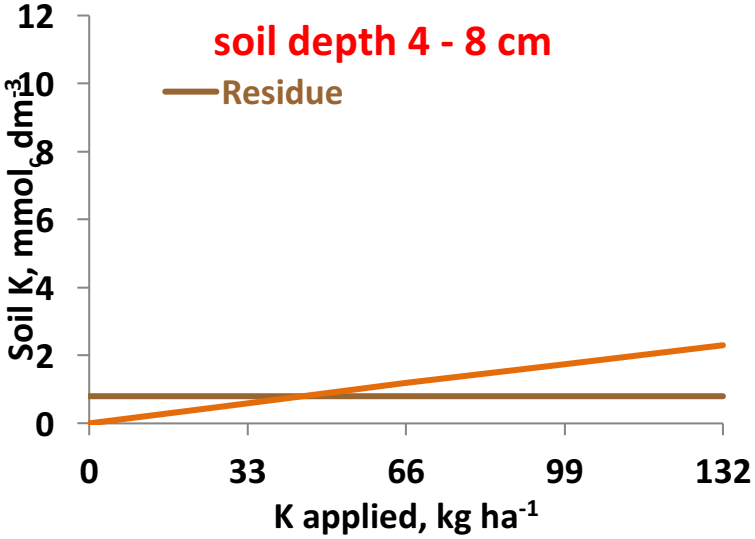


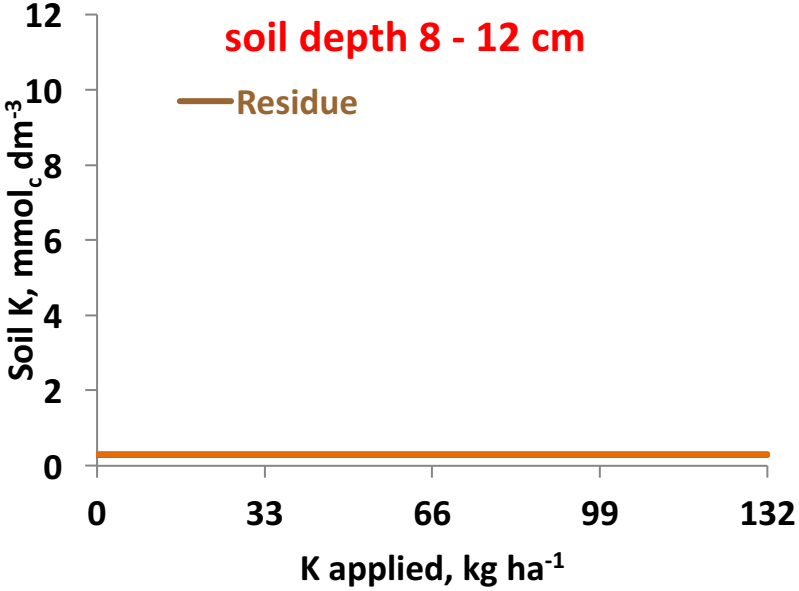
Oltmans & Mallarino, 2015

K WASHED FROM FERTILIZER AND PEAR MILLET RESIDUE IS FOUND IN THE FIRST 8 cm



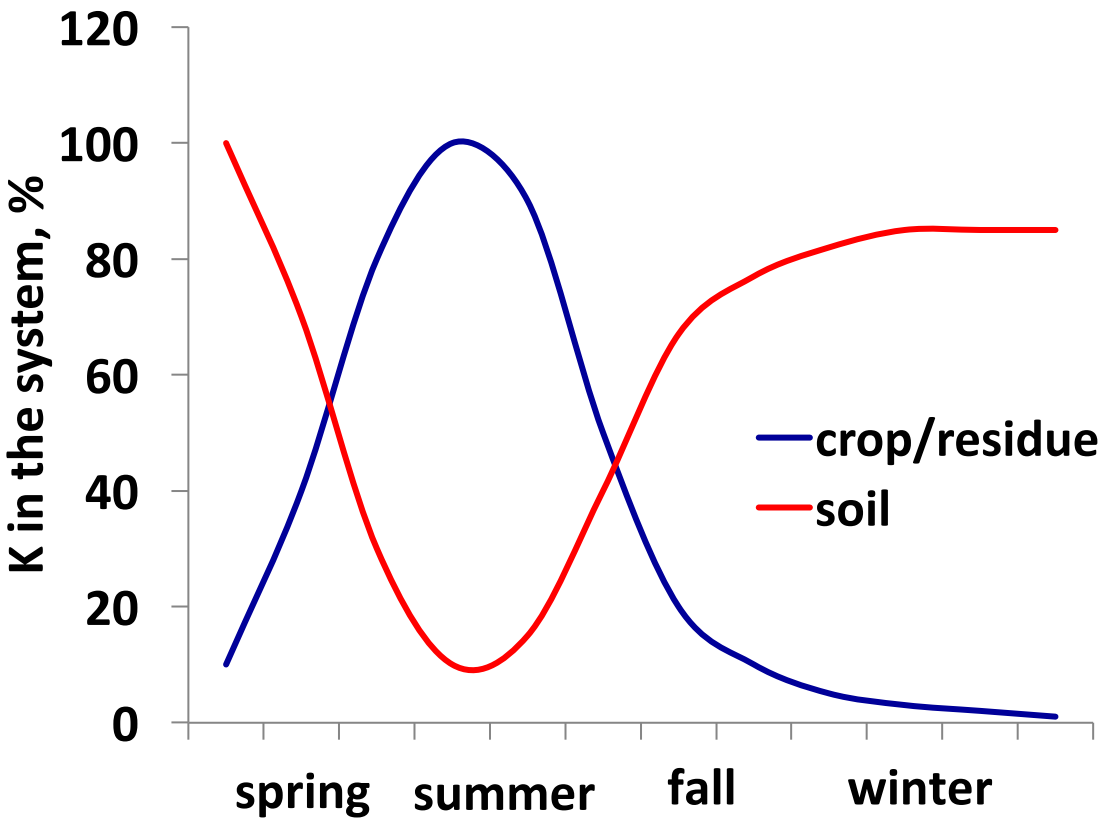






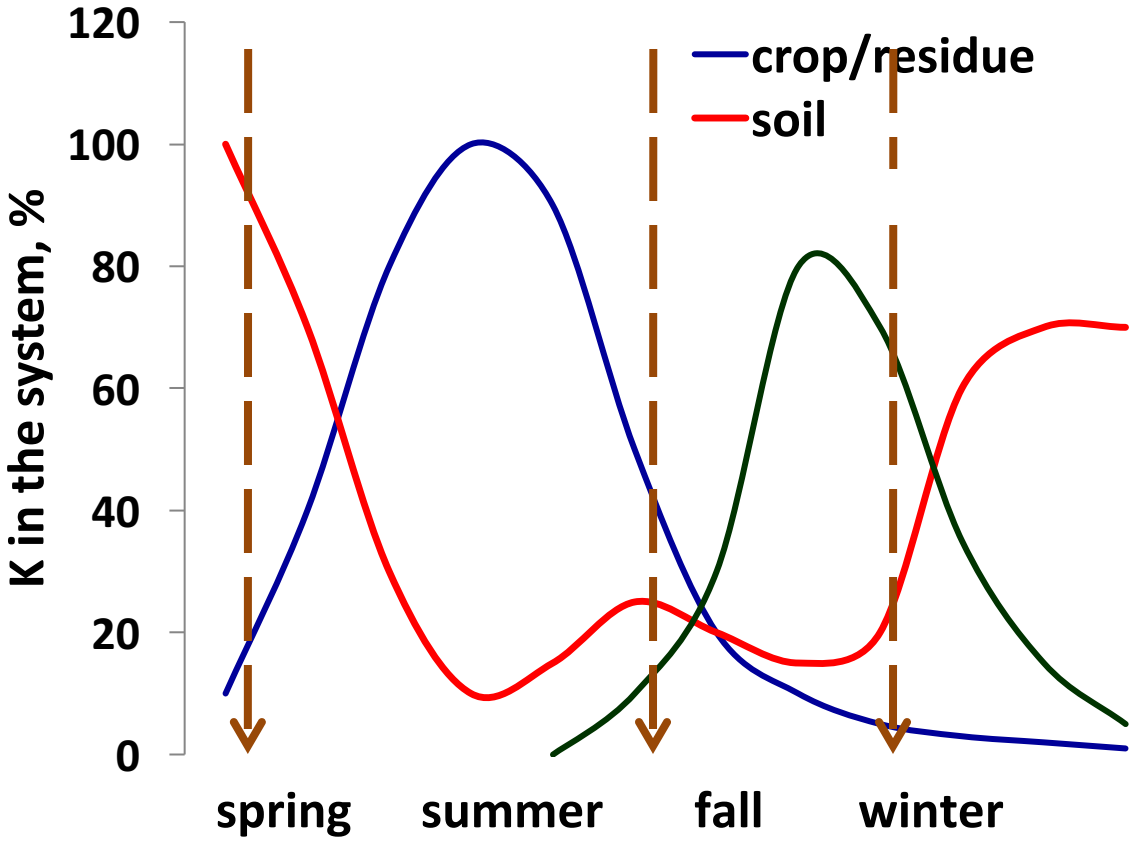
Rosolem et al., 2006

K MANAGEMENT IN CROPPING SYSTEMS






K MANAGEMENT IN CROPPING SYSTEMS







Grazie mille


Muito obrigado