Supplementary Material

This document contains supplementary material supporting the publication *Nichols and MacKenzie (2023) Identifying research priorities through decision analysis: a case study for cover crops*

1 Supplementary Data

Supplementary data and R code is available on Github at https://github.com/vanichols/Nichols_Frontiers_CoverCropRisk

2 Supplementary Figures and Tables

Table S1. Production costs and market prices per unit yield for 2013-2021, production costs come from Iowa State University (https://www.extension.iastate.edu/agdm/crops/pdf/a1-20.pdf), price received per bushel from NASS. Supporting material is available in the 'SupplementaryMaterial>TableS1' folder of the Github repository.

Source	Range in production costs	Ranch in market prices	Maximum net revenue
Maize	\$3.31 - 4.31 bu^{-1}	\$3.30 - 5.45 bu^{-1}	\$2.14 bu^{-1} (2021)
Soybea	\$8.72 - 11.13 bu^{-1}	\$8.46 - 13.1 bu^{-1}	\$4.06 bu^{-1} (2021)

Table S2. Assumed relative maize yields as functions of planting time and length of time between rye cover crop termination and crop planting (referred to as 'gap')

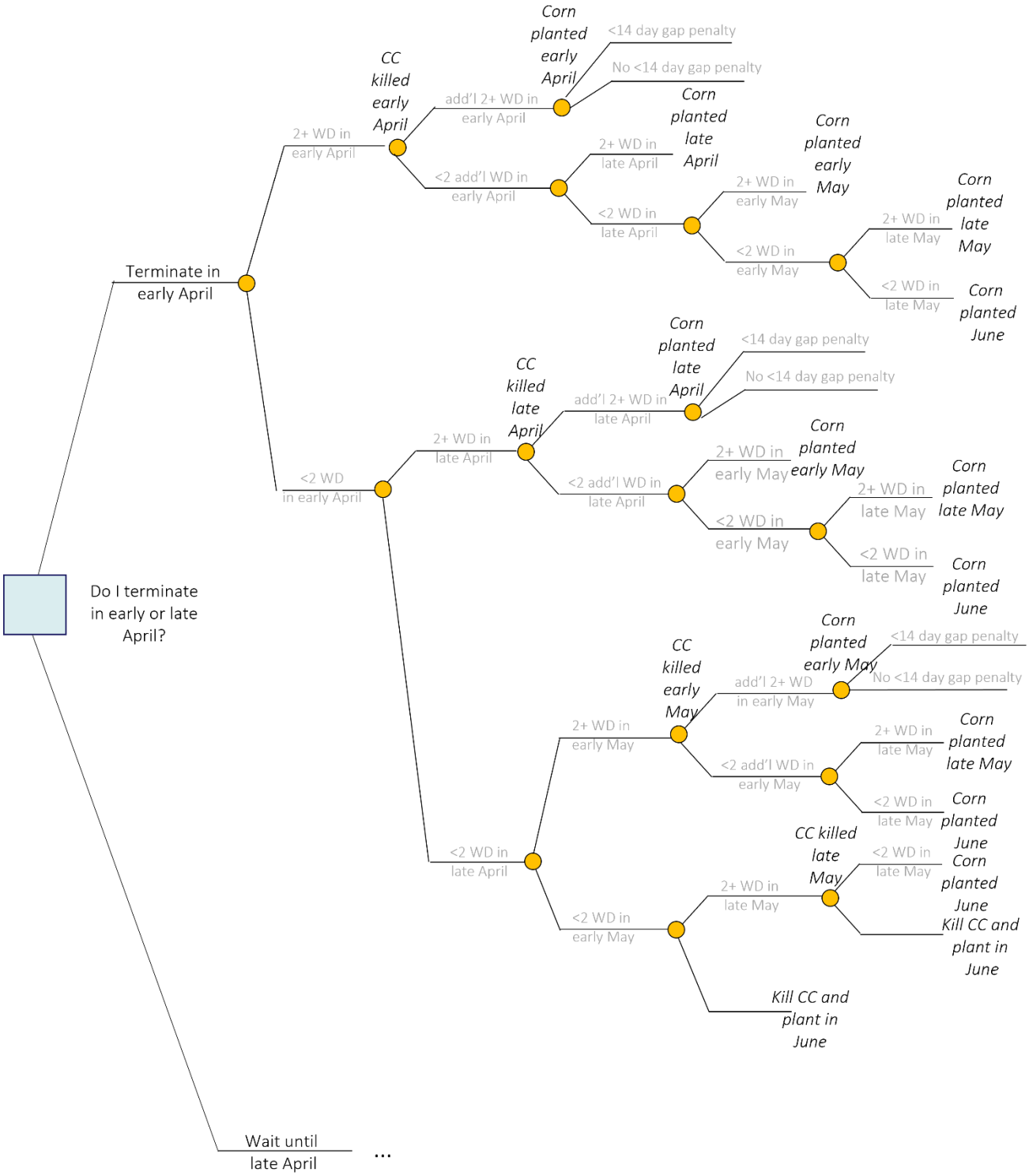
Planting	14+ days window yields	<14 days gap yields, 50% chance of a 10% maize yield reduction	Notes and assumptions
Early April	100%	100%/90%	April 11 is earliest planting date in compliance with crop insurance requirements. We assume producers aim to plant as soon as a field is workable after that

			date. We assumed a maximum yield of 200 bu ac^{-1}. If maize is planted in the same spring category, there is a 50% chance there will be no 'gap' induced yield reduction and a 50% chance of a 10% yield reduction; this same assumption is applied to all planting dates.
Late April	100%	100%/90%	No yield penalty if maize is planted in late April.
Early May	95%	95%/85%	5% yield penalty for planting in early May.
Late May	90%	90%/80%	10% yield penalty for planting in late May.
June	80%	80%/70%	20% yield penalty for planting in June.

Table S3. Summary of fall weather uncertainties in Central Iowa estimated using 30 years of historical weather data

Scenario	*Probability of receiving 1.27 cm of precipitation before 30-Nov*	*Probability of accumulating 100 growing degree days (GDDs)*
Soybean-Rye (15-Oct planting)	97%	100%
Maize-Rye (1-Nov planting)	84%	71%

2.1 Supplementary Figures



Supplementary Figure S1. Decision tree following the decision of whether to terminate the cover crop in early or late April.