

AGRICULTURE

Zoonoses beyond livestock*Glob. Food Sec.* **28**, 100463 (2021)

Zoonotic pathogens are an urgent concern across different food systems, particularly in the livestock sector where labourers work — and sometimes live — alongside their animals. The 2002–2004 severe acute respiratory syndrome epidemic was traced to a likely spillover event from farmed civet cats to humans, with food industry workers being amongst the first to show symptoms. Effective public health and policy measures are essential to limit the impact of epidemics and pandemics that may be zoonotic in origin. Therefore, Binlei Gong from the China Academy for Rural Development and School of Public Affairs and colleagues explored which agricultural subsectors suffer under epidemics and how zoonoses affect these subsectors.

Using data collected from 31 Chinese provinces, Gong and colleagues calculated total factor productivity (TFP) rates for 18 crops and 6 types of livestock, alongside incidence and death rates of 13 zoonotic diseases from 2002 to 2017. They found a 1% increase in zoonotic diseases could lead to a decrease of 0.022–0.036 percentage points for livestock, with mutton production experiencing the worst losses due to increased labour costs. Crops experienced broad, but overall lower losses than livestock; wheat, corn, capsicum and aubergine were not affected. Animal illness and death, and labour shortages from

worker illness, negatively impact livestock production, but Gong and colleagues also demonstrate that adverse shocks can have widespread effects beyond the livestock sector — agricultural inputs can struggle with movement restrictions, physical distancing measures and transportation disruption during major disease outbreaks.

Gong and colleagues also estimated the TFP losses that China's agricultural sector may experience from the ongoing COVID-19 pandemic. Under their worst-case scenario (based on the susceptible–exposed–infectious–removed model), crop TFP losses will be 2.0% and 2.7% in livestock sector. The authors note that this is likely an underestimate as the data are taken from early in 2020. Nevertheless, they convey an important message to governments and policymakers — the impact of zoonoses reaches further than the livestock sector. Other agricultural sectors — even those that may not have direct links to livestock — require tailored support, from bolstering the food industry workforce to fast-tracking agricultural inputs to ensure that outputs across the entire agricultural sector are maintained.

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