The push for a global food transformation has gained a lot of recent attention due to growing concerns about human and planetary health. While agricultural production has kept pace with an increase in population, the technologies of the Green Revolution that emerged as a way to address global hunger have led to a decrease in the overall diversity of our global food supplies. An increased reliance on the production of a core of major staple crops has caused human health and nutrition to deteriorate while also negatively impacting the environment. With this in mind, the concept of sustainable diets has been pushed forward by several countries and organizations to try and address these concerns. Trends among these sustainable dietary guidelines call for an increase in the consumption of pulses, legumes, and coarse grains that are nutritionally dense and beneficial for the environment. However, an issue is that these crop groups have been historically underdeveloped by the agricultural industry and therefore are not being produced at the levels needed to support these diets. By examining the trajectory that agricultural production has been on since the Green Revolution, this paper calls for the following recommendations to ease the transition to sustainable diets: the reorientation of agricultural investment towards underdeveloped crops, an increase in collaboration between the nutritional and environmental industries, and an increase in data collected at the individual level of crops.