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ÉVOLUER AU MÊME RYTHME QUE LES CONSOMMATEURS :  
COMPRENDRE LES EFFETS D'UN ENVIRONNEMENT EN ÉVOLUTION SUR LES POLITIQUES

**Innovation Induced Yield Variability**

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While corn yields have increased at remarkable rates over the past half-century, increases in average yields have been accompanied by commensurate increases in the year-to-year variability of yields. Despite its broad implications—in the context of, for instance, record payouts in subsidized crop insurance, a growing population, shifting global diets, and increasing concerns with food security and sustainability—the causal mechanism responsible for increases in the year-to-year variability of corn yields remains an open empirical question in the scientific and economic literature. In this manuscript we argue increases in the year-to-year variability of corn yields are the direct result of innovations in corn production. Compelling anecdotal evidence suggests innovations in seed genetics, and the higher sowing densities they allow, are responsible for the increase in the variability yields at higher average yield levels: the remarkable increases in corn production per acre have occurred with constant or even decreasing production per plant. We develop a simple theoretical model to demonstrate how higher sowing densities (the number of seeds sown per acre) with constant levels of both production and water demand per plant increase the sensitivity of production per acre to the supply of moisture. Then we provide empirical evidence for the hypothesis of innovation induced yield variability with county-level corn yield and weather data in Iowa and Ontario for 1955 to 2012. Our preliminary results suggest innovation-enabled high sowing densities increase the severity and frequency of damaging deviations from optimal moisture levels on corn yields; technologies that increase average yields via higher sowing densities necessarily increase the variability of corn yields at the field scale by increasing the sensitivity of corn yields to the provision of optimal moisture levels.