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Cooperation through Tech-Based Practices to Struggle Invasive Species and Climate Change for a Sustainable and Resilient Agriculture

PP3-BSU GEORGIA

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Priority Agricultural Crops and Invasive Alien Species in the Autonomous Republic of Adjara, Georgia

Final National Report — AGRICOOP Activity A1.1

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Abstract

Invasive alien species (IAS), interacting with climatic variability and highly connected agricultural landscapes, constitute a major threat to crop productivity in the Black Sea Basin. Under Activity A1.1 of the AGRICOOP project (Interreg NEXT Black Sea Basin, BSB01005), Batumi Shota Rustaveli State University (BSU) established the Georgian evidence base for prioritising crops, invasive pests and pilot areas in the Autonomous Republic of Adjara. The assessment integrated a documentary review of 37 sources, 30 analysed stakeholder questionnaires (124 crop and 108 pest mentions), multi-criteria crop scoring and field validation conducted from 2 April to 13 August 2026. The field programme comprised 15 fieldwork missions and 35 individual visits to agricultural plots across 21 locations in Kobuleti, Khelvachauri, Batumi and Keda municipalities; selected plots were revisited at different dates to evaluate seasonal change. Five priority crops were retained: citrus, hazelnut and blueberry (High priority), and kiwifruit and maize (Moderate priority). Four invasive alien pests were selected for further assessment: Halyomorpha halys, Orosanga japonica, Aleurothrixus floccosus and Drosophila suzukii. The final core pilot configuration comprises Gelauri, the BSU experimental agricultural plot in Tamari settlement and Kakhaberi, while Green Cape is retained solely as a supplementary low-intervention comparison site. The report provides a concise, field-validated national basis for subsequent monitoring, early-warning and integrated pest-management activities.

Keywords: invasive alien species; invasive agricultural pests; phytosanitary surveillance; crop–pest interactions; field validation; Adjara; Black Sea Basin; pilot zones; integrated pest management



1. Introduction

Invasive alien species are recognised, alongside climate change, as one of the principal drivers of biodiversity loss and agricultural production risk worldwide, with estimated global damages exceeding US$1.4 trillion annually (Bellard et al., 2018; Hulme, 2017). Rising temperatures, altered precipitation regimes and increased trade connectivity are expected to accelerate the establishment and spread of invasive pests into new agroecosystems, compounding the direct effects of climate change on crop physiology and yield (Robinet & Roques, 2010; Skendžić et al., 2021).

The Black Sea Basin, and Adjara in particular, exemplifies this compound risk. Adjara's humid subtropical climate supports a diversified agricultural base – citrus, hazelnut, blueberry, kiwifruit and maize among a range of smallholder crops – that is simultaneously well suited to the establishment of warmth-adapted invasive insects (Amiranashvili et al., 2019, 2022; Meladze & Meladze, 2015). Several IAS of Asian origin, including the brown marmorated stink bug and spotted-wing drosophila, have been confirmed in Georgia only within the past decade, and their regional distribution and crop impact remain incompletely characterised (EPPO, 2017, 2019).

The AGRICOOP project (“Cooperation through Tech-Based Practices to Struggle Invasive Species and Climate Change for a Sustainable and Resilient Agriculture”, BSB01005) brings together partners from Türkiye, Bulgaria and Georgia to develop joint, technology-supported responses to this shared challenge. Activity A1.1, synthesised here, establishes the project's evidence base: the identification and prioritisation of the crops most affected by climate change and IAS, the

characterisation of the principal IAS involved, and the preliminary selection of pilot zones for the field monitoring and control-method development undertaken under Activity A1.2.

This report presents the final PP3 (BSU) national synthesis of Activity A1.1. It is limited to the Georgian regional context, the applied methodology, documentary and stakeholder evidence, crop prioritisation, the four selected invasive pests, field-validation results, crop–IAS profiles, the final pilot-area configuration and the supporting GIS framework. Detailed visit-level observations and trap records are provided in the companion Activity A1.2.1 Field Phytosanitary Monitoring Summary Report.

2. Regional Context: Climatic and Agroecological Conditions of Adjara

Adjara lies in south-western Georgia along the Black Sea coast and is characterised by pronounced altitudinal zonation, from humid subtropical coastal lowlands through foothill and mid-mountain landscapes to high-mountain interior areas. The combined influence of the Black Sea, complex orography, high atmospheric humidity, abundant precipitation, mild winters and warm summers produces markedly diverse agroecological conditions across a relatively small territory (Amiranashvili et al., 2019; Ministry of Environment and Natural Resources Protection of Georgia [MENRP], 2013). These same conditions that favour intensive subtropical and perennial cropping – citrus, hazelnut, kiwifruit, blueberry and diversified household orchards containing maize, grapevine, persimmon and walnut – may also extend the seasonal activity window, overwintering success and voltinism of warmth-adapted arthropod pests (IPPC Secretariat, 2021b).

Citrus, concentrated in Kobuleti and Khelvachauri, forms the historical and economic core of Adjara's subtropical agriculture and benefits from dedicated regional harvest-coordination mechanisms (Ministry of Environmental Protection and Agriculture of Georgia [MEPA], 2025); its perennial canopy and year-round host availability favour sap-feeding insects, mites, scale insects and whiteflies. Hazelnut is widely grown in household and commercial orchards across western Georgia and has demonstrated particular vulnerability to the brown marmorated stink bug. Blueberry is a rapidly expanding, state-supported export crop (Rural Development Agency, 2025) whose ripening period coincides with the activity of Drosophila suzukii. Kiwifruit is well adapted to Adjara's coastal and foothill zones but remains comparatively under-documented locally. Maize, vegetables, grapevine, persimmon and walnut further diversify smallholder systems; this diversity supports food security and resilience but also creates host continuity and ecological corridors that can complicate pest monitoring and control, particularly where crop-protection practice varies among producers.

Climate does not act as an isolated stressor: it interacts with land use, trade and transport pathways, and host-plant phenology to influence not only crop physiology but also the probability that an introduced organism will survive, establish and spread (Hulme, 2017; IPPC Secretariat, 2021b). Warmer conditions may accelerate insect development, improve overwintering survival and increase the number of generations per year, while extreme heat, drought or waterlogging may equally constrain particular species; climate-related pest risk therefore cannot be inferred from mean temperature trends alone and must be assessed through the integrated monitoring of weather, crop phenology and organism activity (Robinet & Roques, 2010; Skendžić et al., 2021). An analysis of long-term Batumi meteorological data found an increased frequency of warm and hot bioclimatic conditions in 1986–2015 relative to the 1956–1985 reference period (Amiranashvili et al., 2022), consistent with Georgia's Fourth National Communication under the UNFCCC, which identifies agriculture as a climate-sensitive sector requiring locally adapted adaptation measures (MEPA, 2021).

Agroecological factor	Relevance to crops	Potential IAS/pest implication
Mild winters	Reduced cold injury for citrus and kiwi; longer biological activity	Improved overwintering survival; earlier seasonal emergence
High humidity and rainfall	Supports citrus, blueberry and mixed perennial systems; raises disease pressure	Favourable microclimates for whiteflies, scales, mites and pathogens
Warm summers/heat episodes	Heat and water stress reduce fruit quality and resilience	Accelerated insect development and altered phenology
Fragmented smallholdings	High crop diversity; numerous unmanaged host plants	Host continuity and uneven pest-control coverage

Transport and trade corridors	Movement of planting material and produce	Higher propagule pressure and introduction risk

Table 1. Principal agroecological factors and their pest-relevant implications in Adjara.

3. Materials and Methods

PP3 applied a harmonised, multi-source methodology integrating documentary review, stakeholder consultation, multi-criteria crop assessment, targeted field validation and GIS-oriented spatial interpretation.

3.1 Documentary review and stakeholder consultation

PP3 conducted a structured review of peer-reviewed publications, official pest registers, national plant-health records, climatic databases and institutional and policy documents. The documentary evidence was validated through structured and semi-structured consultations with farmers, agronomists, plant-protection specialists, researchers and relevant public institutions in Georgia. Stakeholders were selected purposively; consequently, the consultation results represent expert and practice-based evidence rather than a statistically representative prevalence survey.



3.2 Multi-criteria crop prioritisation

Candidate crops were scored against four equally weighted criteria – agronomic importance (A), socio-economic importance (B), climate sensitivity (C) and IAS exposure/impact (D) – each on a 1–5 scale with a documented evidence source, following established applications of multi-criteria decision analysis in agricultural assessment (Talukder et al., 2018). The overall score was calculated as Overall Score = (A + B + C + D) / 4, with crops classified as High (≥4.0), Moderate (3.0–3.9) or Low (<3.0) vulnerability; all partners applied the same formula and thresholds. IAS records were separately graded E1 (strong: taxonomically validated local/regional evidence, peer-reviewed data, official confirmation or traceable field documentation), E2 (moderate: validated evidence from ecologically contiguous regions) or E3 (preliminary: stakeholder or photographic report pending confirmation), consistent with ISPM 6 and ISPM 8 (IPPC Secretariat, 2018, 2021a).

3.3 Field validation and alignment with Activity A1.2.1

Field validation was conducted from 2 April to 13 August 2026 in Kobuleti, Khelvachauri, Batumi and Keda municipalities. Fifteen fieldwork missions generated 35 individual visits to agricultural plots across 21 locations. Selected farmer-managed and experimental plots were revisited at different dates to assess temporal changes in pest occurrence, developmental stage and crop injury. Standardised observations recorded location, crop, phenology, pest identity or damage symptoms, developmental stage and photographic evidence. Visual inspection was complemented by pheromone and sticky traps, including tools targeting Halyomorpha halys. The evidence was used to confirm IAS status, refine crop associations and finalise the pilot configuration.

4. Results

4.1 Desk review findings

The documentary review assembled 37 sources spanning 2015–2026, exceeding the methodological minimum of 30 per country (Table 2). Scientific publications formed the largest category (17; 45.9%), followed by policy and regulatory documents (13; 35.1%), with the remainder comprising books/monographs, institutional reports and one doctoral dissertation. Thematically, coverage concentrated on phytosanitary policy and regulation (11 sources), IAS biology and distribution (10), phytosanitary monitoring (6), crop vulnerability (6) and climate/adaptation (4), giving balanced coverage of the biological, agronomic, climatic and institutional dimensions of the assessment, though geographical coverage was strongest for Batumi, Kobuleti and Khelvachauri.

Source type	Number	Share
Scientific publications	17	45.9%
Policy and regulatory documents	13	35.1%
Books and monographs	4	10.8%
Institutional reports	2	5.4%
Doctoral dissertation	1	2.7%
Total	**37**	**100%**

The working inventory comprised 31 evidence records concerning IAS and other harmful organisms, including repeat observations and broader taxonomic categories rather than 31 distinct species. Subsequent field validation strengthened the local evidence base for the four priority invasive pests. Halyomorpha halys was confirmed across multiple crops and municipalities, with increasing trap catches and nymphal activity during July–August. Aleurothrixus floccosus was repeatedly dominant in citrus systems. Orosanga japonica, initially retained as a regional surveillance priority, was directly recorded at multiple Georgian sites and is therefore treated as locally confirmed. Drosophila suzukii was detected late in the blueberry harvest cycle. Other invasive or emerging organisms recorded during fieldwork remain supplementary phytosanitary surveillance targets and are not included in the four-species priority group.

Evidence level	Interpretation	Records	Share
E1	Direct national or local evidence	9	29.0%
E2	Reliable evidence, limited extrapolation	14	45.2%
E3	Preliminary evidence, requires confirmation	8	25.8%
Total		**31**	**100%**

Tables 2–3. Composition of the desk-review evidence base by source type and IAS evidence grade.

4.2 Stakeholder consultation findings

Forty-three stakeholders participated in the consultation meeting, of whom 30 completed anonymised questionnaires analysed here; because multiple responses were permitted, the dataset comprises 124 crop mentions and 108 pest mentions, and percentages below refer to shares of mentions rather than of respondents. Citrus (34 mentions; 27.4%) and hazelnut (29; 23.4%) jointly accounted for over half of all crop mentions, followed by blueberry (16; 12.9%), kiwi (15; 12.1%), vegetables, grape, persimmon, and maize (2 mentions; 1.6%, rank 8). Among pests, the brown marmorated stink bug dominated (31 mentions; 28.7%), followed by aphids (14.8%), bud mites (13.0%), whiteflies (11.1%) and scale insects (11.1%), with Drosophila suzukii recording five mentions (4.6%). These stakeholder results broadly corroborate the desk-review prioritisation and should be read as perceived importance rather than prevalence estimates.

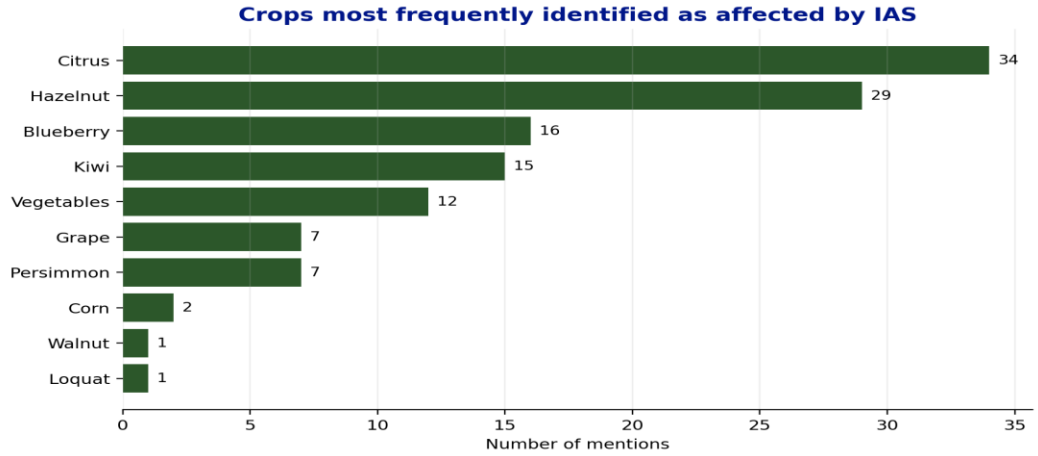


Figure 1. Stakeholder mentions of crops affected by IAS. Source: PP3 stakeholder-results workbook; multiple responses allowed.

4.3 Priority crop assessment

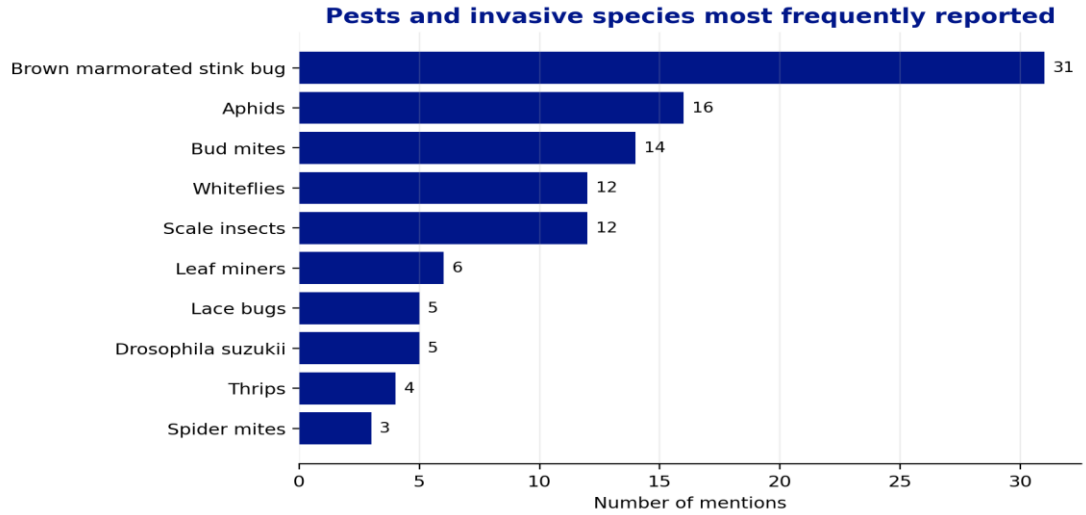


Figure 2. Stakeholder mentions of priority pests and species. Source: PP3 stakeholder-results workbook; multiple responses allowed.

Five crops were scored through the multi-criteria framework (Table 4). Mandarin/citrus obtained the maximum overall score (5.00), ranking highest across all four criteria; hazelnut (4.50) and blueberry (4.00) were also classified High, while kiwifruit and maize (3.75 each) were classified Moderate. Maize was assessed as A = 3, B = 4, C = 4 and D = 4. Its inclusion reflects its widespread cultivation in mixed smallholder systems, socio-economic importance for household food security, sensitivity to precipitation variability and heat or water stress, and documented host status for two of the four priority IAS, Halyomorpha halys and Orosanga japonica (Dumbadze et al., 2019; Karataş et al., 2020). The lower frequency of maize in stakeholder responses reflects the consultation's stronger orientation towards commercial perennial crops rather than limited agroecological relevance.

Priority crop	A	B	C	D	Overall score	Class
Mandarin/Citrus	5	5	5	5	**5.00**	**High**
Hazelnut	5	5	4	4	**4.50**	**High**
Blueberry	4	4	4	4	**4.00**	**High**
Kiwifruit	4	4	4	3	**3.75**	**Moderate**
Maize (added)	3	4	4	4	**3.75**	**Moderate**

Table 4. Multi-criteria crop scoring (A = agronomic importance; B = socio-economic importance; C = climate sensitivity; D = IAS exposure/impact).

4.4 Priority invasive and emerging pest species

Four invasive alien pest species were prioritised on the basis of convergent documentary, stakeholder and field evidence. Halyomorpha halys is the principal cross-crop IAS: it is established in Adjara, highly polyphagous and relevant to hazelnut, citrus, maize and other crops. Orosanga japonica was directly confirmed during the 2026 field programme across several crops and municipalities, supporting its treatment as locally established. Aleurothrixus floccosus was the dominant invasive whitefly repeatedly documented in citrus systems. Drosophila suzukii was detected comparatively late in the blueberry season, close to the completion of harvest; no substantial damage was recorded in the monitored plantation in 2026, but its rapid reproductive capacity warrants continued phenology-based surveillance. Other invasive or emerging organisms recorded during fieldwork remain supplementary monitoring targets and are not included in the four-species priority group.

Organism	Recommended status	Grade	Main evidentiary basis
Halyomorpha halys	Present; principal cross-crop IAS	E1	Local field and trap records; national monitoring; strong stakeholder signal
Orosanga japonica	Present; locally confirmed	E1	Repeated 2026 field records across crops and municipalities; regional literature
Aleurothrixus floccosus	Present; widespread in citrus	E1	Scientific evidence and repeated direct 2026 field documentation
Drosophila suzukii	Present; late-season blueberry risk	E1	Published national record and direct August 2026 detections

Table 5. Consolidated evidence-grading summary for the four priority invasive alien pests.

4.5 Field-validation findings

The completed field programme comprised 15 fieldwork missions and 35 individual visits to agricultural plots across 21 locations between 2 April and 13 August 2026. Repeated visits enabled seasonal progression to be distinguished from one-time occurrence. Aleurothrixus floccosus was the most consistently dominant selected invasive whitefly in citrus. Halyomorpha halys populations increased through the season, with adults, eggs and successive nymphal instars recorded. Orosanga japonica progressed from early-instar nymphs in June to late-instar nymphs and adults by late July and August and was confirmed in several municipalities. Drosophila suzukii was detected during August; its comparatively late appearance, close to the completion of blueberry harvesting, limited documented crop damage in the monitored plantation. The BSU experimental agricultural plot in Tamari supported records relevant to all four priority pests within a diversified system containing citrus, other subtropical fruit and ornamental crops, blueberry and greenhouse vegetables. These findings provide a robust basis for subsequent monitoring and integrated management measures.



4.6 Crop–IAS catalogue profiles

Building on the scoring in Section 4.3, standardised catalogue profiles were prepared for each priority crop, integrating taxonomic identity, regional and socio-economic importance, climate sensitivity, associated IAS and evidence status, damage profile and monitoring indicators. Profiles are presented in condensed form below; the underlying catalogue is maintained as a living, updateable evidence system.

GE-CROP-01 – Mandarin and other citrus (Citrus reticulata Blanco and allied species; Rutaceae)

Mandarin and other citrus constitute the historical and economic core of Adjara's subtropical agriculture and were the most frequently mentioned crops in the stakeholder dataset (27.4%). The principal field-confirmed IAS is *Aleurothrixus floccosus*, which was widely distributed and frequently dominant; *Orosanga japonica* and *Halyomorpha halys* are also confirmed surveillance and management priorities. *Aleurocanthus spiniferus* and A. woglumi were recorded at selected sites and remain supplementary invasive targets. Sap feeding and honeydew-associated sooty mould reduce leaf function, fruit quality and marketability. Monitoring should combine systematic leaf-underside inspection, sticky cards, pheromone traps where species-appropriate, and separate assessment of orchard borders and interiors. Citrus is represented across Gelauri, Tamari and Kakhaberi and at the supplementary Green Cape comparison site.



GE-CROP-02 – Hazelnut (Corylus avellana L.; Betulaceae)

Hazelnut is central to small- and medium-farm income and export value chains in western Georgia and ranked second in stakeholder crop mentions (23.4%). *Halyomorpha halys* is the principal confirmed IAS, affecting developing kernels and contributing to quality and yield losses; *Orosanga japonica* is now also locally confirmed rather than a provisional regional concern. *Phytoptus avellanae* (hazelnut bud mite) is not invasive but remains economically important, with severe bud deformation and a site-specific estimate of up to approximately 40% potential yield reduction. Priority monitoring comprises H. halys pheromone trapping, inspection of orchard borders, shelters, eggs, nymphs and damaged kernels, and visual surveillance for O. japonica. Hazelnut is particularly relevant to Gelauri and Kakhaberi.



GE-CROP-03 – Blueberry (Vaccinium corymbosum L. and hybrids; Ericaceae)

Blueberry is a rapidly expanding export crop requiring acidic, well-drained soils and a stable water supply. *Drosophila suzukii* is its principal invasive pest because females oviposit in apparently healthy ripening fruit, leading to tissue breakdown, secondary infection and loss of marketability. Field monitoring confirmed the species at Tamari and Tsetskhlauri in August, including all major developmental stages. In the monitored plantation, detection occurred only after harvest completion, probably reflecting the relatively cool spring and summer, and no economically significant damage was recorded in 2026. This result does not reduce future risk: traps should be deployed before fruit ripening, with frequent harvesting, removal of overripe or infested fruit and rapid reporting of new foci. Blueberry is represented at Gelauri and Tamari.




GE-CROP-04 – Kiwifruit (Actinidia deliciosa (A.Chev.) C.F.Liang & A.R.Ferguson; Actinidiaceae)

Kiwifruit is well adapted to Adjara's coastal and foothill zones but is vulnerable from bud break through fruit enlargement. *Halyomorpha halys* and *Orosanga japonica* are the principal invasive pests of concern; O. japonica is now supported by direct local field records, including progressive nymphal development during the season. Early inspections did not show mass infestation, but this phenologically restricted result cannot be interpreted as absence. Continued visual surveillance and species-appropriate pheromone or sticky trapping are required. Kiwifruit remains relevant to Gelauri and other monitored coastal sites.




GE-CROP-05 – Maize (Zea mays L.; Poaceae) – added priority crop

Maize is widely cultivated in mixed smallholder systems in western Georgia and retains a Moderate priority score of 3.75 (A = 3, B = 4, C = 4, D = 4). Its inclusion is supported by documented and field-relevant host associations with *Halyomorpha halys* and *Orosanga japonica*. As maize approaches maturity, H. halys may move from perennial hosts into maize, where feeding on developing kernels can cause discoloration, tissue injury and reduced grain quality. O. japonica may contribute sap-feeding injury and honeydew-associated sooty mould. Monitoring should intensify from tasselling and

grain filling, with particular attention to field edges, adjacent woody vegetation and the seasonal movement of adults and nymphs. Maize is represented in Kakhaberi and in mixed smallholder landscapes monitored during the field programme.



4.7 Final pilot-area configuration

The pilot-area configuration was finalised by integrating the desk review, stakeholder evidence and completed 2026 field validation. The three core pilot areas are Gelauri in Kobuleti Municipality, the BSU experimental agricultural plot in Tamari settlement within Batumi Municipality, and Kakhaberi in Batumi Municipality. Tamari replaced Green Cape as a core site because Green Cape is dominated by citrus and does not adequately represent the diversity of the five priority crops. The Tamari site contains citrus and other subtropical fruit crops, ornamental plants, blueberry, open-field vegetables and greenhouse-grown vegetables, and it provides a representative experimental basis for monitoring the four selected IAS. Green Cape remains a supplementary low-intervention comparison site for citrus-related observations.









Status	Location	Main crops	IAS relevance and rationale
Core pilot 1	Gelauri, Kobuleti Municipality	Citrus, hazelnut, blueberry, kiwifruit	Diversified rural/institutional site; H. halys, O. japonica, A. floccosus and D. suzukii relevance

Core pilot 2	Tamari settlement, Batumi Municipality — BSU experimental agricultural plot	Citrus and other subtropical fruit and ornamental crops; blueberry; greenhouse vegetables	Representative diversified site for the four selected IAS and comparative crop monitoring
Core pilot 3	Kakhaberi, Batumi Municipality	Citrus, loquat, mandarin, maize	Peri-urban site with high H. halys trap catches and confirmed O. japonica occurrence

Table 6. Final core pilot areas and supplementary comparison site.

4.8 GIS data preparation and spatial interpretation

Crop, IAS and monitoring records are integrated into a unified spatial database in which each record carries coordinates or an appropriately generalised municipal location, observation date, crop, pest identity and evidence status. The validated dataset comprises 35 visits across 21 locations. Core pilot layers represent PZ-01 Gelauri, PZ-02 Tamari and PZ-03 Kakhaberi. Green Cape is mapped separately as a supplementary low-intervention comparison site and is not included among the core pilot zones.

5. Discussion

The combined documentary, stakeholder and field evidence identifies Halyomorpha halys as the most consequential cross-crop IAS in Adjara. Its polyphagy, seasonal movement among crops and rapid population increase justify pheromone-based monitoring and landscape-aware intervention. Direct field detection strengthened the evidence for Orosanga japonica, while Aleurothrixus floccosus remains the dominant selected invasive whitefly in citrus. Drosophila suzukii requires surveillance aligned with blueberry phenology because early-season non-detection cannot be interpreted as absence. Together, these four species provide a scientifically coherent priority set for subsequent national monitoring and project-level comparison.

The desk review and stakeholder consultation, though methodologically robust, were oriented toward commercial tree-crop systems and consequently under-represented smallholder field crops; the subsequent addition of maize illustrates this limitation directly, since two of the confirmed and surveillance-priority IAS are independently documented as maize hosts in the literature despite maize's low stakeholder-mention frequency. This supports treating the crop and IAS inventories as living, annually updateable products rather than a one-time list, a principle the original A1.1 methodology itself recommends.

The phased design of Activities A1.1 and A1.2.1 enabled preliminary priorities to be tested against direct field evidence. Two substantive refinements resulted: *Orosanga japonica* was upgraded from regional surveillance priority to confirmed local occurrence, and Tamari replaced Green Cape as a core pilot area because it better represents crop and pest diversity. These refinements strengthen, rather than depart from, the original methodology by ensuring that final priorities are evidence-led, spatially representative and operationally suitable for monitoring and control-method development.

6. Conclusions and Recommendations

The integrated A1.1 and A1.2.1 evidence supports the following conclusions and operational recommendations:

- Retain five priority crops—citrus, hazelnut, blueberry, kiwifruit and maize—and maintain the crop and IAS inventories as controlled, annually updateable evidence products.
- Prioritise *Halyomorpha halys* as the principal cross-crop IAS and expand pheromone and sticky-trap surveillance, with separate inspection of crop interiors, field edges and adjacent host vegetation.
- Recognise *Orosanga japonica* as locally confirmed (E1) and incorporate it into routine surveillance and integrated pest-management planning for citrus, hazelnut, kiwifruit and maize.
- Apply phenology-based monitoring to Drosophila suzukii, with traps deployed before blueberry ripening and maintained through the harvest period.

- Use Gelauri, Tamari and Kakhaberi as the three core pilot areas; retain Green Cape as a supplementary low-intervention comparison site and document this distinction in all spatial outputs.
- Continue georeferenced data collection, rapid reporting of new foci and technical evaluation of mechanical, sanitation-based and biotechnical measures under Activity A1.2.

Taken together, the results provide a field-validated and operationally coherent basis for invasive-pest early warning, integrated management, pilot implementation and cross-border exchange of best practices within the AGRICOOP project.

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