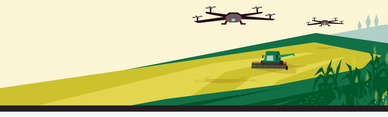
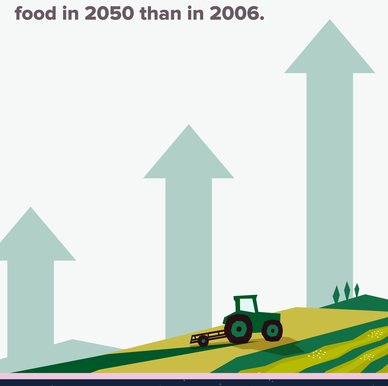
SMART FARMS

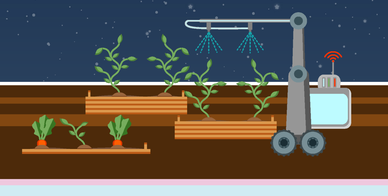
Smart farms follow the example of multiple industries taking advantage of technology advances in **sensors, drones, robots and continuing improvement in IoT applications,** including precision farming, variable rate technology, irrigation and greenhouses. The market value of precision farming, such as determining the optimum amount of fertilizer to be applied in multiple specific areas, was expected to grow $2.42 billion by the end of 2020, according to some estimates. Variable rate technology includes **drones, soil monitoring systems and precision livestock farming,** where a farmer can monitor and collect biological data from individual animals in a herd.



These systems will be critical to meet the needs of an evergrowing population. The United Nations Food and Agriculture Organization reports that farmers around the world will have to grow **70% more food in 2050 than in 2006.**



Sensors collect information on critical conditions for growth, such as weather, soil moisture, and fertilization, along with the condition of machinery. That data is transmitted over satellite and wireless networks to a digital hub where the farmer receives the information in real time. Analyzation allows the farmer to react to exact conditions within the greater area to improve productivity, streamline operations and boost profitability.



Important pieces of new technology include drones, which can monitor weather and soil conditions and apply fertilizer in exact amounts to where it is needed. **Drone swarms are entering the market, allowing farmers to get information and apply solutions even more quickly.** Tractors, seeding equipment and other field equipment work autonomously in the fields guided by sensors and systems that plot the course. They perform tasks from seeding and planting, through fertilization and weeding, to harvest. 5G speeds and increased bandwith will soon allow more applications to increase yields.