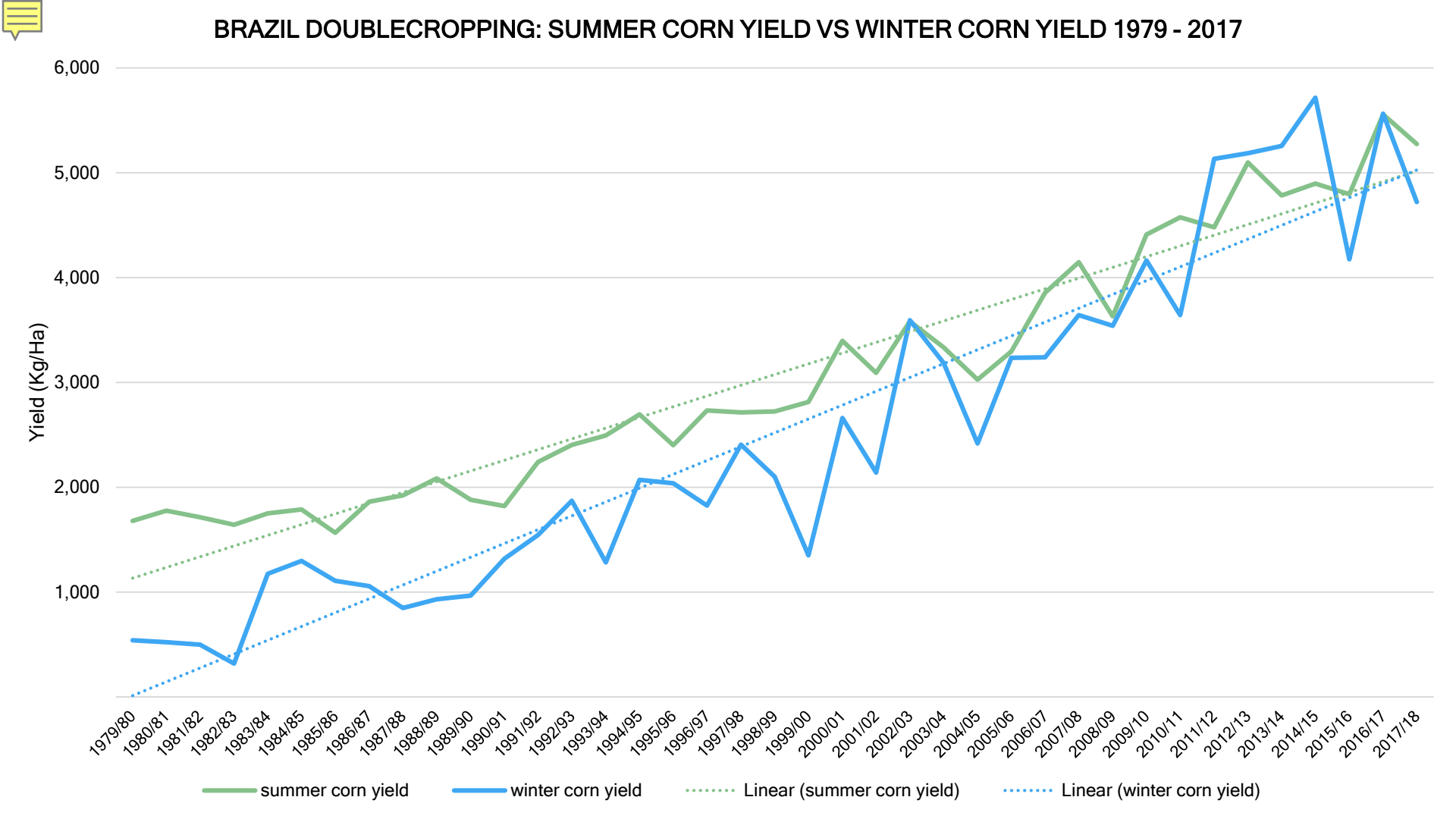
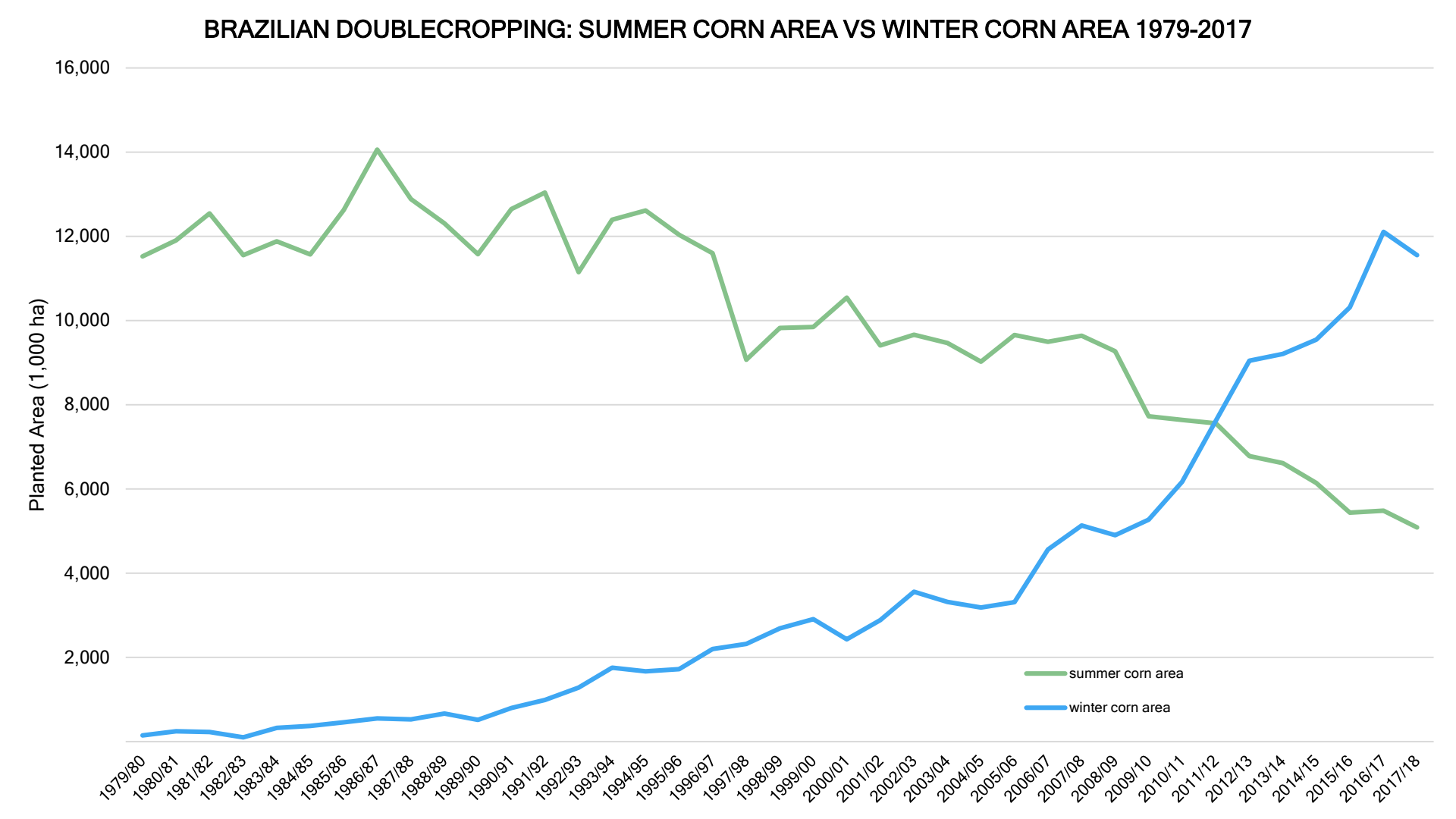
YIELD GROWTH RATES AND CROPPING SYSTEM UPTAKE

BRAZIL DOUBLECROPPING: SUMMER CORN YIELD VS WINTER CORN YIELD 1979 - 2017




BRAZILIAN DOUBLECROPPING: SUMMER CORN AREA VS WINTER CORN AREA 1979-2017
Planted Area (1,000 ha)
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
summer corn area
winter corn area
1979/80
1980/81
1981/82
1982/83
1983/84
1984/85
1985/86
1986/87
1987/88
1988/89
1989/90
1990/91
1991/92
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
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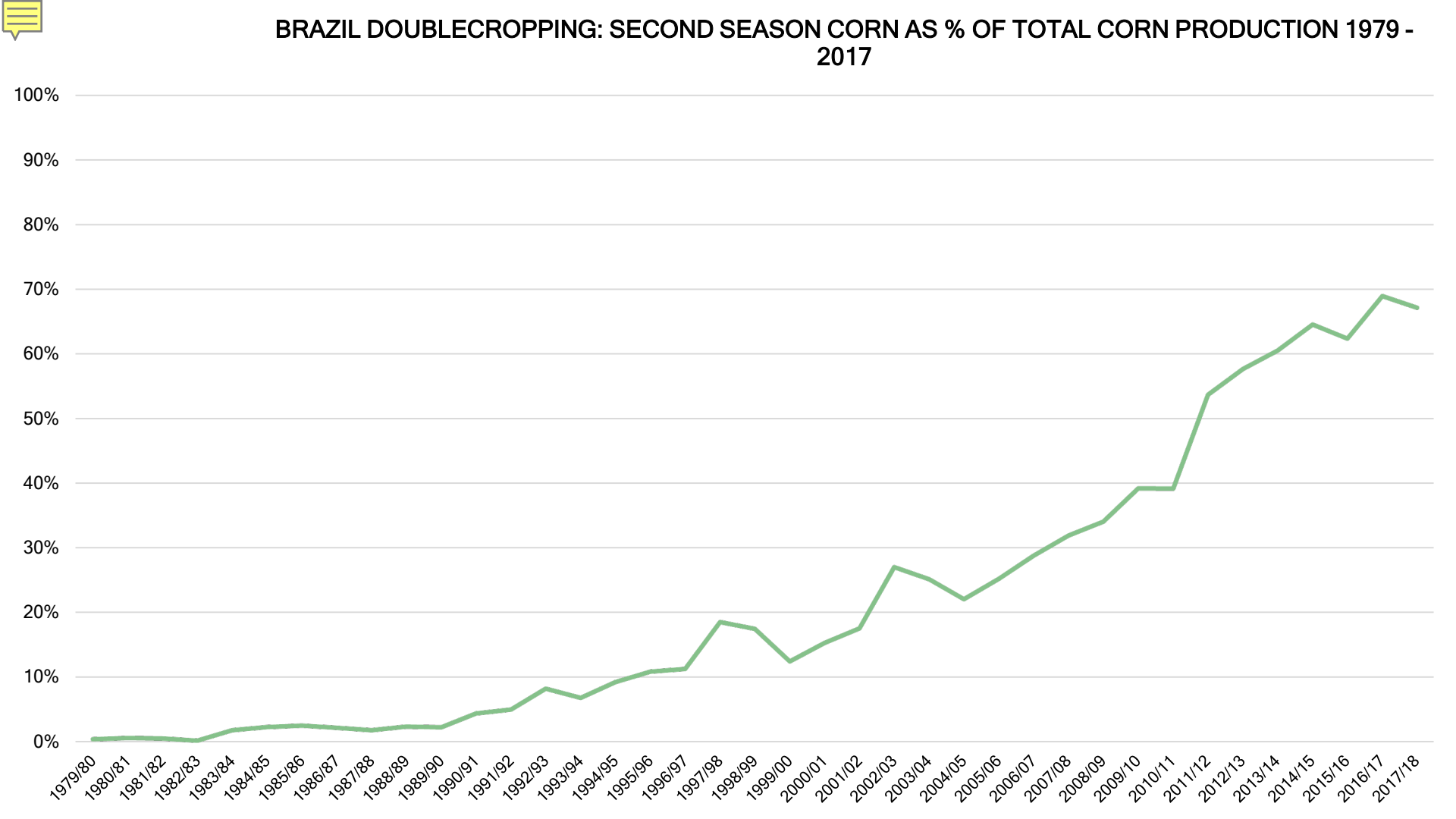
1999/00
2000/01
2001/02
2002/03
2003/04
2004/05
2005/06
2006/07
2007/08
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18

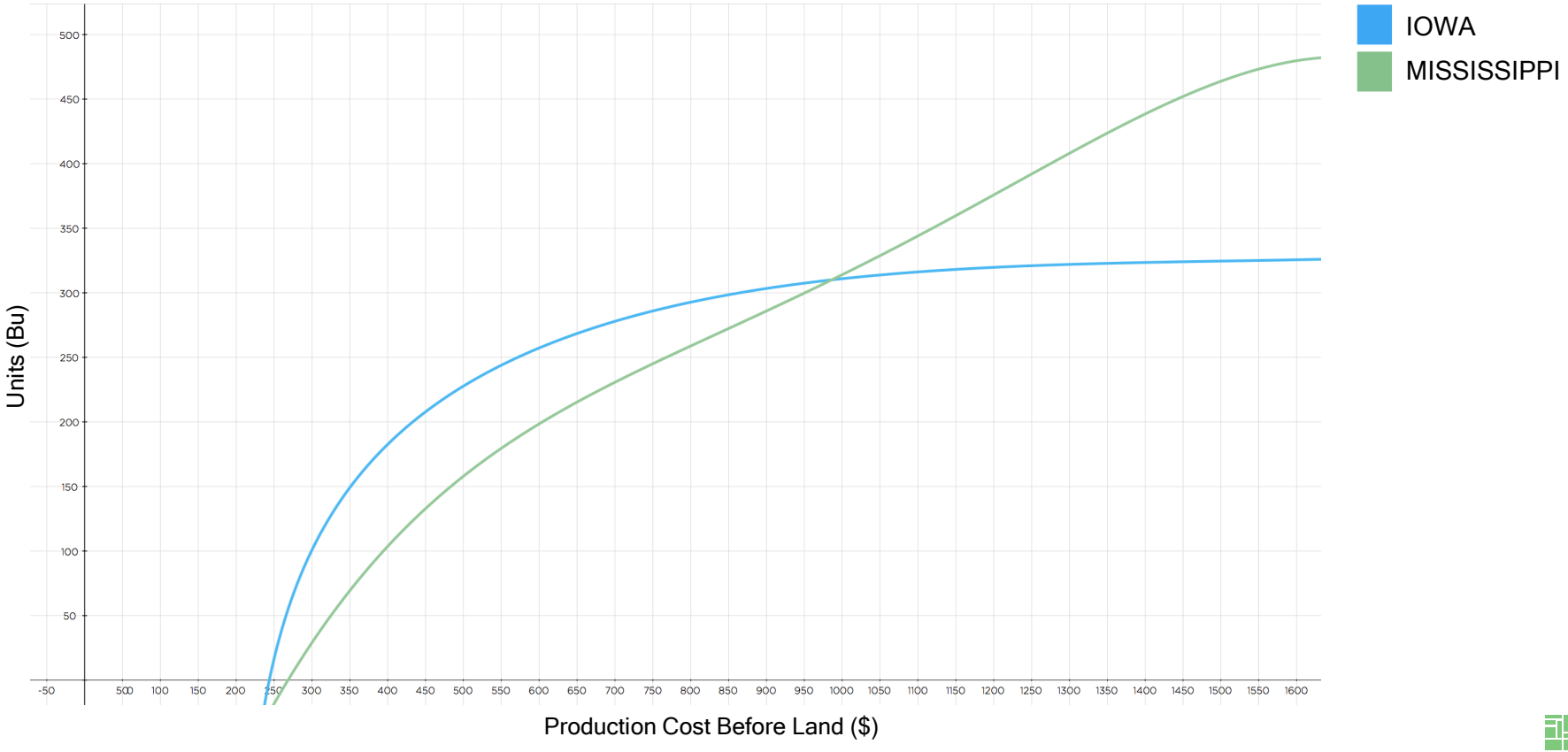
BRAZIL DOUBLECROPPING: SECOND SEASON CORN AS % OF TOTAL CORN PRODUCTION 1979 - 2017



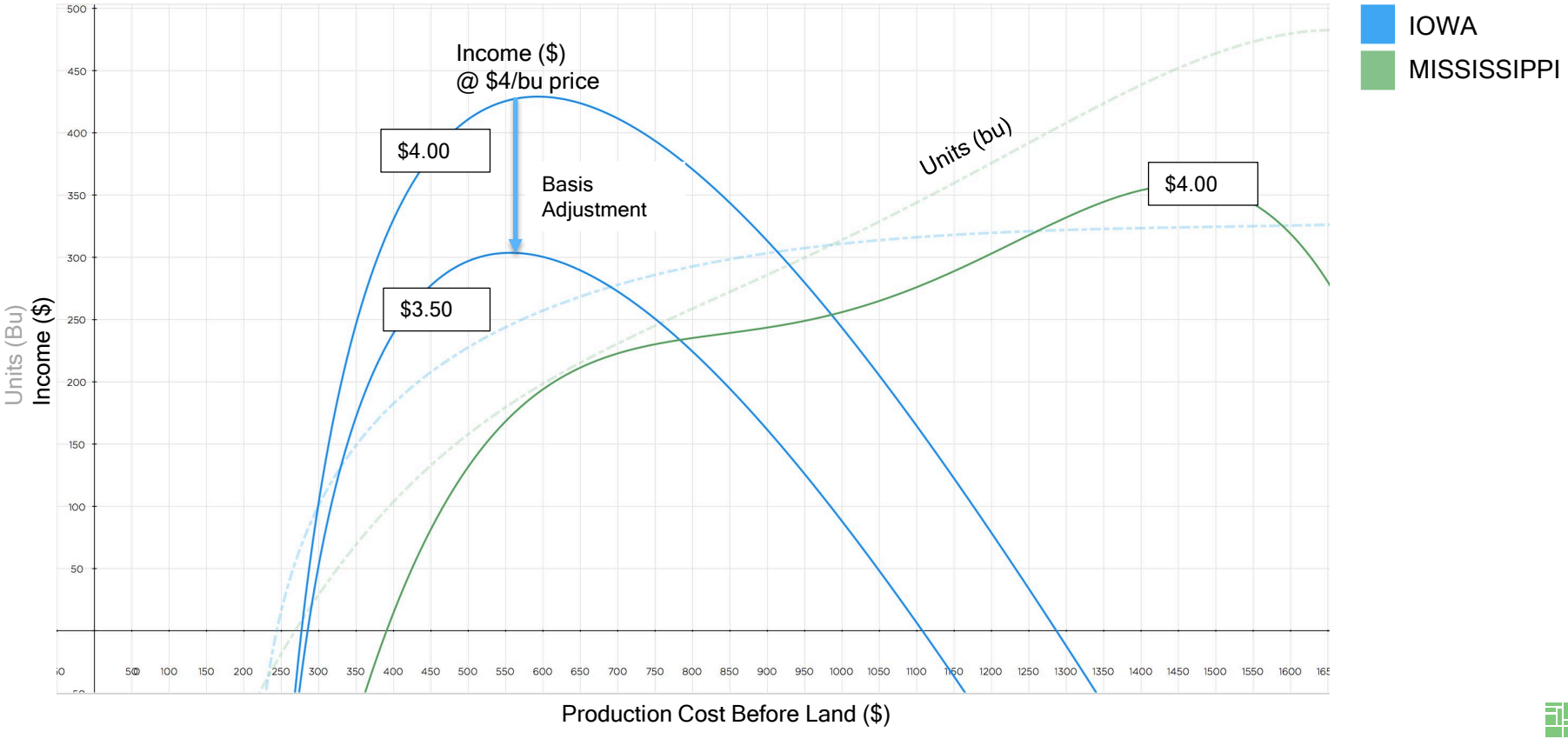
CREATING OPTION VALUE

Southeastern, 2018

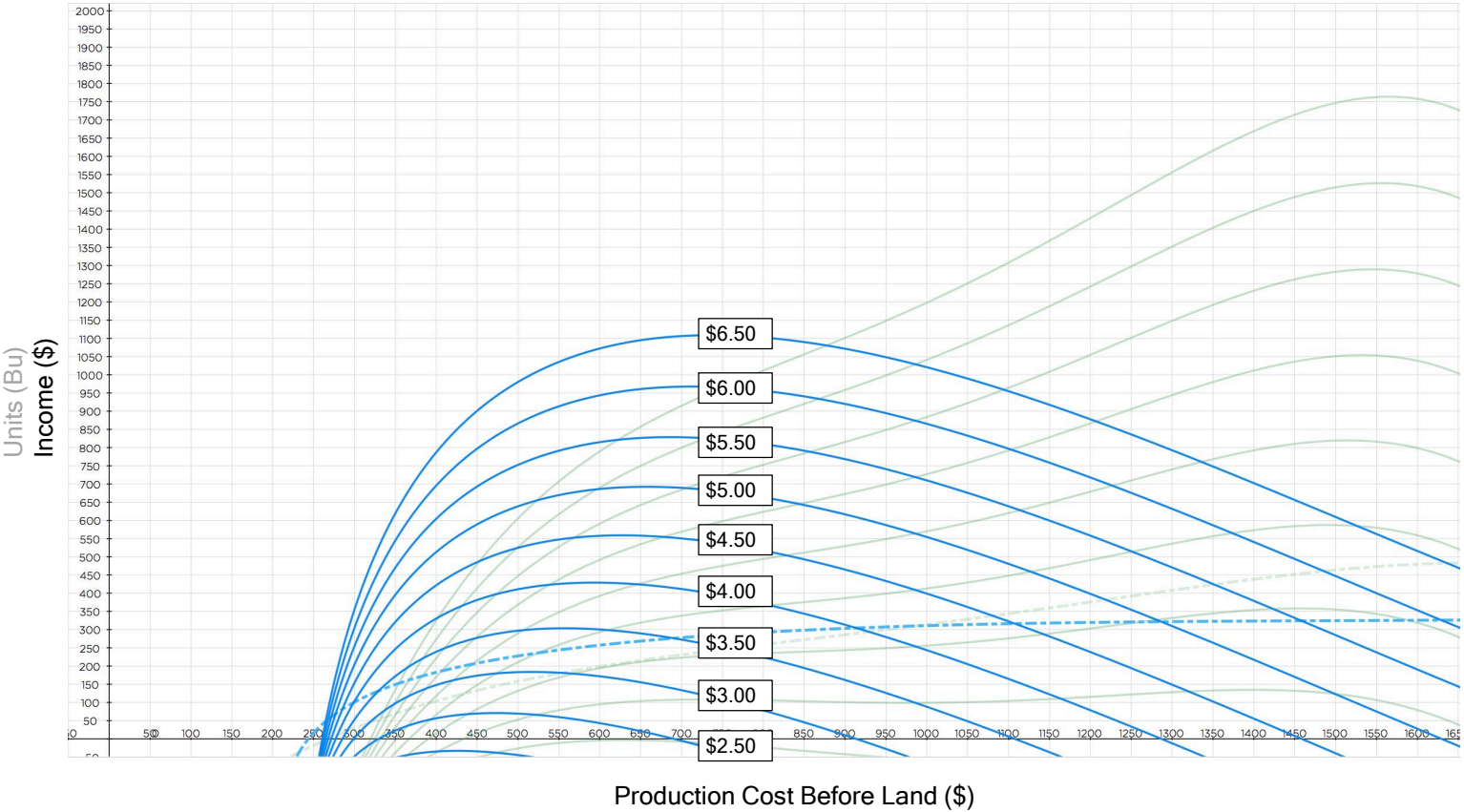
CORN YIELD EQUIVALENT AS FUNCTION OF TOTAL PRODUCTION COST PER ACRE



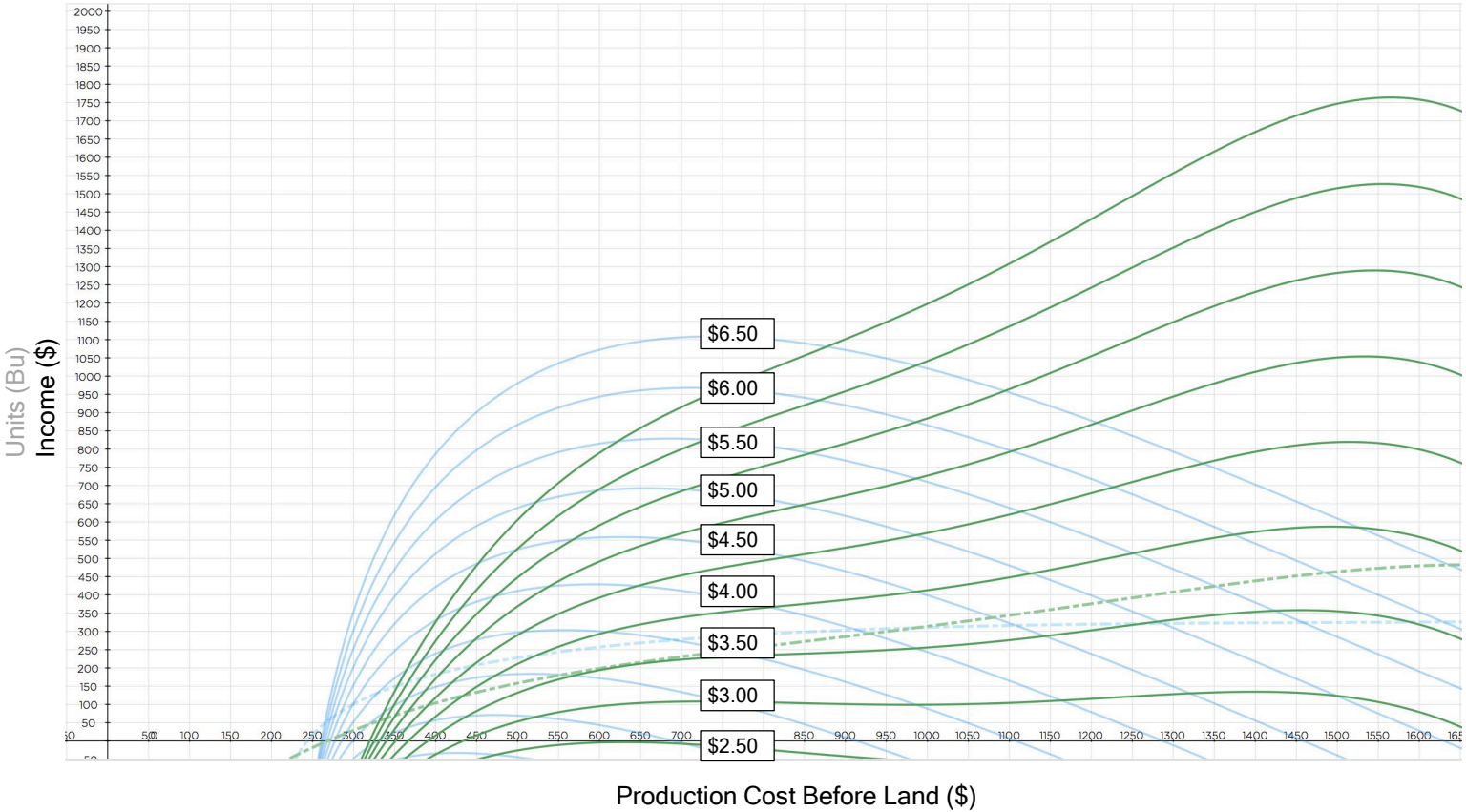
OPERATING INCOME AS FUNCTION OF PRODUCTION COSTS



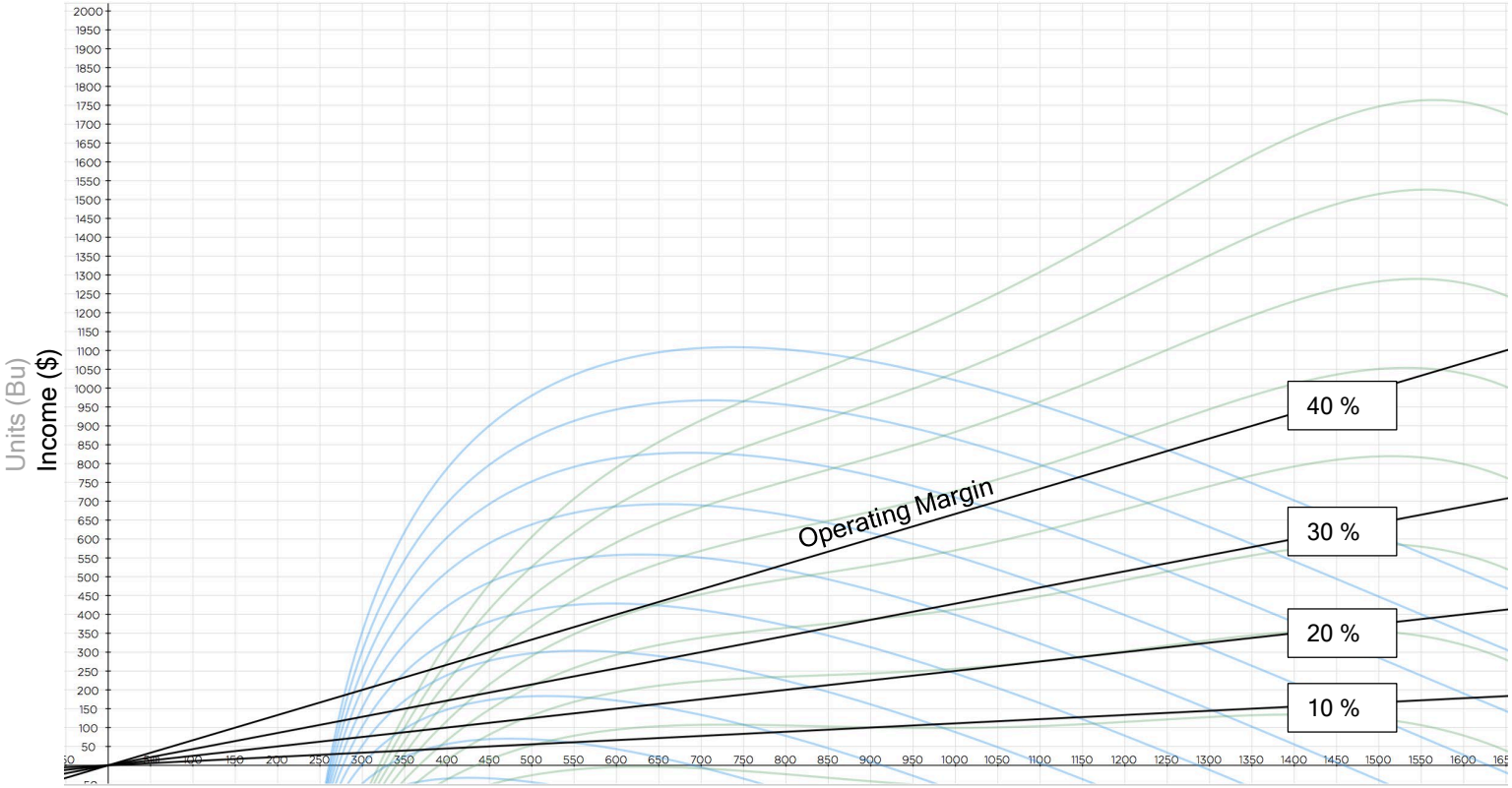
IOWA YIELD AND INCOME VS PRODUCTION COST DYNAMICS



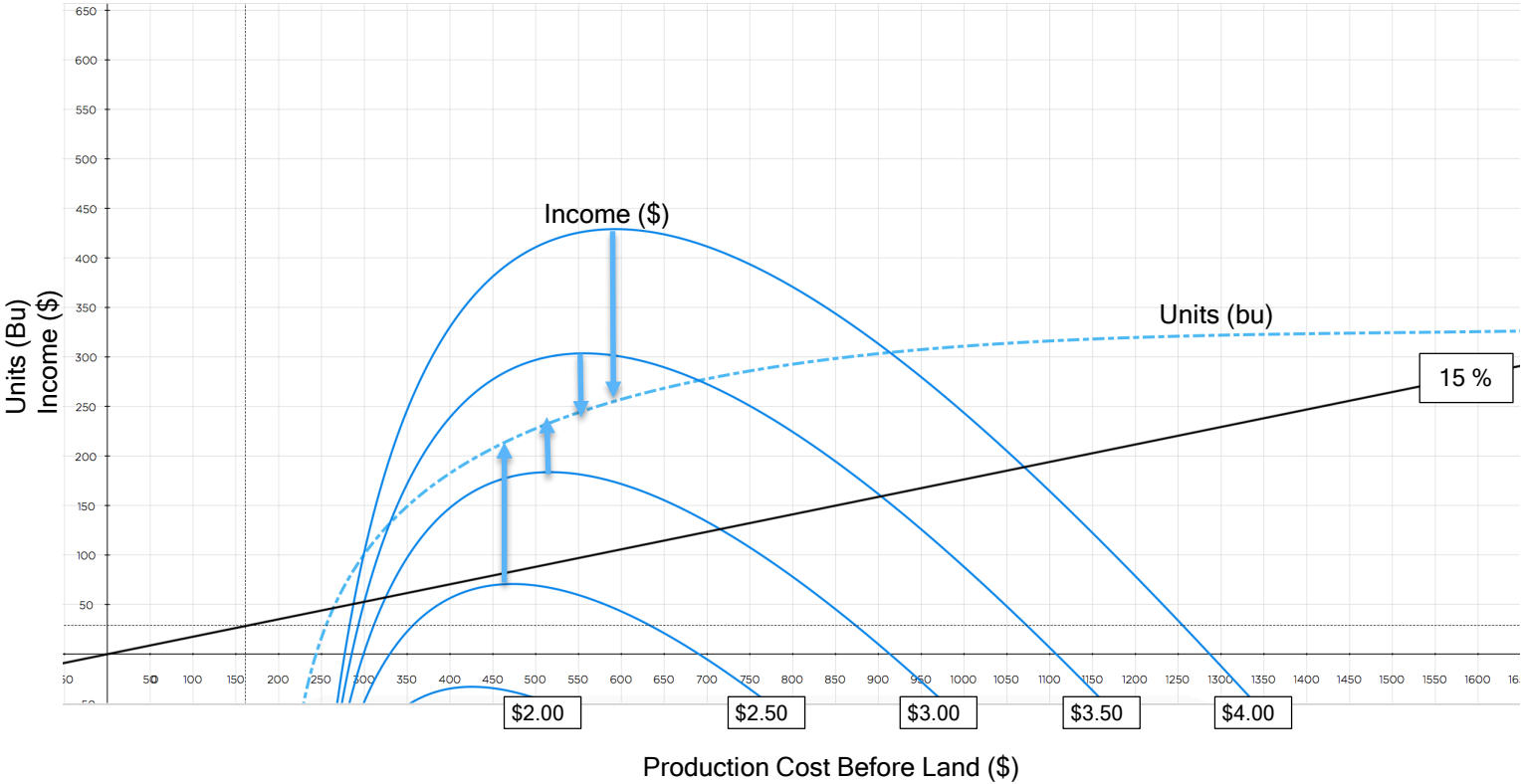
MISSISSIPPI YIELD AND INCOME VS PRODUCTION COST DYNAMICS



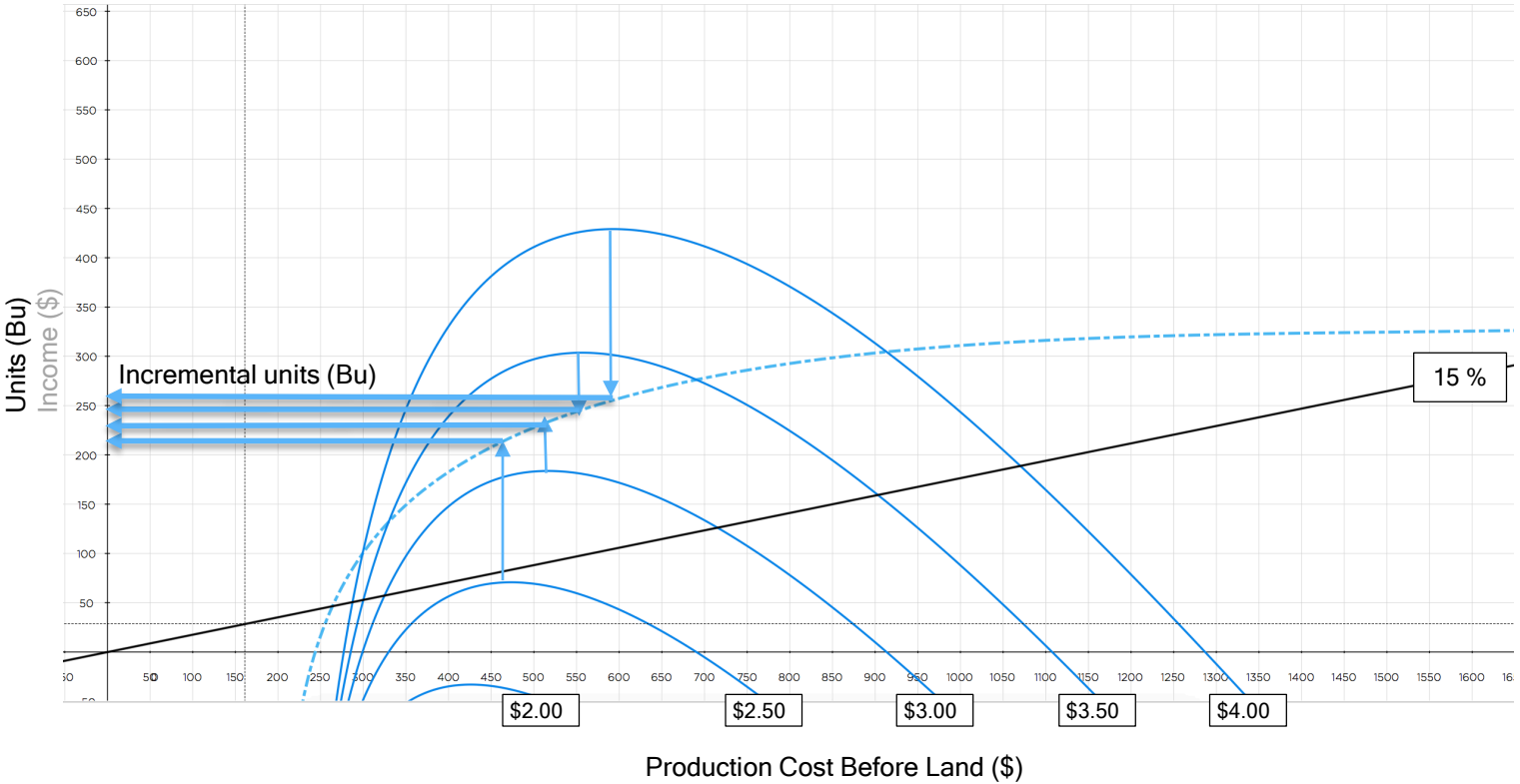
OPERATING MARGIN BEFORE LAND COSTS



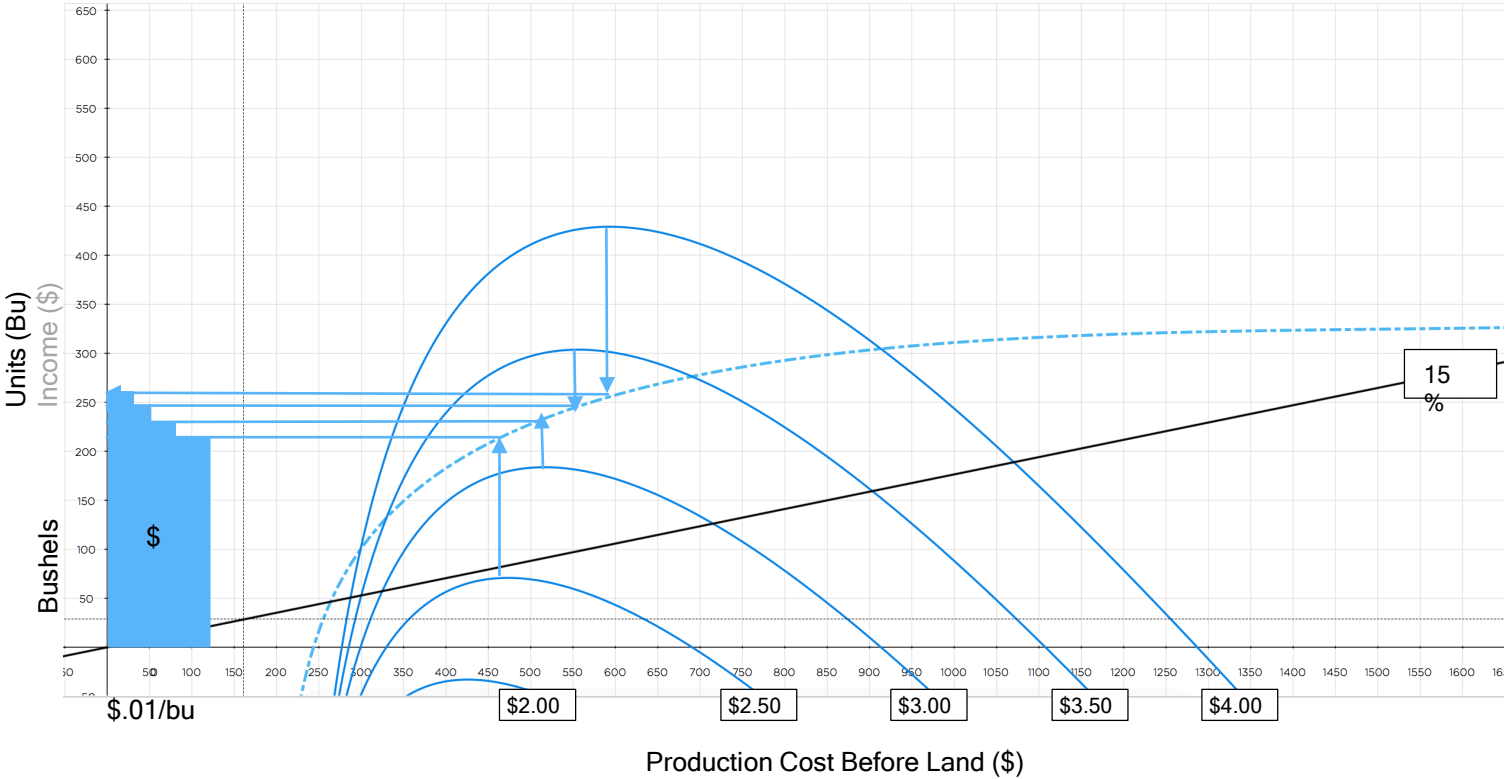
IOWA FARMLAND AS A STACK OF CORN CALL OPTIONS



IOWA FARMLAND AS A STACK OF CORN CALL OPTIONS

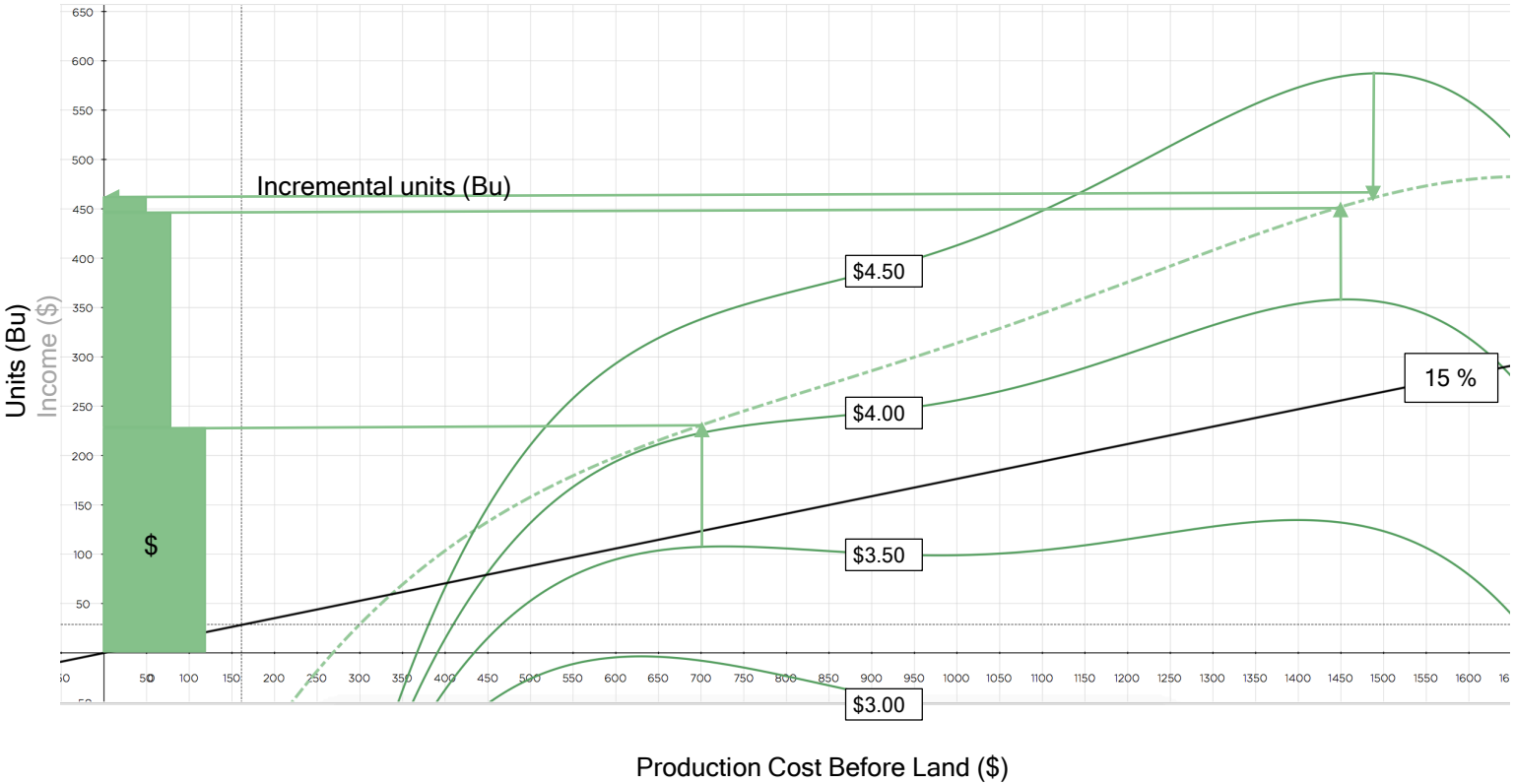


IOWA FARMLAND AS A STACK OF CORN CALL OPTIONS



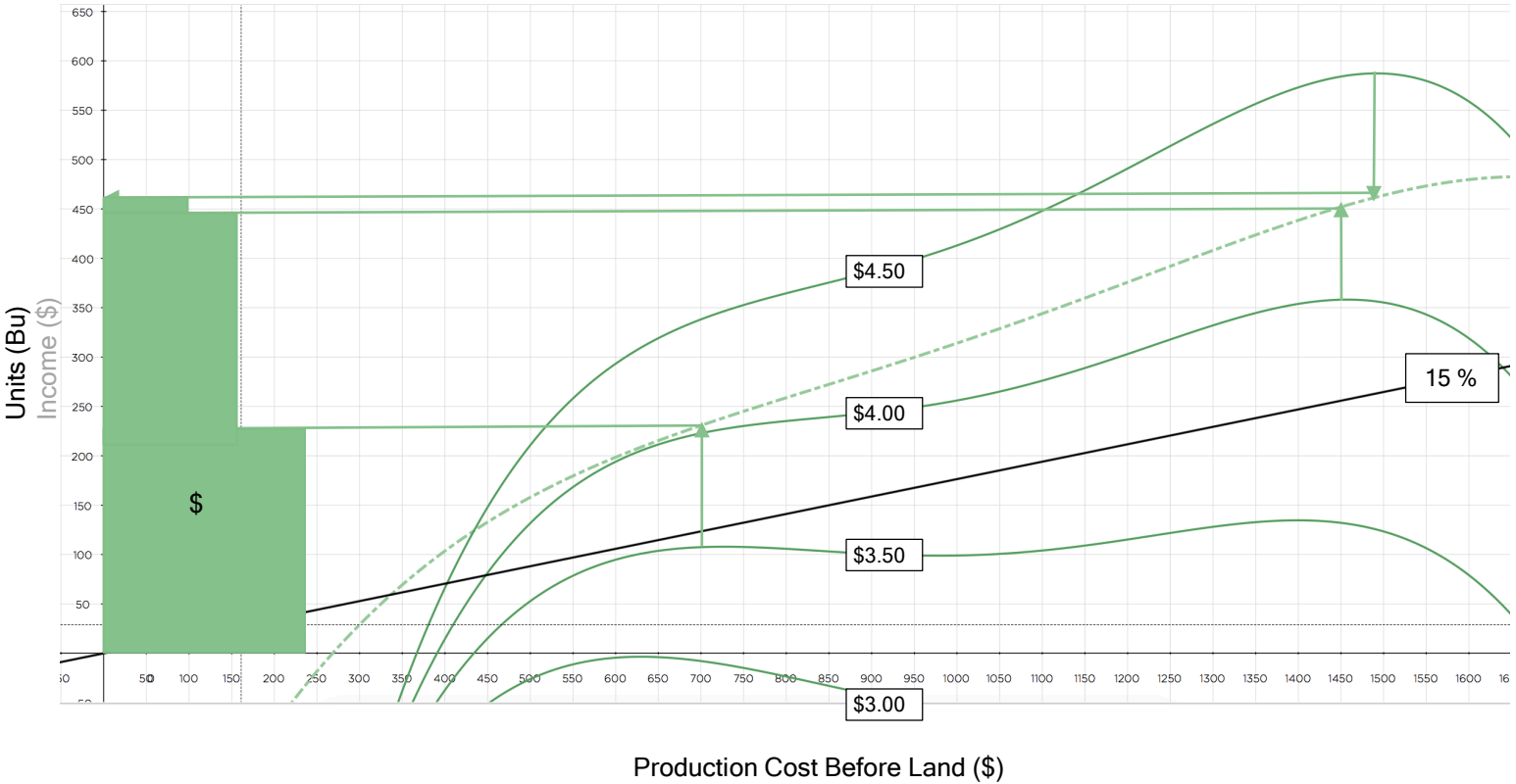
MISSISSIPPI FARMLAND AS A STACK OF CORN CALL OPTIONS

Reference Options: December 2020 CME Corn. Width of Bar = Current Value of Reference Option



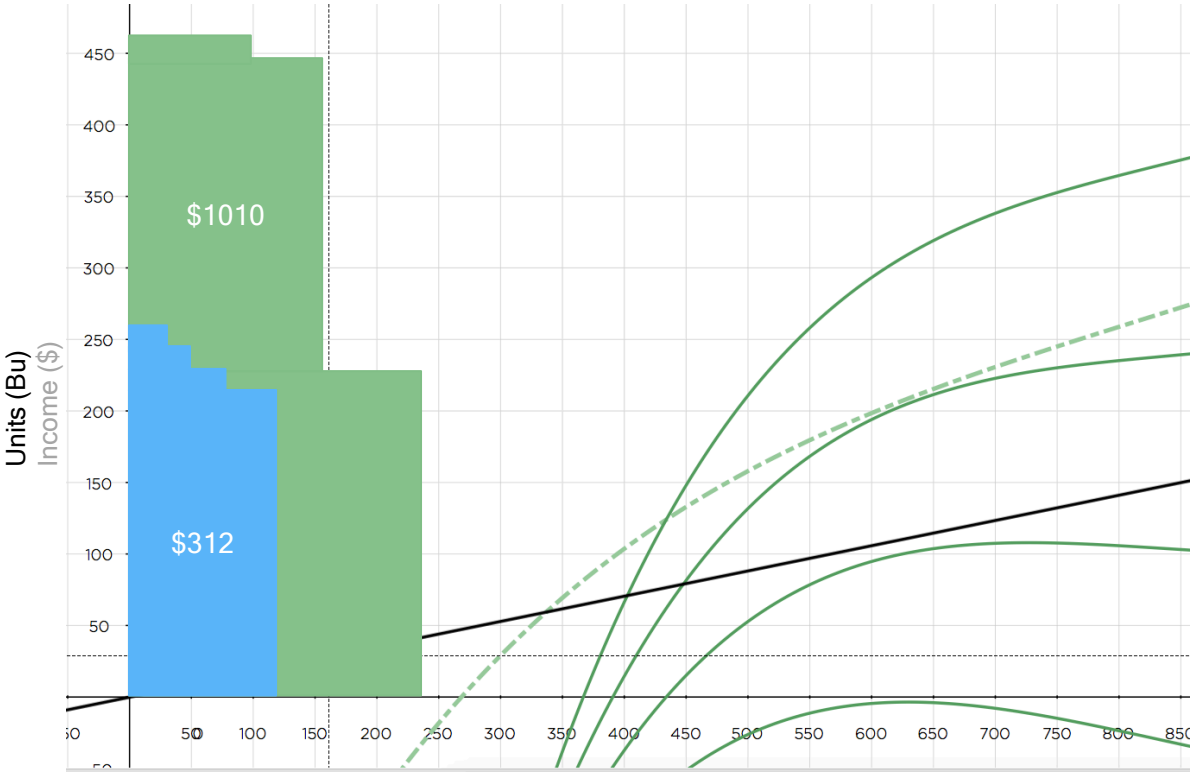
MISSISSIPPI FARMLAND AS A STACK OF CORN CALL OPTIONS

Farmland Price Adjustment: Double the Option Stack



VALUE OF 2020 PRODUCTION OPTIONS

PER $10,000 OF FARMLAND

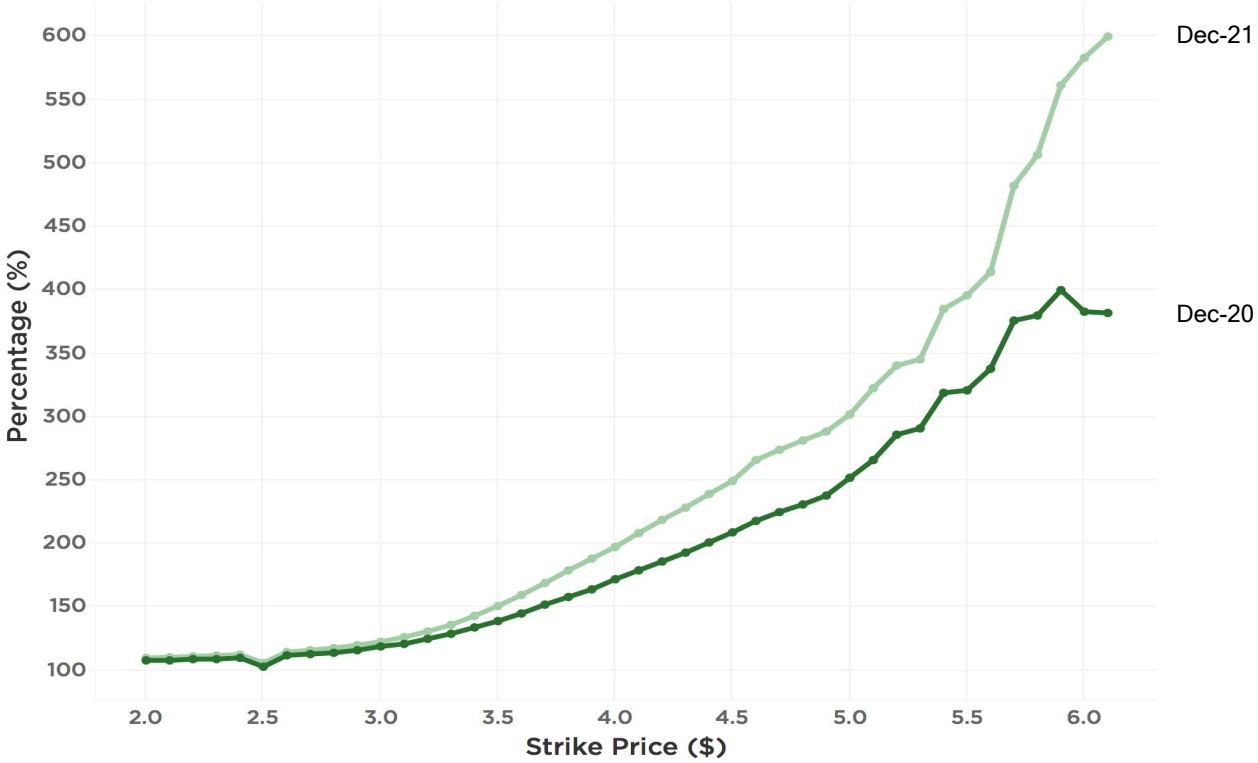


IOWA

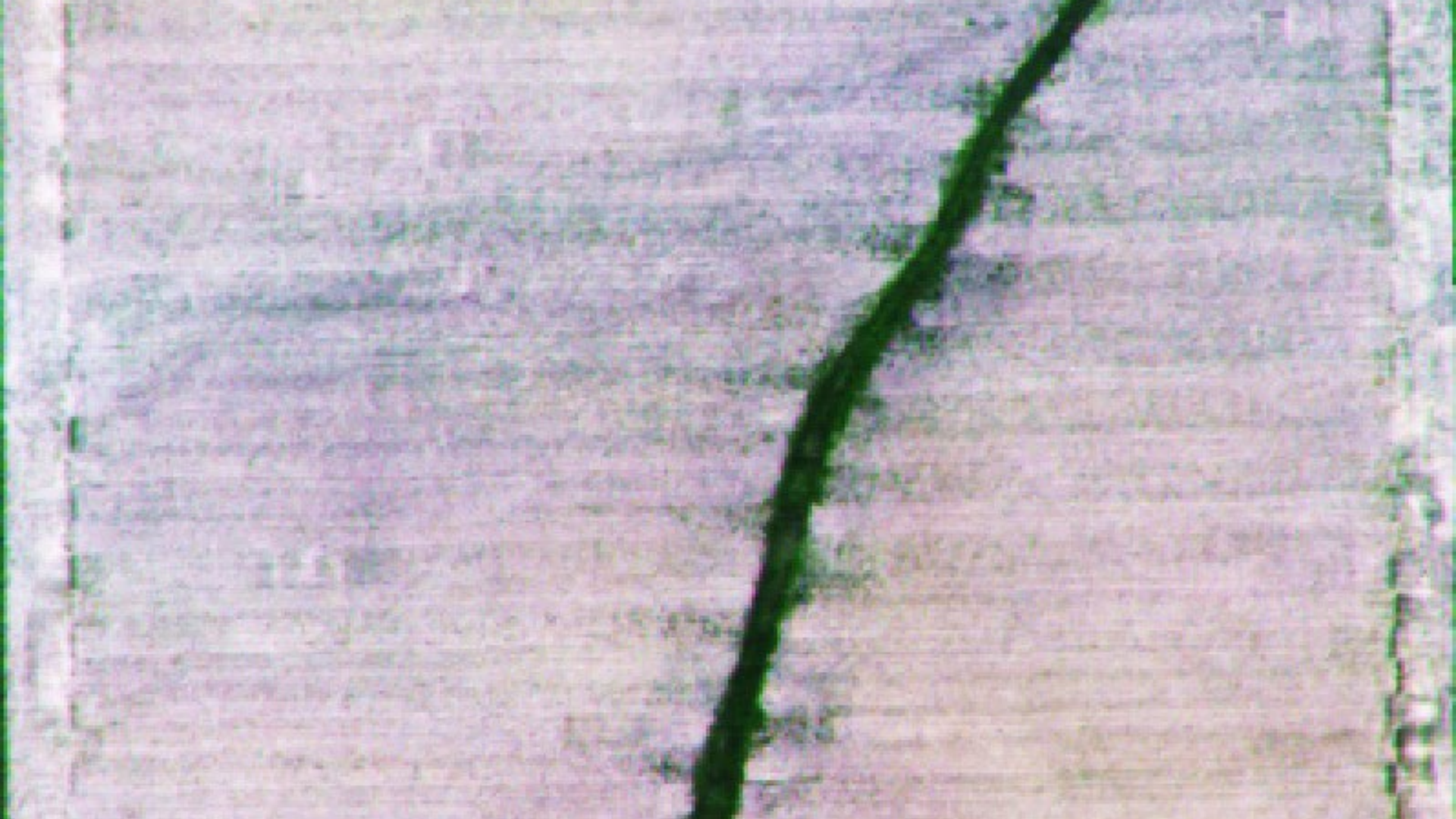
MISSISSIPPI

TIME VALUE OF CORN OPTIONS

December 2020 and 2021 Corn Call Options as a Percentage of December 2019 Options by Strike Price



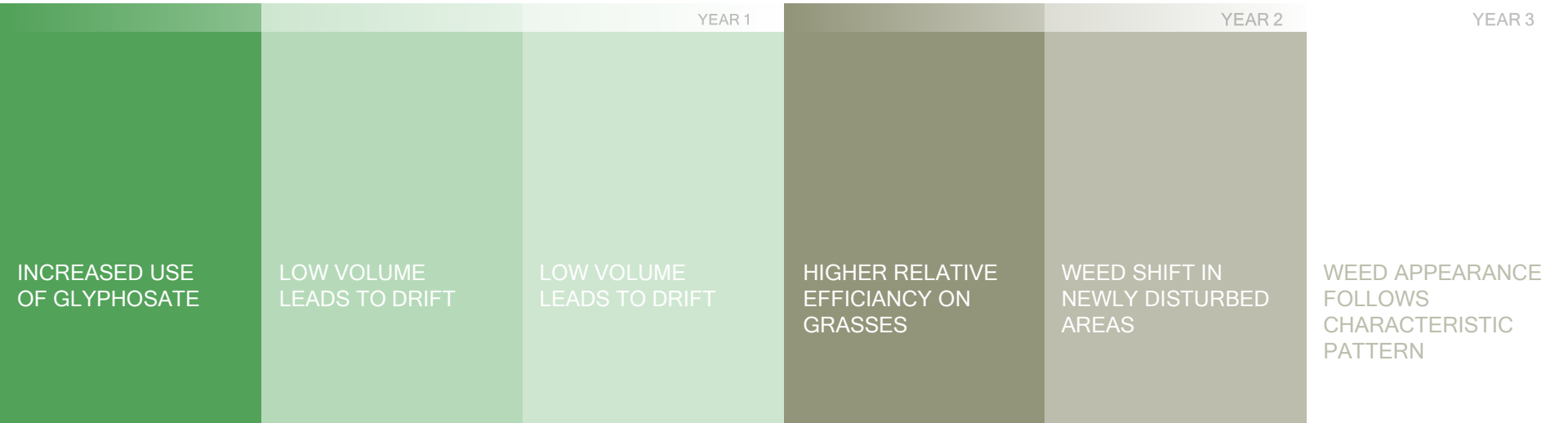
SUSTAINABLE WEED MANAGEMENT



WEED SEED SPREAD

BREAKING THE WEED RESISTANCE CYCLE

Drift of spray into non-cropland border areas is well known as drift measurements under normal conditions vary from 1-15% of target application at 1m from the last spray nozzle. While shown to be highly predictable, drift is also highly variable because of dependence on droplet size in addition to wind speed and release height. While a 1000 micron droplet drifting 4.7 feet in a 3mph wind from a release height of 10 feet, a 5 micron droplet will travel 3 miles under the same conditions



UNDERSTANDING THE POTENTIAL FOR RESISTANCE EVOLUTION TO THE NEW HERBICIDE PYROXASULFONE

FIELD SELECTION AT HIGH DOSES VERSUS RECURRENT SELECTION AT LOW DOSES

RESISTANCE EVOLUTION

PYROXASULFONE

Field screening indicated that no major-effect resistance genes were present in 100 million individuals. Resistance was obtained by recurrent low-dose pyroxasulfone selection of multiple herbicide-resistant *L. rigidum*. The multiple-resistant MR population showed a clear capacity to evolve pyroxafulfone resistance with >30% plant survival at 240 g ha-1 (2.4-fold the recommended rate after three generations of recurrent selection.)

R BUSI, T A GAINES, MJ WALSH & S B POWLES

DICAMBA RESISTANT PIGWEED TRIAL

GREENHOUSE EXPERIMENT

Through experimentation in the greenhouse, we selected a population of pigweed that is tolerant to herbicide dicamba at a field rate. This pigweed population was not found to be resistant to dicamba in nature or in any field.

SCOTT

Researchers exposed three generations of dicamba-susceptible pigweed collected from the field to sublethal doses of dicamba (conditions for resistance development)

GREENHOUSE EXPERIMENT DESIGNED TO EXAMINE POTENTIAL FOR FUTURE RESISTANCE

DISTANCES INCREASING BY ORDER OF MAGNITUDE