

Greenhouse Early Warning Service

International competition in greenhouse horticulture is intense. To maintain a competitive position, greenhouse owners face the challenge of producing high-quality crops efficiently and on a large scale. With modern technology, greenhouses can create optimal conditions for cultivation. CGI contributes to the sustainability and performance of greenhouses with a new satellite-based data service that provides farmers with insights into the condition of their greenhouses. It also enables them to rapidly identify possible problems such as ground subsidence, flooding and glass damage. This allows greenhouse owners to limit damage and production risks.

Assume the size of a greenhouse is four hectares, equivalent to about seven football fields. Damage to part of its roof may take weeks for the owner to notice. In the meantime, heat escapes from the greenhouse and, as a result, its heat costs rise considerably due to the undetected damage. Consider a similar situation; part of the greenhouse structure sinks into the ground, disrupting its watering system. This leads to some parts of the greenhouse receiving too much or too little water with negative effects on its crop yield. It may take time for the greenhouse owner to discover such a defect, and, in the meantime, its profit margin significantly diminishes.



MANAGING RISKS IN GREENHOUSE HORTICULTURE

CGI's Greenhouse Early Warning Service (GEWS)—a component of our CGI EnvironmentMonitor360 intellectual property solution—enables greenhouse owners to detect issues early on and quickly address them. GEWS monitors greenhouses via satellites, collecting data to limit and prevent risks in greenhouse horticulture, particularly risks that are not insurable. The service also significantly decreases required inspection efforts. In developing GEWS, CGI identified the specific needs of greenhouse owners, and the outcome of that assessment is that greenhouses require innovative technology solutions to achieve the following:

- Maintain their leading position in the market
- Continue to work efficiently if risks arise
- Limit or even prevent damage and other negative effects caused by uncontrollable events

Currently greenhouse farmers are spending a lot of time monitoring their properties. Some use ground sensors, but the standard approach consists of manual inspections. These inspections take place sporadically, and, consequently, issues often go unnoticed for extended periods. Moreover, as greenhouses constantly grow in size, there is an increasing demand for innovation and affordable solutions to manage and mitigate horticulture risks. Satellite data addresses these needs.



SATELLITE DATA REDUCES RISKS

Working closely with greenhouse owners and the Netherlands risk prevention specialist PinC Agro, we analyzed greenhouse business processes on location and identified various issues, such as energy leaks, subsidence and light pollution. With satellite technology, it is possible to monitor these issues continuously over large areas, enabling growers to identify and respond quickly to identified risks and defects. The horticulturalists involved in our program are enthusiastic about the possibilities.

HOW IT WORKS

Space data offers a vast number of opportunities for the agricultural sector, including greenhouse horticulture. CGI's GEWS uses earth observation satellites, which provide optical and radar images made available via International and national space programs.

Special algorithms and models analyze collected data to determine the condition of greenhouses, including, for example, the detection of subsidence and energy leaks. With CGI's GEWS, greenhouse farmers receive valuable insight into their greenhouses, which drives performance and reduces risks.

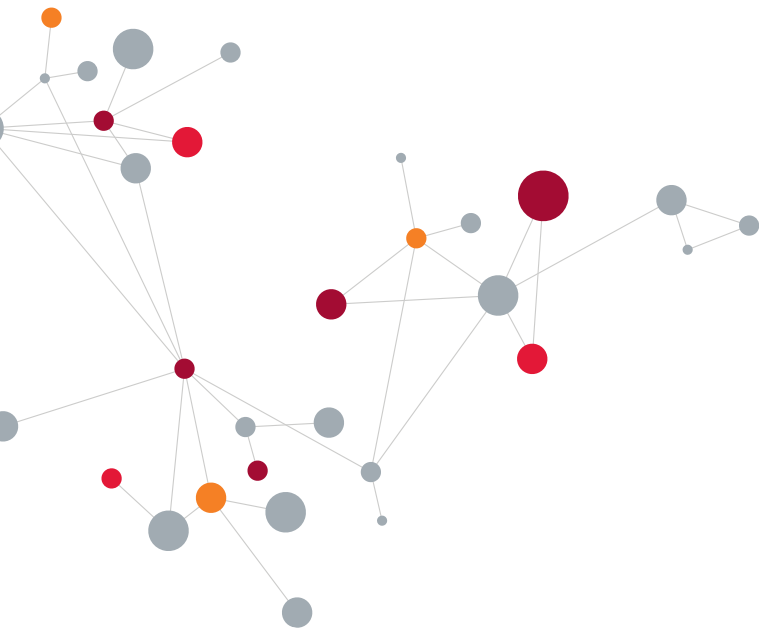
Thanks to the continuous flow of satellite data, CGI's Greenhouse Early Warning Service can quickly identify potential dangers for greenhouse horticulture companies and inform their customers. The greenhouse owners are optimistic about the service and are convinced of the added value of earth observation can bring to their business.



GEWS users and applications

CGI's GEWS is a solution for anyone who has an interest in quickly detecting business risks in greenhouse horticulture:

- **Greenhouse farmers** become more rapidly aware of problems arising in their greenhouses, enabling them to focus entirely on production without having to worry about secondary business risks.
- **Risk and prevention specialists**, such as PinC Agro, benefit from the service by providing their customers with relevant information that helps them to limit or even prevent problems. Customers, in turn, submit fewer claims.
- **Insurance companies** quickly gain insight into the extent of incidents that cause damage to their customers and the costs involved.



ABOUT CGI

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world. Operating in hundreds of locations across the globe, CGI delivers end-to-end services and solutions, including strategic IT and business consulting, systems integration, intellectual property, and managed IT and business process services.

In the space sector, CGI delivers secure, complex, mission critical space software systems across Asia-Pacific, Europe and North America, supporting programs from satellite navigation, communications and operations, to space-enabled applications.

CGI works with clients through a local relationship model complemented by a global delivery network to help clients achieve their goals, including becoming customer-centric digital enterprises.