Table 3.SM.5: 3.4.6 Food security and food production systems

Risk	Region	Metric (Unit)	Baseline Time Period Against Which Change Measured	Socio-Economic Scenario and Date	Baseline Global T	Climate Scenario	Transient (T) or Equilibrium (E)	Overshoot Scenario?	Dynamic Model?	Projected Impact at 1.5°C above Pre-Industrial	Projected Impact at 2°C above Pre-Industrial	Projected Impact at Delta T (°C)	Delta T Relative to Pre-Industrial	Level of Risk After Adaptation at 1.5°C	Level of Risk After Adaptation at 2°C	Type of Adaptation Modelled	Reference
Water scarcity	Mediterranean	%	1986–2005	Not available	0,6	RCP8.5, ISI-MIP	N/A	N/A	Y	-9	-17	Not available	Not available	N/A	N/A	Not available	
Crop yield – wheat	Tropical regions	%	1986–2005	Not available	0,6	RCP8.5, ISI-MIP	N/A	N/A	Y	-9	-16	Not available	Not available	N/A	N/A	Not available	
Crop yield – maize	Tropical regions	%	1986–2005	Not available	0,6	RCP8.5, ISI-MIP	N/A	N/A	Y	-3	-6	Not available	Not available	N/A	N/A	Not available	
Crop yield – soy	Tropical regions	%	1986–2005	Not available	0,6	RCP8.5, ISI-MIP	N/A	N/A	Y	6	7	Not available	Not available	N/A	N/A	Not available	
Crop yield – rice	Tropical regions	%	1986–2005	Not available	0,6	RCP8.5, ISI-MIP	N/A	N/A	Y	6	6	Not available	Not available	N/A	N/A	Not available	Schleussner et al. (2017)
Crop yield – wheat	Global	%	1986–2005	Not available	0,6	RCP8.5, ISI-MIP	N/A	N/A	Y	2	0	Not available	Not available	N/A	N/A	Not available	
Crop yield – maize	Global	%	1986–2005	Not available	0,6	RCP8.5, ISI-MIP	N/A	N/A	Y	-1,5	-6	Not available	Not available	N/A	N/A	Not available	
Crop yield – soy	Global	%	1986–2005	Not available	0,6	RCP8.5, ISI-MIP	N/A	N/A	Y	7	1	Not available	Not available	N/A	N/A	Not available	
Crop yield – rice	Global	%	1986–2005	Not available	0,6	RCP8.5, ISI-MIP	N/A	N/A	Y	7	7	Not available	Not available	N/A	N/A	Not available	
Crop yield	France	%	1980–2009	Not available	Mean seasonal T (°C) 1980–2009 (17°C)	Temperature (-3, 0, +3, +6, +9°C) and CO_2 concentration (360, 450, 540, 630, 720 ppm) factor levels	N/A	N/A	N	-6,75	-9	Not available	Not available	N/A	N/A	Not available	
Crop yield	USA	%	1980–2009	Not available	Mean seasonal T (°C) 1980–2009 (21°C)	Temperature (-3, 0, +3, +6, +9°C) and CO_2 concentration (360, 450, 540, 630, 720 ppm) factor levels	N/A	N/A	N	-9	-12	Not available	Not available	N/A	N/A	Not available	Bassu et al. (2015)
Crop yield	Brazil	%	1980–2009	Not available	Mean seasonal T (°C) 1980–2009 (25°C)	Temperature (-3, 0, +3, +6, +9°C) and CO_2 concentration (360, 450, 540, 630, 720 ppm) factor levels	N/A	N/A	N	-11,7	-15,6	Not available	Not available	N/A	N/A	Not available	
Crop yield	Tanzania	%	1980–2009	Not available	Mean seasonal T (°C) 1980–2009 (27°C)	Temperature (-3, 0, +3, +6, +9°C) and CO_2 concentration (360, 450, 540, 630, 720 ppm) factor levels	N/A	N/A	N	-10,6	-14,2	Not available	Not available	N/A	N/A	Not available	
Crop yield – maize	Drylands	%	1971–1981	SSP2	Not available	RCP8.5, 2006–2100	N/A	N/A	Not available	-0,9	~ -1.1	Not available	Not available	N/A	N/A	Not available	
Crop yield – maize	Humid lands	%	1971–1981	SSP2	Not available	RCP8.5, 2006–2100	N/A	N/A	Not available	3,2	~ 3.5	Not available	Not available	N/A	N/A	Not available	Huang et al. (2017)
Crop yield – maize	Global	%	1971–1981	SSP2	Not available	RCP8.5, 2006–2100	N/A	N/A	Not available	2,6	~ 2.8	Not available	Not available	N/A	N/A	Not available	
Crop yield – wheat	Global	%	1981–2010	Not available	Not available	Temperature (+2, +4°C) factor levels	N/A	N/A	N	-9	-12	Not available	Not available	N/A	N/A	Not available	Asseng et al. (2015)
Crop yield – maize	Brazil	%	1982–2012	Not available	Precipitation: -30 to -20%	Temperature (+0.5, +1, +1.5, +2, +2.5, +3°C) and precipitation (-30, -20, -10, 0, +10, +20, +30%) factor levels	N/A	N/A	N	-10/ -15	~ -15/ -20	Not available	Not available	N/A	N/A	Not available	
Crop yield – maize	Brazil	%	1982–2012	Not available	Precipitation: -20 to -10%	Temperature (+0.5, +1, +1.5, +2, +2.5, +3°C) and precipitation (-30, -20, -10, 0, +10, +20, +30%) factor levels	N/A	N/A	N	-5/ -10	~ -10/ -15	Not available	Not available	N/A	N/A	Not available	
Crop yield – maize	Brazil	%	1982–2012	Not available	Precipitation: -10 to 0%	Temperature (+0.5, +1, +1.5, +2, +2.5, +3°C) and precipitation (-30, -20, -10, 0, +10, +20, +30%) factor levels	N/A	N/A	N	0/ -5	~ -5/ -10	Not available	Not available	N/A	N/A	Not available	Lana et al. (2017)
Crop yield – maize	Brazil	%	1982–2012	Not available	Precipitation: 0 to +10%	Temperature (+0.5, +1, +1.5, +2, +2.5, +3°C) and precipitation (-30, -20, -10, 0, +10, +20, +30%) factor levels	N/A	N/A	N	0/ +5	0/ -5	Not available	Not available	N/A	N/A	Not available	
Crop yield – wheat	Global	%	1960–2012	SSP1,2,3	Not available	RCP2.6 (+1.8°C), 4.5 (+2.7°C), 6.0 (+3.2°C), 8.5 (+4.9°C), 2000–2100	N/A	N/A	Not available	58	59	Not available	Not available	N/A	N/A	Not available	
Crop yield – maize	Global	%	1960–2012	SSP1,2,3	Not available	RCP2.6 (+1.8°C), 4.5 (+2.7°C), 6.0 (+3.2°C), 8.5 (+4.9°C), 2000–2100	N/A	N/A	Not available	29	23	Not available	Not available	N/A	N/A	Not available	
Crop yield – soy	Global	%	1960–2012	SSP1,2,3	Not available	RCP2.6 (+1.8°C), 4.5 (+2.7°C), 6.0 (+3.2°C), 8.5 (+4.9°C), 2000–2100	N/A	N/A	Not available	53	47	Not available	Not available	N/A	N/A	Not available	Lizumi et al. (2017)
Crop yield – rice	Global	%	1960–2012	SSP1,2,3	Not available	RCP2.6 (+1.8°C), 4.5 (+2.7°C), 6.0 (+3.2°C), 8.5 (+4.9°C), 2000–2100	N/A	N/A	Not available	36	41	Not available	Not available	N/A	N/A	Not available	
Crop yield – onions	Netherlands	Fraction	1992–2008	Not available	Not available	Temperature (+1 and +2) factor levels, 2042–2058	N/A	N/A	Not available	-0,255	~ -0.37	Not available	Not available	N/A	N/A	Chemical protection, UV-light protection	
Crop yield – potatoes	Netherlands	Fraction	1992–2008	Not available	Not available	Temperature (+1 and +2) factor levels, 2042–2058	N/A	N/A	Not available	-0,09	~ -0.42	Not available	Not available	N/A	N/A	Plant in wider range, drip irrigation, crop cover, air conditioning, chemical protection, UV-light protection	Mandryk et al. (2017)
Crop yield – maize	Southeast United States	%	1950–1999	Not available	0,5	RCP4.5 (2006–2055), RCP8.5 (2006–2055)	N/A	N/A	Not available	-6,9	-9,2	-4.6 (+1°C)	1.5°C	N/A	N/A	Not available	
Crop yield – wheat	Southeast United States	%	1950–1999	Not available	0,5	RCP4.5 (2006–2055), RCP8.5 (2006–2055)	N/A	N/A	Not available	-5,7	-7,6	-3.8 (+1°C)	1.5°C	N/A	N/A	Not available	Cammarano and Tian (2018)
Crop yield – maize	Southeast United States	%	1979–2009	Not available	Not available	SRES A2 (2041–2070)	N/A	N/A	Not available	Not available	+36/ +83	-5,-13 (+2.5°C)	Not available	N/A	-16	Biochar	
Crop yield – maize	Southeast United States	%	1979–2009	Not available	Not available	SRES A2 (2041–2070)	N/A	N/A	Not available	Not available	+36/ +83	-5,- 13 (+2.5°C)	Not available	N/A	10	Irrigation	
Crop yield – soy	Southeast United States	%	1979–2009	Not available	Not available	SRES A2 (2041–2070)	N/A	N/A	Not available	Not available	-1/ -13	Not available	Not available	N/A	N/A	Biochar	
Crop yield – soy	Southeast United States	%	1979–2009	Not available	Not available	SRES A2 (2041–2070)	N/A	N/A	Not available	Not available	-1/ -13	Not available	Not available	N/A	N/A	Irrigation	
Crop – C3 aggregated (soybean, alfalfa, winter wheat)	Southeast United States	%	1979–2009	Not available	Not available	SRES A2 (2041–2070)	N/A	N/A	Not available	Not available	-10/ -22	Not available	Not available	N/A	-5, -7	Biochar	Lychuk et al. (2017)
Crop – C3 aggregated (soybean, alfalfa, winter wheat)	Southeast United States	%	1979–2009	Not available	Not available	SRES A2 (2041–2070)	N/A	N/A	Not available	Not available	-10/-22	Not available	Not available	N/A	0	Irrigation	
Crop – C4 aggregated (corn, sorghum, pearl millet)	Southeast United States	%	1979–2009	Not available	Not available	SRES A2 (2041–2070)	N/A	N/A	Not available	Not available	-6/ -10	Not available	Not available	N/A	-3, -5	Biochar	
Crop – C4 aggregated (corn, sorghum, pearl millet)	Southeast United States	%	1979–2009	Not available	Not available	SRES A2 (2041–2070)	N/A	N/A	Not available	Not available	-6/ -10	Not available	Not available	N/A	N/A	Irrigation	
Crop shift – olive tree	Mediterranean	%	1950–1999	Not available	Not available	SRES A1B (2031–2060)	N/A	N/A	Not available	Not available	14	Not available	Not available	N/A	N/A	Not available	Moriondo et al. (2013)
Crop shift – olive tree	Mediterranean	%	1950–1999	Not available	Not available	SRES A1B (2061–2090)	N/A	N/A	Not available	Not available	18	Not available	Not available	N/A	N/A	Not available	
Loss of area in global biodiversity	Global	%	1500-2005	Not available	Not available	RCP4.5 (model ensemble)	N/A	N/A	Not available	Not available	~ -25	Not available	Not available	N/A	N/A	Not available	Jantz et al. (2015)
Wildfire – dead fuel moisture	Western USA	%	1960–2005	Not available	Not available	RCP8.5 (CMIP5 project)	N/A	N/A	Not available	0/ -5	-10/-15	Not available	Not available	N/A	N/A	Not available	Gergel et al. (2017)
Wildfire – increase in number of days per fire season with potential active fire growth	Canada (East)	N°	1971–2000	Not available	Not available	RCP8.5 (model ensemble)	N/A	N/A	Not available	+12/ +45	Not available	Not available	Not available	N/A	N/A	Not available	
Wildfire – increase in number of days per fire season with potential active fire growth	Canada (West)	N°	1971–2000	Not available	Not available	RCP8.5 (model ensemble)	N/A	N/A	Not available	+2/ +35	Not available	Not available	Not available	N/A	N/A	Not available	Wotton et al. (2017)
Wildfire – future probability of fire	USA (Alaska)	Ratio	1950–2009	Not available	Not available	RCP6.0 (model ensemble)	N/A	N/A	N	~ +126	~ +144	Not available	Not available	N/A	N/A	Not available	Young et al. (2016)
Wildfire – fire weather index	Mediterranean	%	1961–1990	Not available	Not available	SRES B2	N/A	N/A	N	Not available	16,0	Not available	Not available	N/A	N/A	Not available	
Wildfire – fire weather index	France	%	1961–1990	Not available	Not available	SRES B2	N/A	N/A	N	Not available	21	Not available	Not available	N/A	N/A	Not available	Moriondo et al. (2006)
Wildfire – fire weather index	Portugal	%	1961–1990	Not available	Not available	SRES B2	N/A	N/A	N	Not available	11	Not available	Not available	N/A	N/A	Not available	
Wildfire – fire weather index	Spain	%	1961–1990	Not available	Not available	SRES B2	N/A	N/A	N	Not available	18	Not available	Not available	N/A	N/A	Not available	
Wildfire – projected annual area burned	Canada	%	1961–1990	Not available	Not available	SRES A2 (2041–2070)	N/A	N/A	N	Not available	~ +167	Not available	Not available	N/A	N/A	Not available	Boulanger et al. (2014)
Wildfire – fire occurrence	Canada	%	1961–1990	Not available	Not available	SRES A2 (2041–2070)	N/A	N/A	N	Not available	~ +102	Not available	Not available	N/A	N/A	Not available	
Wildfire – fire occurrence density	Northeast China	%	1965–2009	Not available	Not available	SRES B1 (2081–2100 - CGCM3)	N/A	N/A	N	Not available	~ +30	Not available	Not available	N/A	N/A	Not available	Liu et al. (2012)