

TECHNOLOGY DESCRIPTION

- Co-formulation of the insect pest specific sexual pheromones of the potato tuber moth species *Phthorimaea operculella* (Po) and *Symmetrischema tangolias* (St), which “attract” males, and a contact insecticide, which “kills” males getting in contact with the product.
- AdiosMacho is applied at a droplet size of 100 µl using a special hand-held applicator (Photo 1A). It's applied at 2500 droplets/ha or 1 droplet/1 qm potato storage area. It reduces effectively the male population and the number of offspring hence reducing larvae damage in the crop and in stored tubers.
- The product is easily applied, provides pest specific control, and is harmless to natural enemies, safe for humans and the environment.

IMAGE & CAPTION

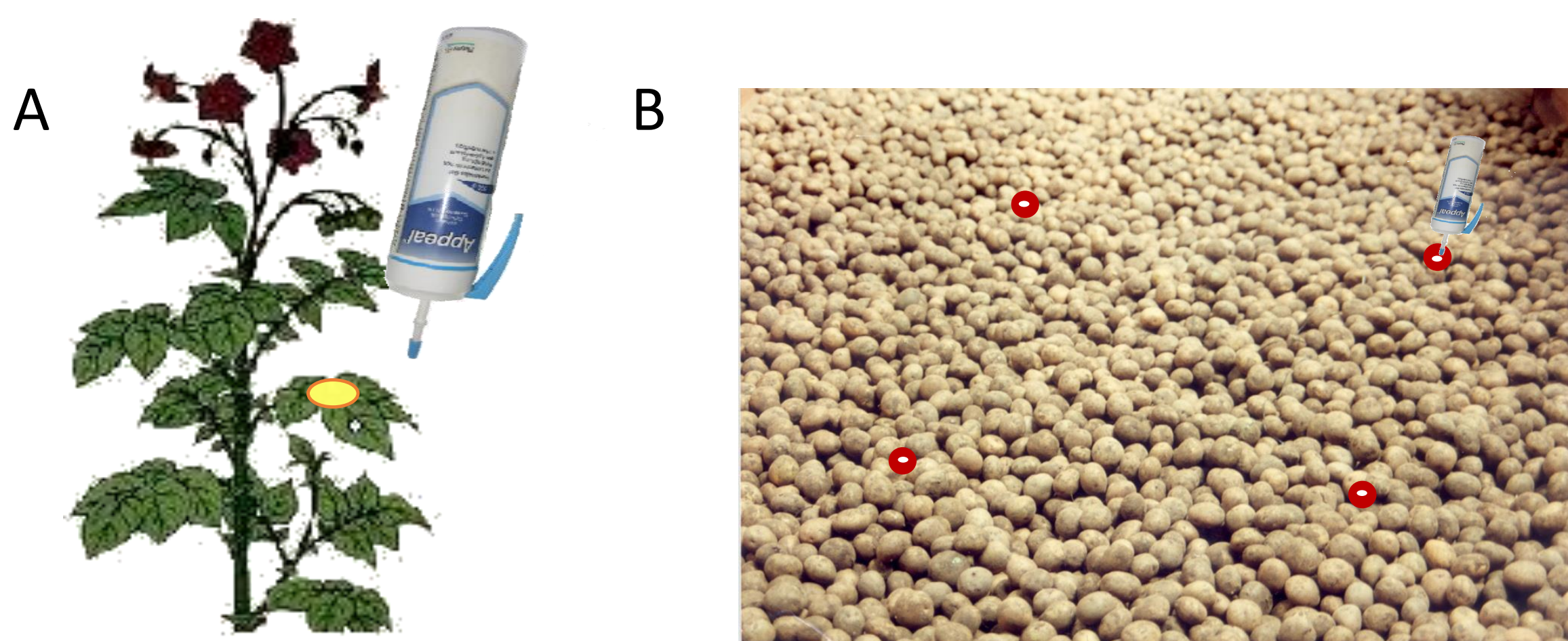


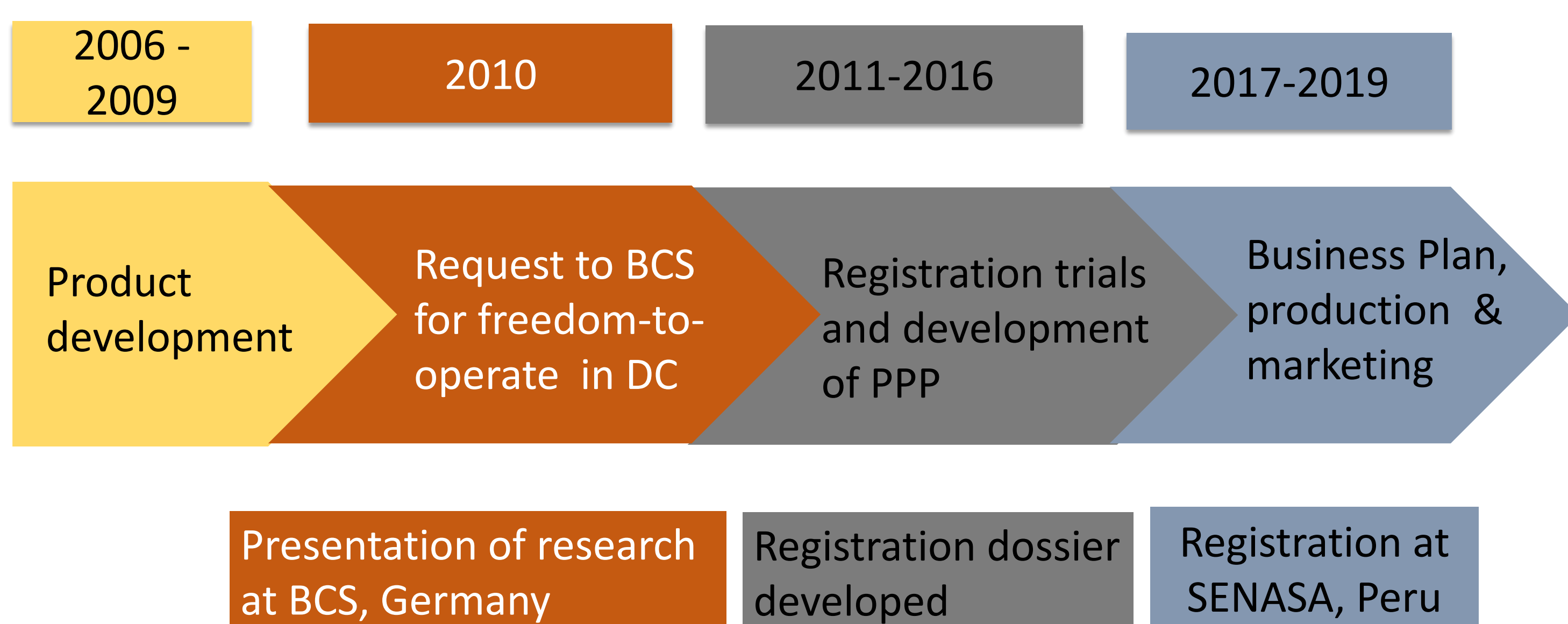
Photo 1: (A) AdiosMacho droplet application on potato leaves using a special hand-held applicator. (B) Application of AdiosMacho in potato stores on red plastic discs.

END USERS AND BENEFITS

- Target beneficiaries are farmers requiring the control of potato tuber moths in potato or other host crops (Photo 2), thereby reducing major crop losses and providing food security considering environmental protection.
- The two products have been developed for Peru and neighbouring countries (Bolivia, Colombia, and Ecuador).
- Considering the global distribution and economic impact, especially of *P. operculella* (Map 1), medium and long-term goals are to establish the product on markets in other regions and countries.

SCALING STRATEGY

Product development, registration, formulation and marketing time scale for Peru:



LEVEL OF ADOPTION OR USE

- The product has been widely tested under different environmental conditions and potato agroecologies in Peru, Bolivia, Bhutan, Nepal, and Australia.
- Partners have highly acknowledged its efficacy creating benefits for farmers thereby reducing pesticide application. Since then, national potato programs are requesting its registration and use.

CRITICAL GAPS AND NEXT STEPS

Business plan (BP)

- **2017-2019:** Registration in Peru; BP developed and production, commercialization, and financial plans harmonized with partners; products introduced in Peru.

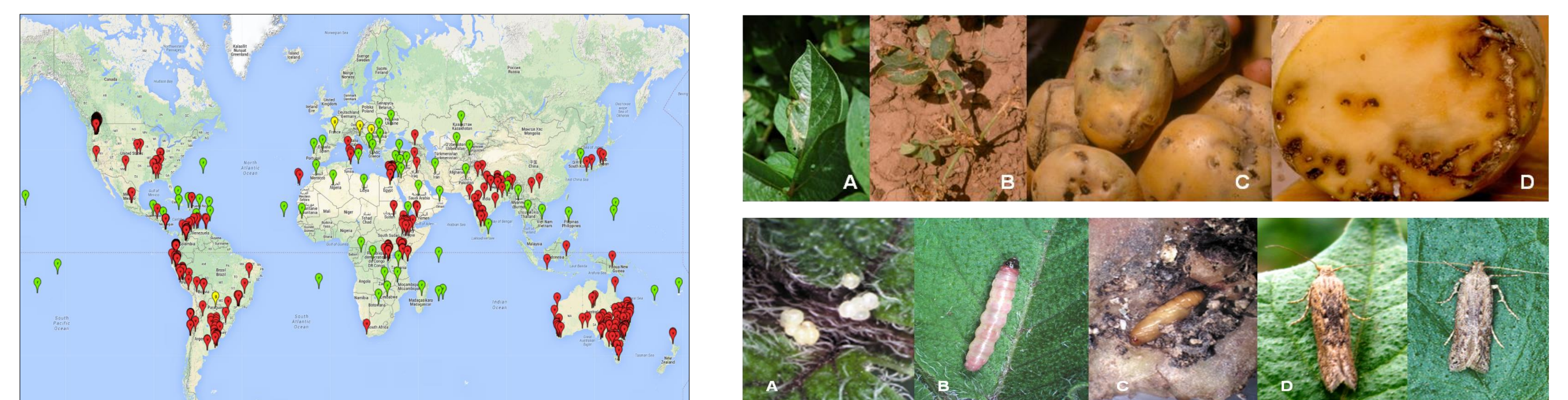
Funding strategy

- Private sector partner
- Support from donors (e.g., BMZ, USAID) for production (formulation), commercialization incl. training of extension staff and farmers, and registration in other countries (e.g., Bolivia, Ecuador).

New attract-and-kill products under field testing

- *Tuta absoluta*, *Tecia solanivora*, *Cylas* spp.

IMAGE & CAPTION



Map 1. Geographical distribution of *P. operculella*.

Green points: countries with reported pest establishment; yellow points: countries with reported occurrence in protected crops; red points: geo-referenced distribution data.

Photo 2. Symptoms of *P. operculella* larvae infestation on leaves and tubers, and the developmental stages egg, larva, pupa and male and female adult.

KEY PARTNERS FOR SCALING

- Bayer Crop Science, Peru: Supply contract: access letter for registration information of the active ingredient and its purchase and use in product
- Serfi S.A., Peru: MoU to act as product formulator and likely for the commercialization
- ChemTica, Costa Rica: Pheromone provider; non-disclosure agreement

LOGOS

