Soil and Water Conservation: Best Practices to Strengthen Household Resilience to Climate Shocks (Focus on Burkina Faso)

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A best practice is a method or technique that has been generally accepted as superior to any alternatives because it produces results that are superior to those achieved by other means or because it has become a standard way of doing things. This document is one of a series of reports from the Food Security Portal on best practices for emerging topics in agriculture and food security policy.

Introduction

This brief synthesizes robust evidence on soil and water conservation practices (SWCPs), a subset of Climate-Smart Agriculture (CSA) practices that strengthen household resilience to climate shocks in Burkina Faso and Africa south of the Sahara (SSA). The findings highlight a set of proven practices, including zaï pits, half-moons, stone bunds, mulching, irrigation, and sustainable water harvesting and management. These practices have demonstrated measurable impacts on yield gains, improved soil fertility, increased water retention, enhanced food security, and income stability, particularly in drought-prone and degraded environments. The review underscores that SWCPs are most effective when implemented as integrated packages rather than in isolation, supported by strong extension systems, access to knowledge, materials, inputs, and finance, gender-responsive approaches, and secure land tenure. The evidence base reflects more than three decades of experience from Burkina Faso and comparable agroecological zones in SSA, making these practices both technically sound and operationally scalable. By embedding SWCPs approaches into national climate and food security frameworks, governments and partners can create long-term, systemic change to protect livelihoods, restore degraded land, and build resilient agrifood systems.

Background and Context

Africa south of the Sahara (SSA) is on the frontline of climate change impacts on food security. Agriculture remains the backbone of livelihoods across the region, where over half of the SSA workforce (55–62 percent) is employed in farming and around 95 percent of cropland is rainfed, making the sector extremely vulnerable to rainfall variability (Trisos et al., 2022). The continent is projected to experience severe and irreversible impacts on food production systems (Ariom et al., 2021). Rising temperatures, shifting rainfall patterns, and more frequent droughts have already impacted production, as climate change has reduced Africa's agricultural productivity growth by an estimated 34 percent since 1961, the largest decline among all regions (Trisos et al., 2022). According to the IPCC Sixth Assessment report on SSA, staple crop yields are stagnating or declining in the region even as population growth drives higher food demand. This combination of high exposure and sensitivity to climate shocks has made food security precarious across many African countries.

Burkina Faso well illustrates these challenges. It is a low-income Sahelian country highly vulnerable to climate risks, with limited natural resources and an economy heavily dependent on smallholder agriculture (about 18 percent of GDP in 2024; World Bank, 2025). The agriculture sector remains the backbone of Burkina Faso's economy, employing around 60 percent of the labor force and serving as the main source of livelihoods for most rural households (World Bank, 2025). However, the sector is highly vulnerable to climate shocks such as droughts, floods, and advancing desertification, which have severe economic repercussions. The country experiences long dry seasons and irregular rainfall, and climate change is intensifying these extremes, resulting in recurrent droughts and occasional destructive floods that undermine agricultural productivity and food security (World Bank, 2025). For example, extreme flooding in 2009 caused agricultural output to fall nearly 46 percent below expectations, with disastrous consequences on rural incomes (Sawadogo and Mabugu, 2025). Moreover, decades of unsustainable land use combined with climate stress have led to severe land degradation; approximately 46 percent of Burkina Faso's arable land is now degraded (NDC Partnership, 2025), further hampering farm productivity. These factors leave smallholder farmers especially vulnerable: With few irrigation systems or financial safety nets, most must gamble each season on increasingly unpredictable rains. A failed harvest due to drought or a flash flood can quickly translate into household food insecurity and poverty, contributing to broader crises.

In response, climate-smart agriculture (CSA) has emerged as a key approach to sustainably increase productivity, enhance resilience (adaptation), and reduce emissions in the face of these challenges (FAO, 2013). According to the FAO, CSA is defined as agriculture that "improves resilience, sustainably increases productivity, reduces or removes greenhouse gases where possible, and boosts attainment of national food security and development goals" (Partey et al., 2018; Taylor et al., 2018). CSA aims for a "triple win" of higher yields, greater climate adaptation, and contribution to the mitigation of greenhouse gases. In practice, CSA encompasses a suite of techniques and innovations that make smallholder production more resilient to climate shocks. These include sustainable land and water management practices (e.g., conservation agriculture with minimum tillage, rainwater harvesting structures like planting zaï pits, terracing, and erosion control), agroforestry and integrated crop-livestock systems, improved stress-tolerant crop varieties, efficient irrigation (drip systems, water storage), climate-informed advisory services, and risk management tools such as crop insurance. It is documented that Soil and Water Conservation Practices (SWCPs) such as zaï, half-moons, rock/stone bunds, organic manure application, and intercropping have been implemented in northern Burkina Faso since the 1980s, with their large-scale promotion beginning in 2008 under the SCAP project (Maré et al., 2022). By leveraging such innovations, CSA seeks to increase yields and food security in the face of climate stress. Evidence from West Africa shows that farmers adopting CSA practices indeed achieve better outcomes (Barbier et al., 2009; Kone et Uzmay, 2024; Douxchamps et al., 2016; Zongo, 2016).

Given the significant challenges involved, aligning agricultural development with climate resilience is now a policy priority. By reviewing the latest research and field experiences, we aim to provide policymakers and stakeholders with evidence-based insights on SWCPS, a group of CSA best practices that can strengthen household resilience to climate shocks in Burkina Faso and similarly vulnerable contexts. The following sections summarize the key approach used in this brief, research findings, and recommendations to guide climate-smart agricultural policy and investment in support of national food security and development goals.

Approach

A comprehensive literature search was conducted across academic databases and development organization repositories, focusing on CSA practices, especially SWCPs in SSA, with an emphasis on Burkina Faso. Queries and keywords were used to search for the papers that met the selection criteria. Additional relevant studies already in the author's possession or identified through citation tracking were included as manually identified studies. Studies were included if they addressed SWCPs and resilience outcomes such as yield stability, soil fertility, water retention, food security, or income. Both peer-reviewed and gray literature were reviewed to ensure a balanced perspective. Evidence was extracted into information covering the SWCP types, contexts, documented outcomes, enabling conditions, and scalability. The synthesis focused on identifying practices with strong, consistent results and clear policy relevance.

SWCPs for Climate Shock Resilience

Best agricultural practices are proven actions that improve farming performance and economic returns while reducing vulnerability to climate shocks. In Burkina Faso, farmers have long relied on soil and water conservation practices to protect soil health, reduce erosion, and manage water use more efficiently. Together, these approaches sustain productivity, strengthen resilience, and support rural livelihoods. The following section presents the key SWCPs identified in Burkina Faso and their relevance for broader scaling across SSA.

Zai Pits

Zai pits are a traditional SWCP developed in Burkina Faso. The term zai means "to prepare in advance" in Mooré. Farmers dig small pits (about 24 cm wide and 10–15 cm deep) at 40 cm intervals, place organic matter at the bottom, and sow seeds in the same spots. The pits capture rainwater, improve infiltration, enhance soil fertility, and rehabilitate degraded land (Savadogo et al., 2011). This low-cost technique has become central to dryland farming strategies in Burkina Faso and has spread across other Sahelian and semi-arid countries (e.g., Niger, Ethiopia, Ghana, Senegal, Kenya, Zimbabwe, and Mali)

In Burkina Faso, zai pits consistently deliver high yield and resilience gains. When combined with compost and NPK, sorghum grain yields rose from 588–828 kg/ha under traditional zai to 2,227–2,269 kg/ha, while straw yields exceeded 5.3 t/ha (Dabre et al., 2024). In Yatenga, Zondoma, Lorum, and Passoré provinces, sorghum yields increased from 319–642 kg/ha on untreated plots to 975–1,312 kg/ha with zai, along with clear improvements in soil fertility, moisture retention, and household food security (Sawadogo, 2011). In northern provinces, millet yields rose by more than 200 percent, while sorghum yields rose by 60 percent, and gross margins tripled compared to conventional systems (Schuler et al., 2016). Regional synthesis confirms sorghum yield gains of 33–55 percent in Burkina Faso and over 40 percent millet yield increases in Niger (Zougmoré et al., 2014).

Similar impacts have been documented across SSA. In Niger, zai with manure increased millet yields from 1 kg/ha under control to 1,157 kg/ha and raised rainwater productivity to 12.7 kg/mm (Fatondji et al., 2012). In Ethiopia, zai increased potato yields five- to twenty-fold and bean yields by 250 percent (Amede et al., 2011). In Kenya, maize yields rose from 1.4 t/ha to 4.8 t/ha and sorghum yields from 1.4 t/ha to 3.8 t/ha when zai was combined with organic and mineral inputs (Ehiakpor et al., 2019; Getare et al., 2024). Ghana recorded similar positive effects (Danso-Abbeam et al., 2019). In Zimbabwe, zai adoption increased maize yields and improved moisture retention (Kugedera, 2022). In Mali, the practice raised household income by 75,320–222,102 CFA francs (Coulibaly, 2018).

Half-moons *(Les demi-lunes)*

Half-moons are a traditional SWCP that originated in the Yatenga region of Burkina Faso in 1958. These crescent-shaped basins (2–4 m in diameter, 15–20 cm deep, spaced 8 m apart) are dug along the slope or contour to retain rainwater and reduce runoff. The practice improves water infiltration, stabilizes soils, reduces erosion, and rehabilitates degraded land, making it a widely used adaptation strategy across central and northern Burkina Faso and other Sahelian countries (Sawadogo, 2011; Savadogo et al., 2011).

In Burkina Faso, half-moons have consistently improved crop yields and land productivity. Sorghum yields increased from traditional levels to 1,400–2,000 kg/ha compared to untreated plots (Sawadogo, 2011). Experimental trials with nutrient amendments recorded 1,614 kg/ha of sorghum grain (Zougmoré et al., 2003), and trials in Zondoma reported 1.7 t/ha of millet with improved infiltration and soil fertility (Zouré et al., 2025). In irrigated systems, onion yields reached 20.1 t/ha and jute 9.68 t/ha (Ayoumbissi Keugmeni et al., 2025). Farmers supported through WFP in the Nord region increased bean harvests from 3 bags of 100 kg to over 20 bags, raising household income and food security (WFP, 2024). On average, households earned around US$125 per harvest from half-moon cultivation.

Evidence from across SSA confirms similar trends. In Niger (Sokorbé-Lago), multifunctional half-moons increased cowpea yields from near zero to 567 kg/ha and sorghum up to 2,159 kg/ha over two years (Seidou et al., 2024; Ado, 2021). Yield gains of 20–120 percent have been documented across multiple SSA countries (Partey et al., 2018), and in Mali, half-moon users increased household income by US$79.99 compared to non-users (Coulibaly, 2018). Long-term monitoring in northern Burkina Faso revealed increased NDVI (0.15–0.21) and biomass accumulation (0.35 t/ha/year) over 15 years (Tamagnone et al., 2020), confirming the environmental and resilience benefits of these practices.

Stone Bunds

Stone bunds (also called stone rows, lines, or ribbons) are low barriers made of loose stones placed along contour lines to slow surface runoff, trap sediments, increase water infiltration, and reduce erosion. Typically, 15–20 cm wide and 10–30 m long, they are well-suited to gently sloping lands. First introduced in the Central Plateau of Burkina Faso in the late 1970s, stone bunds have since become one of the most widely adopted SWCPs across the Sahel. They can be used alone or combined with other practices such as zai pits, half-moons, compost, or microdosed fertilizer to enhance performance (Savadogo et al., 2011; Zougmoré et al., 2000).

Stone bunds have shown substantial impacts on hydrology, soil fertility, and productivity in Burkina Faso. Runoff reductions range from 55–71 percent with bunds alone and up to 94 percent when combined with compost (Zougmoré et al., 2014). Soil moisture increased by 18–25 percent near bunds (Zougmoré et al., 2000), while long-term trials recorded increases in soil organic carbon from 0.31 percent to 0.43 percent, available P from 3.9 to 6.8 mg/kg, and exchangeable K from 0.16 to 0.24 cmol/kg (Zougmoré et al., 2002). Sorghum yields rose from 436 kg/ha in control plots to 772–932 kg/ha with stone bunds (Sawadogo, 2011). During drought years, yields increased by up to 343 percent at closer spacing (25 m), demonstrating strong drought-buffering capacity (Zougmoré et al., 2000). Ecosystem benefits are equally significant. NDVI values and vegetation cover improved in northern Burkina Faso, confirming long-term land restoration impacts (Naba et al, 2023). Economic analyses found household energy availability rose by 16–19 percent and farm income by 10–15 percent (Maatman et al., 1998).

Comparative evidence from other SSA countries reinforces this performance. In Ethiopia, bunds reduced soil loss from over 50 t/ha/year to below 10 t/ha, lowered runoff by 20–30 percent, and increased soil moisture by 29.5 percent (Taye et al., 2015; Guadie, 2019). Sorghum yields increased by 46.3 percent compared to the control (Guadie, 2019), demonstrating strong transferability across agroecological zones. Bunds perform best when integrated with organic amendments or complementary practices such as zai pits and fertilizer microdosing, as documented in Burkina Faso and Ethiopia (Ouedraogo et al., 2020; Yameogo et al., 2013; Taye et al., 2015; Gnissien et al., 2025). In Mali, contour bunds retained 162 mm of rainfall per year as soil moisture and reduced soil loss by 163 percent compared to untreated fields. Maize and millet yields and biomass significantly increased ($P < 0.01$), confirming their strong contribution to farm-level productivity (Birhanu et al., 2020).

Mulching

Mulching involves covering the soil surface with crop residues, organic materials, or synthetic films to reduce evaporation, stabilize soil temperature, suppress weeds, and protect soil structure. In West Africa, common materials include cereal residues, Loudetia grass, tree leaves, and cover crop residues; in horticulture, plastic films or organic by-products are also used. Farmers apply mulch as a stand-alone practice or within conservation agriculture packages such as no-tillage, tied ridges, drip irrigation, or fertilizer microdosing. In Burkina Faso, mulching is widely practiced across cereal and vegetable systems and plays a critical role in buffering dry spells, improving water use efficiency, and rehabilitating degraded soils (Nyamekye et al., 2018; Naudin et al., 2010; Tilander, 1997).

In Burkina Faso, mulching has produced strong yield and resilience gains. In the Central Plateau, leaf and straw mulch increased sorghum grain yields by 203-422 percent over three seasons, improving soil moisture retention and reducing evaporation (Tilander, 1997). Residue application at 3–6 t/ha improved infiltration, reduced wind erosion, and promoted vegetation regrowth (Nyamekye et al., 2018). In vegetable systems, a 10 cm straw layer under drip irrigation raised cabbage, onion, and tomato yields by 42–58 percent and improved irrigation productivity and gross margins (Masasi et al., 2024). In direct-seeded maize, 4 t/ha mulch increased yields from 746 to 1,105 kg/ha and boosted rainwater productivity from 1.12 to 1.56 kg/ha/mm compared to zero mulch, indicating strong water-saving benefits even in wet years (Ouattara et al., 2019).

Results from other SSA countries confirm mulching's adaptability and impact. In Ghana, cocoa establishment survival reached 91–94 percent under plastic or irrigation and 82 percent under organic mulch, compared to 70 percent without mulch, with higher soil moisture and early yields (Acheampong et al., 2019). In semi-arid Ghana, maize yields rose from 1.45 to 2.68 t/ha, and water use efficiency increased by 35 percent under residue mulch with tied ridges (Abdul Rahman et al., 2018). In Kenya, mulch improved pepper fruit mass to over 900 g/plant (Edgar et al., 2016), increased maize yields from 3.3 to 5.5 t/ha with 15–25 percent higher soil moisture (Kiboi et al., 2017), and raised water productivity by 19.8 percent in dry years (Waweru et al., 2024). In Uganda, tomato yields reached 23.7 t/ha with black polythene and 21.5 t/ha with dry grass versus 16.2 t/ha control (Chidimbah et al., 2020). In Nigeria, black polythene mulch increased okra yields to 18.5 t/ha, producing heavier and longer fruits with improved soil moisture (Hakim et al., 2021).

In Zimbabwe, tied ridging with mulch raised maize yields from 0.69 to 1.56 t/ha and delayed moisture stress onset by 2–3 weeks (Mhlanga et al., 2020). In Cameroon, cotton yields rose by 12–24 percent under mulch with no tillage (Naudin et al., 2010). In Mali, residue mulching increased sorghum yields by 22–45 percent and soil organic carbon by 8% over three seasons (Slingerland et al., 2000). A regional study in Zambia, Malawi, Kenya, and Tanzania found 60 percent runoff reduction and higher soil carbon under organic mulches, alongside better soil moisture retention and lower N_2O emissions compared to inorganic films (Kayusi et al., 2025).

Irrigation and Sustainable Water Harvesting and Management Practices

Irrigation is a key CSA practice for enhancing household resilience to climate shocks such as drought, rainfall variability, and dry spells in SSA. It encompasses multiple modalities, including gravity-fed community schemes, large-scale state-managed irrigation, pump-based small-scale systems, drip irrigation with mulching, supplemental irrigation using rainwater harvesting structures, and small reservoir-based irrigation. In Burkina Faso, farmers also use indigenous irrigation techniques such as micro-irrigation à cuvettes (“Koglogo”) and boulis (Savadogo et al., 2011; Naba et al., 2023).

Irrigation systems in Burkina Faso show strong impacts on yields, water productivity, and income. Community-managed schemes achieve rice yields of 4.3 t/ha with water productivity between 0.29 and 0.58 kg/m³ and fee recovery rates of 50–97 percent (Baki et al., 2025). In Di commune, irrigation increased net income by approximately USD 1,222/ha (Nyamba et Zidouemba, 2025). In Vallée du Kou and Karfiguéla schemes, paddy yields ranged from 3.1 to 4.8 t/ha with cropping intensity between 137 and 188 percent (Dembélé et al., 2012). Supplemental irrigation with rainwater basins raised maize yields by 19–26 percent, improved soil water storage by 46 percent, and mitigated 10-day dry spells (Doto et al., 2015). Drip irrigation with mulching doubled or tripled vegetable yields and increased water productivity from 2.74 to 4.75 kg/m³ (Masasi et al., 2024). In Sourou Valley, large-scale irrigation increased net income by 762,435 FCFA/ha, with yield gains of 2.31 t/ha for cereals, 0.89 t/ha for oilseeds, and 5.55 t/ha for vegetables (Nyamba et Zidouemba, 2025). Small reservoir systems produced rice yields of 3.1–5.8 t/ha and vegetable yields of 4–8.6 t/ha, with labor productivity up to USD 21.2/day and storage capacity of 4.2 million m³ (Poussin et al., 2015). Pond-based supplemental irrigation showed a 5 percent catchment income increase in dry years, shifting land use toward higher-value crops such as cotton (Sanfo et al., 2017). In Kou Valley, evapotranspiration rose by 12–16 percent, rice yields increased by 23 percent, and sweet potato yields by 53 percent, with crop water productivity reaching 1.30 kg/m³ for rice and 5.86 kg/m³ for sweet potato (Sawadogo et al., 2020). Adoption studies indicate 65–94 percent willingness to adopt supplemental irrigation, with rectangular basins preferred and adoption linked to bund access, improved seeds, and income (Zongo et al., 2015). Profitability analyses show an internal rate of return of 40 percent, a benefit–cost ratio of 2.25, and net benefits of 266,000 FCFA per household per season (Zongo et al., 2022).

In Ethiopia, Ghana, and South Africa, irrigation increased incomes by USD 176–1,630/ha (Nyamba et Zidouemba, 2025). In Mali, long-term pump-based irrigation raised NDVI by 32 percent, increased rice yields by 0.5 t/ha, reduced conflict incidence by 10 percentage points, and lowered child stunting rates (BenYishay et al., 2024). Over nine years, irrigating households saw poverty decline by 17 percent and livestock assets rise by 23% (Dillon, 2011). In Nigeria, irrigation adoption improved yield stability and profitability (Olayide et al., 2016). In Niger, the SPIN program expanded irrigated area sixfold in the rainy season, increased income by 7 percent, and doubled the income of the poorest 20 percent (Tillie et al., 2016).

Policy Recommendations

Based on the evidence presented, strengthening household resilience to climate shocks in Burkina Faso and across SSA requires turning proven SWCPs into scalable programs. The evidence points to a set of clear priority actions.

- **Prioritize Proven Practices for Scale-Up:** Governments and development partners should concentrate investments on practices that have shown strong and consistent resilience impacts. SWCPs such as zai pits, half-moons, and stone bunds have demonstrated substantial yield gains, improved soil fertility, and increased water retention in dry years. Mulching enhances soil quality and buffers against climatic variability. Irrigation, water harvesting, and management have demonstrated significant impacts on income, yield stability, and water productivity, particularly under erratic rainfall conditions. Targeting these proven practices ensures cost-effectiveness and rapid impact.
- **Strengthen Institutional and Extension Support:** Scaling SWCPs requires strong extension services and farmer support systems. Public investment should focus on expanding agricultural extension networks, improving farmer access to training, and ensuring timely information on climate risks and farming techniques. Partnerships between government agencies, NGOs, research institutions, and producer organizations can accelerate dissemination through farmer field schools, demonstration plots, and farmer-to-farmer learning networks. For irrigation, extension support should also cover water governance, infrastructure maintenance, and climate-informed scheduling to ensure efficiency and sustainability.
- **Facilitate Access to Inputs, Financing, and Land Security:** Widespread adoption depends on farmers' access to essential inputs such as composting materials, improved seeds, tools for zai and bund construction, and organic or mineral fertilizers. Financing mechanisms, including microcredit, input subsidies, or community savings schemes, can help farmers overcome upfront investment costs. Land tenure security is crucial for motivating investment in labor-intensive land restoration practices. Given the high capital and labor requirements of irrigation, financing and credit schemes targeting smallholder farmers, particularly women, are critical to support basin construction, drip system installation, and pump acquisition.
- **Facilitate Access to Equipment:** Widespread adoption depends first on farmers' access to appropriate agricultural equipment and tools required to implement soil and water conservation practices. This includes basic equipment such as hoes, shovels, pickaxes, carts, and mechanized or semi-mechanized tools for digging zai pits, constructing stone bunds, shaping half-moons, and managing compost. Promoting small-scale mechanization services, tool banks, and community-based equipment-sharing schemes can significantly reduce labor constraints, which are a major barrier to adoption, especially for women and labor-constrained households.
- **Promote Gender-Responsive and Inclusive Programming:** Women play a central role in land restoration, farm management, and household food security but face persistent barriers in accessing land, credit, training, and agricultural technologies. Policy

interventions should explicitly address these constraints through targeted capacity-building, gender-sensitive extension services, and inclusive program design. Strengthening and scaling community-based platforms such as Village Savings and Loan Associations (AVECs) and Dimitra Clubs can be particularly effective. AVECs enhance women's access to finance, enabling investment in SWCPs, equipment, and inputs. Dimitra Clubs foster inclusive community dialogue, collective action, and knowledge-sharing, improving women's participation in decision-making and facilitating the adoption of CSA practices. For irrigation, ensuring women's access to water rights, infrastructure, and cooperative management structures is essential to reduce gender gaps in productivity and income. Integrating these approaches within SWC agricultural programs can significantly enhance adoption rates, strengthen social cohesion, and amplify resilience outcomes at both household and community levels.

- **Integrate SWCPs into National Climate and Food Security Policies:** Proven SWCPs should be embedded in national agricultural investment plans, climate adaptation strategies, and food security programs in Burkina Faso and across SSA. Linking these practices to broader policy frameworks such as Nationally Determined Contributions (NDCs), land restoration strategies, and resilience programs can help mobilize funding and ensure sustained institutional support. Water harvesting, moisture conservation, and small-scale irrigation should be integrated into climate adaptation and water resource management policies to strengthen their role in stabilizing agricultural production, restoring degraded land, and enhancing resilience to climate shocks.
- **Invest in Monitoring, Evaluation, and Knowledge-Sharing:** Scaling soil and water conservation practices requires systematic monitoring of adoption rates, land restoration outcomes, productivity gains, and resilience to climate shocks. Governments and partners should invest in robust monitoring and evaluation (M&E) systems that generate reliable data on the performance of practices such as zai pits, half-moons, stone bunds, mulching, and water harvesting. Strengthening data systems will support evidence-based decision-making, improve targeting, and enable adaptive management of interventions. In parallel, platforms for knowledge-sharing, including farmer networks, extension services, and regional learning mechanisms, can accelerate the dissemination and replication of successful soil and water conservation models across Burkina Faso and similar agroecological zones in SSA.
- **Encourage Bundled and Context-Specific Approaches:** Evidence shows stronger results when practices are combined rather than applied in isolation. Scaling should target integrated practice packages rather than single interventions. Combining zai pits, half-moons, stone bunds, composting, and drought-tolerant seeds has shown to lead to higher productivity and resilience gains. Bundling irrigation and water management with these practices further amplifies benefits by stabilizing yields and incomes during prolonged dry spells. Farmer-to-farmer extension, community-based labor mobilization, mechanization support, and targeted subsidies can accelerate adoption. Bundling technical assistance with financing mechanisms and training will address structural barriers. Scaling efforts should also leverage regional initiatives and programs to replicate successful experiences from Burkina Faso in similar agroecological zones.

Conclusion

The impacts of climate change on agriculture in Burkina Faso and similar contexts in SSA are already visible and intensifying, particularly through increased rainfall variability, droughts, and land degradation. Evidence consistently shows that soil and water conservation practices such as zai pits, half-moons, stone bunds, mulching, and water harvesting can significantly reduce vulnerability, restore degraded land, and stabilize agricultural production under climate stress. Burkina Faso's long-standing experience with these practices provides a strong foundation for scaling effective and locally adapted solutions across SSA. Their effectiveness is further enhanced when implemented in integrated combinations and supported by appropriate extension services, access to equipment and inputs, inclusive financing mechanisms, and secure land tenure. Achieving large-scale impact will require aligning these proven practices with supportive policies, institutional coordination, and sustained investments. Embedding SWCPs within national climate adaptation, land restoration, and food security strategies will be critical to strengthening household resilience, improving rural livelihoods, and advancing climate-resilient agricultural systems.

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