We analyzed crop production and associated land use and economic data on 190 countries (separating mainland China, Hong Kong SAR, and Taiwan) from the years 1977-2017 with usable data from FAOSTAT (FAO, 2019). While evidence exists for some irregularities in the reporting of FAO crop data, this is the most complete global dataset available. We assembled data on the total yield (mass) and area (ha) used to produce 23 of the world’s most energetically important food crops (Balmford et al. 2005), referred to as staple crops, and converted individual crop yield from mass to average energetic equivalents (kcal) using values from Cassidy et al. (2013). Using a method adapted from Ewers et al. (2009), for each country and year we calculated average caloric yield per hectare by dividing the total energy production for these 23 crops by the area used to produce them, and calculated per-capita area for staple crop production. We also collected data for each country on per-capita amounts of nutrient nitrogen and pesticides applied for agricultural use, CO2 equivalent emissions, and the gross production value, export value, and import value of staple crops, and Human Development Index (HDI) based on FAO definitions (Supp. Table. 1).

We evaluated changes over time from two periods, 1979-1999 and 1995-2015; these dates were chosen to compare the period analyzed in Ewers et al. (2009) to the most recent period with data available. To account for potential variability among years, we averaged values from the two years immediately preceding or following the year of interest. Change was calculated separately for each period by creating dimensionless quantities, e.g. Δ = log [average value­2013-2017 -average value1977-1981]. For both periods, we fit regression models using change in per capita cropland area as a response and change in cropland yield as a predictor. We also ran similar models including HDI and the interaction of change in cropland yield and HDI as predictors.

For the period from 1995-2015, we fit additional regression models with change in per capita cropland area as a response and change in per-capita nitrogen additions and change in per capita export and import values of staple crops as predictors. We also ran similar models adding HDI and the interaction of each predictor and HDI as fixed effects. **Possible addition of top-line numbers in a figure 1?** Would just be a simple ANOVA.