



## GEOTRACEABILITY

**Area of Focus:** Traceability and supply chain management systems

**How it Works:** GeoTraceability, a private agribusiness technology company, leverages GPS mapping—integrated into a customized GIS—to help clients meet traceability demands in the marketplace. In Ghana, they are mapping tens of thousands of cocoa and cotton farmers for Armajaro and feed this information into a GIS for employees (and a simplified web-based platform for clients) with unique information needs and levels of access. Each farmer receives a unique farmer ID/code, linked to his/her cocoa certification ID. The process begins with the administration of a field-based questionnaire delivered on-farm by trained field surveyors, capturing information such as pesticide use, land tenure situation, date of plantation establishment, and key farm and community infrastructure. To speed data entry and reduce errors, GeoTraceability uses scannable paper questionnaires (similar to those used in standardized tests in the U.S.). The surveyors use handheld Garmin GPS devices to accurately map the boundaries of farms, and the data is stored in the GPS until it can be uploaded into the database. GeoTraceability pays each surveyor per farmer mapped and a premium for quality data and properly completed forms. An auditor re-maps 1 percent of every agent's farms for quality assurance; Armajaro's goal is to re-map all farms every 3 years.

**Technology used:** Customized GIS, Garmin GPS (for mapping), barcode scanners, scannable survey forms

**Implementer/Funder:** GeoTraceability is a private technology company

**Fees:** There are no fees for farmers. GeoTraceability charges clients to customize the database and establish the GIS, and there is a TMS licensing fee per laptop. Mapping costs vary according to the context, but the cost for mapping cocoa in Ghana is approximately \$15 USD/hectare.

**Primary Markets:** Africa (offices in Ghana and Kenya), Malaysia, Latin America

**Users:** GeoTraceability's primary client is Armajaro. As it only recently spun off as an independent company, it is slowly building up its client base. As of June 2012, GeoTraceability has mapped 20,000 cocoa farmers in Ghana, covering 35,000 ha across 15 districts.

**Business Model:** GeoTraceability is a private company with a small full-time staff, mostly based in the countries of operation. It charges for its GIS customization, the TMS licenses, and then a fixed fee per ha/mapped. It uses a cloud-based system (managed by a staff person in Canada) to maximize efficiencies.

**Impact:** Using GeoTraceability, Armajaro is able to quickly determine which cocoa plantations are the oldest to prioritize and target replanting efforts. Armajaro also discovered that actual average cocoa farm size is considerably smaller (1.1 ha) than assumed (3 ha). Although these farmers had higher yields on smaller plots than originally thought, they were also more land/resource constrained. Armajaro is also investing in mapping 3,000 cotton farms. Previously, cotton farmers received inputs on credit based on area planted (e.g. 1 ha = 3 bags fertilizers) but farmers vastly overestimated their farm size and struggled to repay input loans at season's end. Now, farmers only get the volume of inputs they need and Armajaro is more confident it will recoup the advances. They anticipate that farmers will receive greater net payouts at the end of the season, which in turn will improve relations and nurture performance incentives.

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**Sources:** Interviews with GeoTraceability and Armajaro staff, August 2012.

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