

Model	CO ₂ fertilization	Nutrient limitation	Adaptation
GEPIC (Liu et al., 2007; Liu, 2009)	RUE, TE <i>p</i> CO ₂ of the fixed-CO ₂ run: 364 ppm	flexible N application up to an upper national application limit according to FAO FertiStat database (FAO, 2007), fixed present-day P application rates following FertiStat.	decadal adjustment of planting dates (incl. switch between winter and spring wheat); total heat units to reach maturity remain constant
LPJ-GUESS (Lindeskog et al., 2013)	LLP, CC <i>p</i> CO ₂ of the fixed-CO ₂ run: 379 ppm	no consideration of soil nutrient limitation	adjustment of total heat units to reach maturity based on the average climate during the preceding 10 years to keep growing season length constant
LPJmL (Bondeau et al., 2007)	LLP, CC <i>p</i> CO ₂ of the fixed-CO ₂ run: 370 ppm	no consideration of soil nutrient limitation	fixed sowing dates (Waha et al., 2012); total heat units to reach maturity remain constant
PEGASUS (Deryng et al., 2011)	RUE, TE <i>p</i> CO ₂ of the fixed-CO ₂ run: 369 ppm	fixed N, P, K application rates (IFA, 2002)	adjustment of planting dates; variable heat units to reach maturity
pDSSAT (Jones et al., 2003; Elliott et al., 2014)	RUE, LLP, CC <i>p</i> CO ₂ of the fixed-CO ₂ run: 330 ppm	fixed N present-day application rates	no adjustment of planting dates; total heat units to reach maturity remain constant