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The role of food retailers in improving resilience in global food supply

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ABSTRACT

We urgently need a more resilient food supply system that is robust enough to absorb and recover quickly from shocks, and to continuously provide food in the face of significant threats. The simplified global food supply chain we currently rely upon exacerbates threats to supply and is unstable. Much attention has been given to how producers can maximise yield, but less attention has been given to other stakeholders in the supply chain. Increasingly, transnational food retailers (supermarkets) occupy a critical point in the chain, which makes them highly sensitive to variability in supply, and able to encourage change of practice across large areas. We contend that the concentration in the chain down to a few retailers in each country provides an opportunity to increase resilience of future supply given appropriate, scale-dependent interventions. We make ten recommendations aimed at reducing variability in supply that can be driven by retailers (although some of the interventions will be implemented by producers). Importantly, resilience in our food supply requires the restoration and expansion of ecosystem services at the landscape-scale.

1. Introduction

Our daily lives increasingly depend on a well-functioning global food production and delivery system. With rapid population growth in some regions, demographic and geo-political change, set against changing climate patterns and extremes, resilience of global food supply is paramount. Even small shocks early in the supply chain can amplify through the global agri-food system impacting people who are geographically distant from the disturbance (Puma et al., 2015; Suweis et al., 2015). For example, a drought period in 2007–08, coupled with low stocks and export restrictions, led to food price inflation sparking food riots in many places (Berazneva and Lee, 2013; Galtier, 2013). Significant crop (and post-harvest) losses due to weeds, invertebrate pest and disease outbreaks have continued over the last 40 years, despite increased use of pesticides (Oerke, 2005; Stokstad, 2013). Additionally, many countries have reached the limit of available land suitable for agriculture with significant areas of this land now so degraded that returning it to productivity will be both difficult and costly (Smith, 2013; Strassburg et al., 2014). Without adaptive

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Text box 1–The concept of ecological resilience

The term resilience is used in a variety of contexts but can often be vaguely defined and difficult to quantify. In ecological systems resilience is described as the ability of a system to absorb changes in state variables and so persist after a disturbance (Holling, 1973). In social–ecological systems, such as agriculture, resilience can be defined as the ability of the system to withstand stress factors while maintaining productivity, and the capacity to learn and adapt (Folke et al., 2010). Thresholds of disturbance, at which an ecosystem switches to another state, can be used as a measurement of resilience (Standish et al., 2014). Here we talk about resilience in terms of production variability, and the ability of agro-ecosystems to maintain stability in production levels even in the face of disturbances. The replacement of ecosystem services with artificial inputs such as pesticides, fertilisers, and irrigation is one way to reduce production variability in the short term. However, these practices come with a range of environmental externalities (Pretty et al., 2001) that eventually lead to negative feedbacks and ultimately a reduction in productivity. Allison and Hobbs (2004) use land-use change in the Western Australian agricultural region as an example of how you can apply a framework based on resilience theory to examine capacity for change and renewal to a large-scale social-ecological system. More recently resilience thinking is being applied to real-world species conservation and ecosystem management decisions.

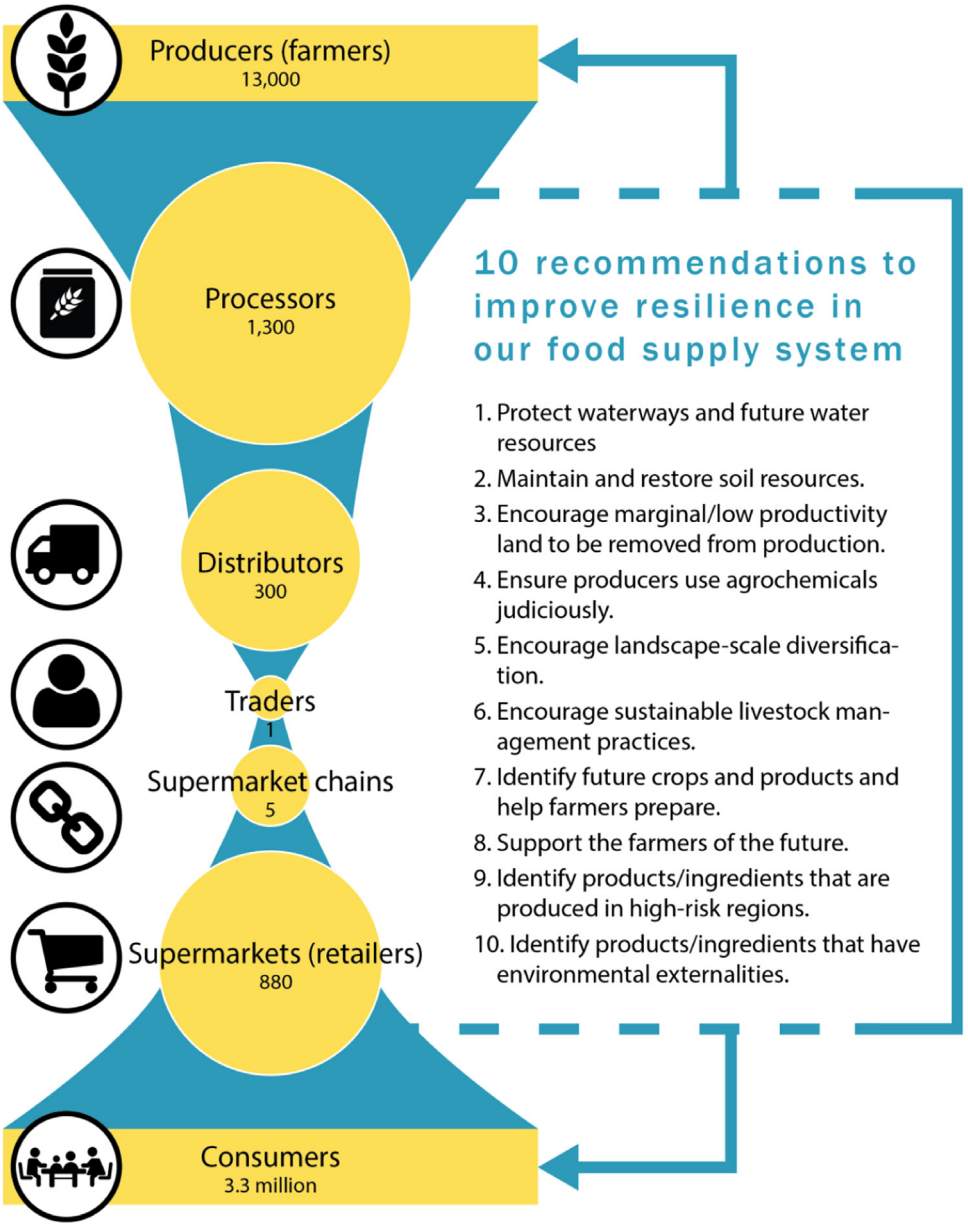

Fig. 1. The simplified food supply chain typically comprises many stakeholders, but few organisations in the centre. However, where few organisations dominate a section of the food supply chain, their mandates have the power to influence production practices (top arrow) and consumer decisions (bottom arrow). The illustration (not to scale) is based on a study by the Dutch Environmental Agency (Hoogervorst et al., 2012). Five wholesale traders serve the 16.5 million Dutch consumers, therefore for every trader there is an equivalent of 13,000 producers, 1300 manufacturers and 300 distributors; there is one trader for every five supermarket chains that retail through 880 supermarkets. We make 10 recommendations for ways in which these stakeholders can improve resilience of the food supply chain.