Growing through Climate Change: Local Responses to Food Security

Potentials for agriculture and food adaptations in Southwest England

SHORT SUMMARY

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This research was commissioned by Seeding our Future, a non-profit initiative exploring resilience and adaptation to climate change, directed by Alan Heeks. It is intended to support Seeding our Future's work on food security in West Dorset and across the UK. To download a free pdf of the full report, click here.

Foreword

By Alan Heeks - Seeding our Future

Climate change is already impacting food supplies, and is forecast to create much greater disruption in the years ahead. I commissioned this research by Elise Wach to understand both the threats and the scope for positive adaptation, especially in South-West England, one of the focus areas for Seeding our Future's work.

Overall, it's clear from this report that producers and consumers in South-West England, and in Britain generally, have plenty of opportunities to increase the resilience of local food supplies: but grasping these opportunities will need determination, money and a willingness to innovate *before* the problems get more severe.

Changing crops and cultivation methods requires time, investment and assured markets. South-West England is blessed with a good range of independent, clear-thinking producers of all scales, strong communities, and many other assets which could be built on to form a robust local food economy. This is the opportunity on offer.

While climate change will pose challenges to production at home and abroad, the report describes concrete ways in which a range of producers in the South West of England can adapt, from domestic garden scale to arable farmers.

Jem Bendell (Deep Adaptation) and many others highlight the growing risk of Multi Breadbasket Failure, i.e. simultaneous failure of global staples like wheat or soya in the handful of countries which produce most of the world's supplies. However, the South West of England is expected to remain a viable location for producing food, provided farmers and growers adapt their practices and crops.

Currently the UK produces 60% of its overall food, down from 80% in 1984. Increasing the level of self-sufficiency should be a high priority for local food economies, and for Government policy. In an ideal world, the changes suggested by this report would have strong financial and policy support from the UK Government. That looks unlikely at present, so a crucial enabler for change is consumers and local community groups, and innovative farmers who are willing to try new practices and crops. This report details the actions that these groups can take.

Seeding our Future is a small non-profit initiative which I founded in 2017: we aim to support resilience and adaptation to climate change with communities, individuals, and NHS staff. This includes working with producers, consumers and organisations in and around Bridport, West Dorset, on food security. To follow our progress and access resources from our work, see www.seedingourfuture.org.uk.

At present in Spring 2020, food security and climate change are only two among a range of major issues, and it is hard to foretell how much attention these will get over the coming year. In the short term, the best hope is that pilot schemes emerge in some of the local food economies in the South-West. As food security issues intensify in coming years, let's hope that successful pilots plus support from Government and national organisations will propagate wider uptake of the findings from this research.

Summary

Climate change is expected to have significant impacts on all areas of life but could particularly affect food production and food security if practices remain unchanged. Some harvests have already been affected by the changing climate and studies have indicated that more failed harvests could affect food security in the future. However, it has not been clear how climate change could affect food availability in England specifically. Details have also been lacking about what can be done locally to improve food security in a changing climate. With a focus on the Southwest of England, this report details the adaptive productive practices, crop choices and market models which could help improve local food system resilience.

This report is targeted for horticultural and arable food producers of various scales and for community groups in the Southwest of England who wish to work towards greater food security in the context of our changing climate. While animal farming could fit into a model of sustainable food production, due to the scope of this report it is not covered here in detail.

In the Southwest of England, **crop production could be disrupted** through warmer wetter winters, hotter drier summers, and more frequent extreme weather events such as heavy rainfalls and storms. Further, future climate scenarios are characterised by **uncertainty**, so there is a chance of any kind of weather at any time in the year. Climate changes are likely to bring changes to pests and diseases, some positive and others negative.

To adapt to increased aridity in summers in Southwest England, measures are needed to **conserve soil moisture and manage water appropriately** so as not to deplete groundwater reserves while continuing to produce food. Approaches include:

- Rainwater capture during rainier months to reduce pressure on groundwater reserves
- Better irrigation to improve efficiency
- The use of mulching and intercropping to reduce soil evapotranspiration

Warmer, wetter winters bring increased risks of soil erosion, water logging and farm runoff, which are already at unsustainable levels. Techniques to **improve water management** and **improve soil structure** could help to address these challenges. They include:

- Preventing and diverting runoff through swales and ponds
- Planting shrubs and trees along keylines to improve soil structure and reduce runoff
- Cultivating along contours or keylines to reduce erosion
- Intercropping and the use of green manures to improve soil structure
- Shallow till or no dig approaches, implemented without the use of harmful herbicides

The overall levels of uncertainty with climatic conditions, pests and diseases indicate that increasing diversity – at genetic, crop and landscape levels, will help increase resilience. When done well, these approaches can minimise pests and disease, support the regeneration of soils and reduce vulnerability to shocks. This can be done through:

- Using population, heritage and open-pollinated varieties
- Practicing intercropping
- Creating more diverse habitats around and within fields and plots.

Increasing the use of polytunnels has been suggested as a means of securing farming in the face of climate change. Some smaller scale producers may benefit from increased **protective cover** in the form of caterpillar or shade tunnels, and stronger polytunnels for improved storm resistance. However, large scale use of protective plastic cover could increase risks of runoff and negatively affect pollinators. The increased use of plastics may also be unsustainable from an ecological or human health point of view.

Figure 1: Increasing diversity can improve resilience in the context of uncertainty. Photo: Helen Clark

While conditions may be challenging at times, Southwest England is not expected not face the water scarcity of many of the locations which currently supply us with food, particularly veg and fruit, or the flooding which affects a significant amount of England's Grade 1 farmland. There is scope for increased food production in the southwest, though possibly with **different crops.** It is anticipated that some crops, such as certain brassicas and orchard fruits may not be as viable in the Southwest with the new climate, but other crops such as certain types of squashes and fruits (e.g. apricots) could become more viable. If producers adapt their practices and crops, production in the Southwest could remain substantial. However, to ensure that farming supports local food security, other changes are needed.

Re-orienting production towards human needs is the one of the most significant changes which could be made to improve food availability. In a future where crop failure and reduced yields are possible, there is enormous potential in shifting away from using our farmland to produce biofuels, animal feed and overly processed and 'discretionary' foods and drinks and instead towards foods which contribute to a healthy diet. For example, if wheat production were oriented towards human consumption for a healthy diet, we would only need to produce about half as much wheat as we do now.

Local action can help **improve the linkages between producers and consumers**. Community organisations, producer cooperatives and Community Supported Agriculture schemes are some approaches which can ensure that the needs of people and the environment do not get side-lined to supply and demand economics. There is also significant scope for improving local storage and processing facilities to buffer shocks, reduce costs for producers and help shorten and decentralise food supply chains.

Farmers and growers are and always have been adaptive to changing situations and there are many examples of this already happening in England, including the in the Southwest. However, some adaptations require upfront investments or incur greater costs in the long-term and therefore need **financial support** in the form of grants, donations or crowdfunding.

While the challenges are significant, they are not insurmountable. Innovative action and greater collaboration could turn climate change into an opportunity for growing better foods in better ways in the Southwest of England. However, without adapting our practices or our food supply chains, the threats are very real. This report details the feasible actions for producers and consumers which bring few if any risks, and which must be taken now to avoid food failures later.