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SOCIAL PROTECTION FOR OLDER FARMERS: AN INTEGRATIVE LITERATURE REVIEW OF COVERAGE, ADEQUACY, AND INSTITUTIONAL CHALLENGES

Farhanah Shahab[1]*, Raniasa Putra[2], Alamsyah [3]
[1,2,3]Universitas Sriwijaya, Indonesia
E-mail: 07012622529018@student.unsri.ac.id[1]* , raniasaputra@fisip.unsri.ac.id[2] , alamsyah78@fisip.unsri.ac.id[3]

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Abstract

As demographic ageing accelerates across developing economies, older farmers underpin national food security while remaining structurally exposed to volatile incomes, physical decline, and the absence of retirement guarantees. This study conducts an integrative literature review of 35 peer-reviewed and institutional publications (2015–2026) examining social protection for older farmers across three dimensions: coverage, adequacy, and institutional challenges. The synthesized evidence reveals a persistent divide between statutory eligibility and effective coverage, driven by agricultural informality, rigid contributory mechanisms, proxy-means targeting errors, and spatial delivery disparities. Moreover, prevailing social assistance transfers exhibit severe adequacy deficits, functioning merely as marginal cash supplements that fail to alleviate chronic geriatric nutritional insecurity, thereby compelling vulnerable seniors into hazardous, involuntary late-life labor. These deficits are reinforced by institutional barriers, wherein onerous administrative burdens spanning learning, compliance, and psychological costs are exacerbated by unmediated digital-by-default public services and fragmented governance. Conceptually, coverage, adequacy, and administration operate as an interlocking cycle of agrarian deprivation. Policy efforts must prioritize expanding effective coverage through non-contributory pensions, recalibrating benefit adequacy against geriatric living thresholds, and simplifying implementation via accessible non-digital service pathways and harmonized data systems.

Keywords: Benefit Adequacy; Effective Coverage; Integrative Literature Review; Older Farmers.

INTRODUCTION

Global demographic patterns are undergoing a profound structural transition marked by unprecedented population ageing, presenting complex socio-economic ramifications across low- and middle-income countries (Farhan et al., 2023). In predominantly agrarian settings, this demographic shift coincides with the reality that agriculture remains the primary livelihood source for a substantial share of the population, operating predominantly through smallholder, informal, or family-based farming arrangements (Bacil et al., 2020; Long, 2019). As domestic labor structures shift and younger generations migrate toward urban centers, older individuals increasingly bear the burden of sustaining farm production (Patunru & Respatiadi, 2017; Sun et al., 2023). Social protection for older farmers is not merely an individual welfare concern, but an urgent matter of public policy because aging agricultural workers underpin national food security while remaining structurally exposed to covariate climatic shocks, market volatility, and biological decrepitude without the insulation of formal safety nets (Brzeska et al., 2015; Tirivayi et al., 2016). When social protection fails to reach rural producers, the resulting erosion of old-age livelihoods threatens agricultural sustainability and deepens chronic rural poverty (Bacil et al., 2020; Long, 2019).

Older farmers occupy a precarious structural position that sharply distinguishes them from formal wage-earners. Unlike formal employees who benefit from regulated working hours, occupational safety standards, and employer-sponsored severance or retirement schemes, agrarian workers depend heavily on unpredictable seasonal harvests, experience high income volatility, and lack access to standard employment-based social insurance (Bakroh, 2026; Long, 2019; Patunru & Respatiadi, 2017). Consequently, they remain tied to continuous physical farm labor well into advanced age to secure day-to-day subsistence (Farhan et al., 2023; Pratama & Pratiwi, 2025).

Crucially, older farmers cannot be conceptualized as an undifferentiated, homogeneously destitute cohort lacking all institutional protection. Empirical scholarship demonstrates substantial heterogeneity across agrarian households: while landless agricultural wage laborers and tenant farmers confront acute destitution, physical disability, and near-zero pension access, other older farmers maintain productive land assets, engage in successful aging strategies, or receive informal intergenerational support from adult children that partially cushions old-age risks (Dupa & Cagas, 2021; Medawati et al., 2024; Sun et al., 2023). The true nature and distribution of these vulnerabilities therefore require rigorous empirical interrogation rather than uniform assumptions.

Analyzing social protection for older farmers necessitates deconstructing three interconnected dimensions: coverage, adequacy, and institutional challenges.

The first dimension, coverage, exposes the persistent divide between de jure statutory eligibility and de facto receipt of social protection (Bacil et al., 2020). While national legal frameworks may nominally entitle vulnerable seniors to social security or categorical social pensions, effective coverage among older farmers remains severely curtailed (Long, 2019). Contributory schemes systematically bypass informal agricultural workers due to inflexible premium requirements that clash with irregular farm cash flows, while non-contributory cash transfers are frequently hampered by narrow proxy-means tests, outdated poverty registries, and pronounced geographic disparities that exclude remote agrarian localities (Patunru & Respatiadi, 2017; Trisnawati et al., 2025).

The second dimension, adequacy, interrogates whether transfer amounts and benefit packages are sufficient to meet the essential living, nutritional, and healthcare requirements of older farmers. Available evidence indicates that where social pensions exist, benefit levels are often meager and fall far below basic subsistence thresholds, functioning at best as a modest supplement rather than a genuine guarantee of income security (Bakroh, 2026; Long, 2019). As a result, transfer inadequacy fails to resolve chronic elderly food insecurity or nutritional deficits, thereby forcing older adults to continue strenuous agricultural work despite degenerative physical decline (Bakroh, 2026; Huzaimah et al., 2023). Conversely, when pension benefits achieve meaningful adequacy, they exert a tangible substitution effect, providing older farmers with the financial security required to voluntarily retire and lease out their cultivated land (Sun et al., 2023).

The third dimension, institutional challenges, captures how program design and administrative governance govern real-world access to entitlements. Drawing on administrative burden theory, older farmers seeking social benefits face substantial learning costs in deciphering complex program rules, high compliance costs in procuring documentation and traveling across fragmented rural jurisdictions, and severe psychological costs associated with bureaucratic gatekeeping and welfare stigma (Benoit & Marier, 2024; Dupa & Cagas, 2021). Moreover, contemporary institutional efforts to streamline public administration through digital service delivery and e-government platforms often introduce new operational barriers (Giest & Samuels, 2023). Rather than easing administrative frictions, digital-by-default mechanisms frequently exacerbate exclusion among older farmers due to limited digital literacy, inadequate rural telecommunication infrastructure, and software interfaces incompatible with the realities of aging rural households (Hegemann & Ritz, 2026; Reissig et al., 2022).

A preliminary scoping of the existing literature reveals that scholarly inquiries into social protection for agricultural populations have largely progressed along isolated thematic tracks. One stream of research evaluates macro-level pension coverage and fiscal sustainability within formal labor markets, frequently overlooking the institutional realities of non-salaried, informal agrarian labor (Bakroh, 2026; Long, 2019). A parallel body of literature investigates agrarian livelihoods, agricultural risk, and the physical vulnerabilities of aging farmworkers without adequately engaging with social protection policy architectures (Farhan et al., 2023; Tirivayi et al., 2016). Concurrently, public administration studies on administrative burden and e-government barriers remain concentrated in urban or commercial settings, leaving the specific frictions encountered by aging rural producers underexplored (Benoit & Marier, 2024; Reissig et al., 2022). Consequently, the literature lacks an integrative synthesis that systematically examines how legal coverage rules, benefit adequacy levels, and institutional administrative mechanisms interact to shape welfare outcomes for older farmers (Bakroh, 2026; Tirivayi et al., 2016).

To address this fragmentation, this review is guided by four overarching research questions:

1. RQ1: How is social protection for older farmers conceptualized and structured in the existing literature?
2. RQ2: What does the literature reveal about the coverage, eligibility, and adequacy of social protection programs for older farmers?
3. RQ3: What institutional and implementation challenges constrain the delivery of social protection to older farmers?

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4. RQ4: How can the literature on coverage, adequacy, and institutional challenges be integrated to inform more inclusive social protection policies for older farmers?

This study aims to integrate existing empirical and conceptual literature on social protection for older farmers, focusing on program coverage, benefit adequacy, and institutional challenges. It seeks to identify recurring patterns, conflicting findings, and gaps in existing knowledge, and to develop an integrated conceptual framework to inform more inclusive social protection policies across different national contexts. By bridging previously disconnected analytical domains, this review contributes to social policy, rural development, and gerontological scholarship by clarifying the conditions under which social protection can foster dignified later-life livelihoods for the world's aging agricultural workforce.

LITERATURE REVIEW

Social Protection for Older Farmers: Concepts and Context

Social protection is broadly conceptualized as a set of public and institutional measures designed to prevent, manage, and overcome situations of poverty, vulnerability, and social exclusion throughout the life cycle (Bacil et al., 2020; Tirivayi et al., 2016). For older farmers, social protection serves as a critical buffer against covariate agro-climatic risks and idiosyncratic biological shocks associated with aging (Brzeska et al., 2015; Holmes et al., 2007). Older farmers constitute a distinctive occupational cohort characterized by seasonal and volatile earnings, hazardous working environments, and the absence of a statutory retirement age (Farhan et al., 2023; Medawati et al., 2024).

Functionally, social protection encompasses four core pillars: old-age pensions, social assistance cash transfers, subsidized health coverage, and agricultural income guarantees (Patunru & Respatiadi, 2017; Widjaja & Abadi, 2025). However, a fundamental institutional divide persists between contributory, employment-based social insurance and non-contributory, tax-financed social assistance (Bacil et al., 2020; Putri & Alginda, 2026). Contributory schemes, such as formal civil or private pension systems, require regular payroll deductions and stable employer-employee contracts—prerequisites virtually nonexistent in smallholder and peasant agriculture (Bakroh, 2026; Long, 2019). Consequently, older agrarian workers rely almost entirely on non-contributory social assistance or basic social pensions (asistensi lanjut usia), which are traditionally underfunded and administratively fragmented (Anggraini, 2018; Nawawi, 2021).

Coverage: Legal Entitlement and Effective Protection

A central inquiry in rural welfare studies concerns the discrepancy between statutory entitlement and realized access. Diagnostic frameworks distinguish legal coverage (the statutory inclusion of a group under formal legislation) from effective coverage (the actual proportion of eligible individuals receiving timely, meaningful benefits) (Bacil et al., 2020). While older farmers may nominally qualify for generalized safety nets under constitutional mandates, effective coverage remains systematically depressed by high exclusion errors—the operational failure to enroll genuinely impoverished and eligible rural seniors (Amanda et al., 2024; Yemtsov et al., 2018). This targeting failure is exacerbated by categorical conditions attached to conditional cash transfers (e.g., child school enrollment requirements), which structurally filter out solitary or skipped-generation older farmers (Suharto, 2015).

The primary driver of this coverage gap is the entrenched informality of agricultural work (Patunru & Respatiadi, 2017; Putri & Alginda, 2026). Standardized social insurance models impose rigid, fixed monthly premium payments that clash with the seasonal liquidity constraints of peasant agriculture, thereby pricing out smallholders and daily farm laborers (Long, 2019; Patunru & Respatiadi, 2017). Furthermore, coverage exhibits pronounced geographic and spatial disparities (Trisnawati et al., 2025). Remote rural areas and peripheral borderlands suffer from severe delivery friction, characterized by absent banking infrastructure, sparse registration offices, and incomplete civil registries, which disenfranchises isolated rural seniors from exercising their statutory entitlements (Yod et al., 2025).

Adequacy: Income Security and Livelihood Protection

Even when older farmers achieve effective coverage, the crucial question remains whether social transfers provide adequate welfare protection. Across developing and transitional economies, non-contributory social assistance transfers are notoriously parsimonious, functioning merely as marginal cash injections rather than genuine income-replacement mechanisms (Bakroh, 2026; Long, 2019). Empirical nutritional assessments demonstrate that inadequate pension benefits fail to guarantee food security and dietary diversity, leaving low-

income older adults exposed to caloric deficits and chronic micronutrient deficiencies (Bakroh, 2026; Huzaimah et al., 2023).

Because transfer values fall substantially below local subsistence thresholds, older farmers are trapped in involuntary late-life labor (Bakroh, 2026; Pratama & Pratiwi, 2025). Older agricultural laborers are compelled to continue strenuous fieldwork despite deteriorating visual acuity, chronic musculoskeletal disorders, and elevated occupational hazards (Farhan et al., 2023; Nurfitriani et al., 2021). Farmland continues to serve as an indispensable, physical survival instrument rather than an asset for retirement (Sun et al., 2023). When institutional benefits remain meager, older farmers are forced to adopt precarious coping strategies, including borrowing from informal moneylenders, relying on precarious kin altruism, or accepting low-wage casual work when displaced by agricultural mechanization (Nurfitriani et al., 2021; Sari & Handoyo, 2022). Conversely, empirical evidence confirms that when social pension benefits reach a threshold of financial adequacy, they exert a robust substitution effect, empowering older farmers to voluntarily retire, preserve their physical health, and lease out their cultivated land to younger agricultural operators (Sun et al., 2023).

Institutional Challenges and Integrated Conceptual Framework

The structural gap between policy ambition and grassroots reality is driven by formidable institutional bottlenecks. Applying the lens of administrative burden, older farmers confront three distinct operational costs: learning costs (navigating complex, opaque eligibility guidelines), compliance costs (procuring civil identification, completing bureaucratic dossiers, and financing long-distance travel to municipal offices), and psychological costs (navigating stigmatizing means-testing, discretionary gatekeeping, and bureaucratic intimidation) (Afif & Sari, 2026; Benoit & Marier, 2024; Dupa & Cagas, 2021). These administrative hurdles disproportionately penalize older farmers due to prevailing functional illiteracy, cognitive aging, and limited institutional autonomy (Kurniyawan et al., 2022; Medawati et al., 2024).

These procedural frictions are further amplified by a growing digital exclusion (Giest & Samuels, 2023; Hegemann & Ritz, 2026). As public agencies increasingly implement "digital-by-default" governance, automated registration portals, and electronic banking disbursements, older farmers are marginalized by inadequate rural broadband connectivity, lack of digital literacy, and touchscreen interfaces poorly tailored to sensory-impaired seniors (Nuanmeesri, 2020; Reissig et al., 2022). Simultaneously, institutional siloization and program fragmentation across agricultural, social affairs, and health ministries generate redundant reporting procedures and contradictory targeting criteria (Nawawi, 2021; Noya, 2025; Poppe et al., 2021).

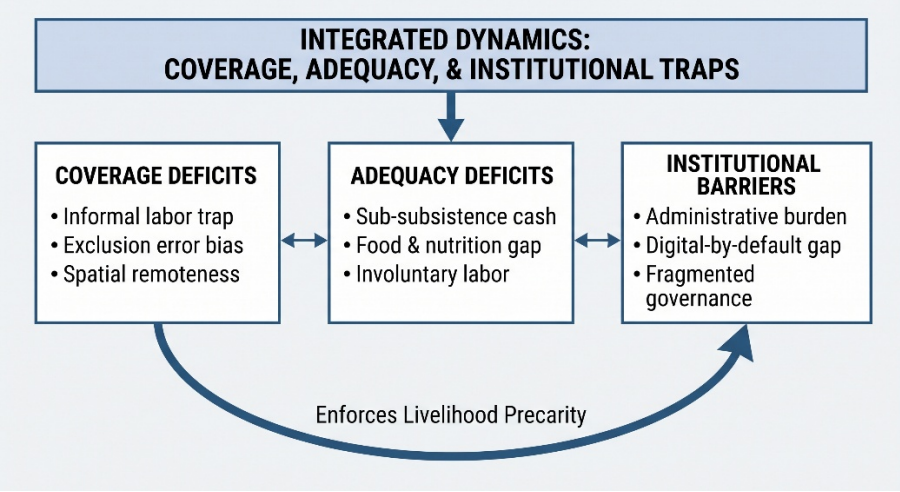


Image 1: Integrated Dynamics: Coverage, Adequacy, & Institutional Traps

As synthesized above, coverage, adequacy, and institutional challenges do not operate as isolated silos; they function as a mutually reinforcing structural trap. Restrictive administrative and digital burdens depress effective coverage, institutional fragmentation suppresses benefit adequacy through high transaction costs, and inadequate transfers force older farmers back into informal, unprotected agricultural labor. Overcoming this cycle requires an integrated policy architecture that combines universal non-contributory social pensions, flexible contribution arrangements tailored to agrarian harvest cycles, and proactive administrative mediation designed

with participatory co-production principles (Benoit & Marier, 2024; Mulvale & Robert, 2021; Putri & Alginda, 2026).

METHOD

Research Design

This study adopts an Integrative Literature Review (ILR) design, guided by the methodological framework advanced by Whittemore and Knafl (2005). An integrative review approach is selected because it represents a sophisticated review method that allows for the simultaneous synthesis of diverse methodological traditions—including experimental and quasi-experimental inquiries, microeconometric panel surveys, qualitative phenomenological studies, legal-policy analyses, and institutional reports (Whittemore & Knafl, 2005). Combining diverse empirical and conceptual evidence is essential to capture the complex, multi-layered phenomena surrounding social protection access among aging agricultural populations, which cannot be adequately captured through single-method review protocols (Whittemore & Knafl, 2005).

The core focus of this review centers on the operationalization of social protection for older farmers across three analytical domains: coverage, adequacy, and institutional challenges. The primary unit of analysis comprises published peer-reviewed journal articles, institutional policy papers, and doctoral dissertations that investigate the vulnerabilities, social security entitlements, and bureaucratic barriers encountered by older farmers and aging rural agricultural workers.

Data Sources and Search Strategy

Primary literature retrieval was conducted using Google Scholar harvested systematically through Harzing's Publish or Perish (PoP) software, which provides comprehensive coverage of both international indexed journals and high-impact regional agrarian scholarship. The publication timeframe was restricted to studies published between 2015 and 2026, capturing the most recent decade of agrarian transformation, digital government expansion, and social protection reforms in developing and transitional economies. Seminal institutional benchmarks published prior to this window were retained where they provided indispensable baseline frameworks.

The search strategy employed combinations of Boolean operators (AND, OR) integrating three keyword clusters:

1. Target Population: ("older farmers" OR "elderly farmers" OR "aging agricultural workers" OR "rural elderly" OR "petani lansia")
2. Intervention / Subject: ("social protection" OR "social security" OR "pension" OR "cash transfer" OR "safety net" OR "perlindungan sosial")
3. Core Dimensions / Barriers: ("coverage" OR "adequacy" OR "administrative burden" OR "access" OR "informality" OR "hambatan").

To establish rigorous boundaries, clear inclusion and exclusion criteria were applied:

1. Inclusion Criteria: (1) Studies focusing explicitly on older farmers, aging agricultural laborers, or the rural elderly in agricultural contexts; (2) Inquiries investigating non-contributory or contributory social protection schemes, old-age pensions, social assistance, or health guarantees; (3) Rigorous empirical (quantitative, qualitative, mixed-methods), legal-normative, or conceptual research designs; and (4) Publications written in English or Indonesian.
2. Exclusion Criteria: (1) Studies examining urban, formal-sector pension systems without rural or agrarian applicability; (2) Strictly agronomic, biological, or technical crop-production studies devoid of socio-economic protection dimensions; and (3) Non-peer-reviewed commentaries, brief editorials, and duplicate records.

To maximize search comprehensiveness, primary electronic searches were complemented by manual backward and forward citation tracking (snowballing) from the reference lists of seminal institutional reports and core theoretical texts (Whittemore & Knafl, 2005).

Literature Selection and Analysis Process

The literature selection process followed a transparent, multi-stage protocol modeled after established systematic standards and Whittemore and Knafl's (2005) evaluation stages:

1. Identification: Literature querying via Publish or Perish yielded initial candidate records across databases.
2. Deduplication: Duplicate records, automated citations, and corrupted files were identified and excised.
3. Title and Abstract Screening: Remaining records were screened against the eligibility criteria, removing articles lacking relevance to agrarian welfare or social protection.

4. Full-Text Eligibility Assessment: Full-text manuscripts were retrieved and evaluated to confirm analytical alignment with at least one dimension of the coverage–adequacy–institutions triad.
5. Quality Appraisal: Rather than using a rigid single-scale scoring metric that biases against qualitative or gray policy literature, methodological quality was appraised based on internal validity, theoretical coherence, sampling appropriateness, and empirical transparency (Whittemore & Knafl, 2005). Authoritative reports from multilateral agencies (e.g., World Bank, FAO) were appraised based on methodological rigor and policy influence.
6. Final Inclusion: A finalize

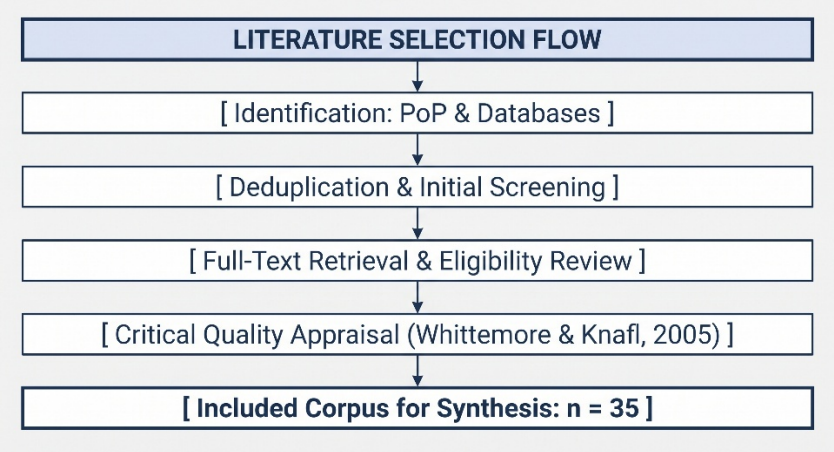


Image 2: Literature selection flow

Data Extraction and Thematic Synthesis

Data extraction was executed using a standardized extraction matrix comprising seven distinct operational parameters: (1) Identity (author, year), (2) Target population, (3) Thematic focus, (4) Type of evidence, (5) Methodology, (6) Preliminary inclusion decision, and (7) Relevance rationale.

Data synthesis followed the five-stage integrative review method outlined by Whittemore and Knafl (2005): data reduction, data display, data comparison, conclusion drawing, and verification. Extracted evidence was coded inductively to identify recurring patterns, cross-case regularities, and empirical contradictions across heterogeneous national contexts. Constant comparative analysis was utilized to cluster disparate data into unified analytical sub-themes.

Finally, the synthesized evidence was mapped into the study's three-dimensional conceptual triad:

1. Coverage Barriers: Structural informality, proxy-means targeting errors, and spatial delivery disparities (Bacil et al., 2020; Long, 2019; Yemtsov et al., 2018).
2. Adequacy Deficits: Sub-subsistence benefit levels, dietary/nutritional insecurity, and the compulsion of late-life agricultural labor (Bakroh, 2026; Huzaimah et al., 2023; Sun et al., 2023).
3. Institutional Challenges: Administrative burdens (learning, compliance, and psychological costs), e-government digital divides, and scheme inflexibility (Benoit & Marier, 2024; Hegemann & Ritz, 2026; Reissig et al., 2022).

This iterative analytical synthesis facilitated the development of a grounded, integrated conceptual framework capable of informing inclusive social protection policy design for older farmers.

RESULTS AND DISCUSSION

Profile and Characteristics of the Literature

The final corpus of this integrative literature review comprises 35 publications examining social protection, rural ageing, and institutional barriers facing agrarian workers. As illustrated in Table 1, the temporal distribution demonstrates a marked acceleration of scholarly interest, with over 80% of the included literature published between 2020 and 2026, reflecting global policy urgency surrounding demographic ageing, informal sector precarity, and digital public administration.

Geographically, the literature spans diverse developing, emerging, and developed contexts. Southeast Asia—predominantly Indonesia (21 studies), alongside Vietnam (Long, 2019) and the Philippines (Dupa & Cagas, 2021)—serves as the primary focal area, capturing the acute tensions between agrarian demographic ageing and immature rural welfare regimes. These regional insights are complemented by large-scale microeconometric

investigations from East Asia (China: Sun et al., 2023), empirical analyses of rural digitalization in Europe (Switzerland: Reissig et al., 2022; Netherlands: Poppe et al., 2021; Canada: Benoit & Marier, 2024), and foundational conceptual frameworks from international development agencies (FAO: Bacil et al., 2020; World Bank: Yemtsov et al., 2018; OECD: Putri & Alginda, 2026).

Methodologically, the corpus exhibits rich pluralism: 37% utilize quantitative designs (including panel econometric analyses like IFLS, CHARLS, and VHLSS), 34% employ in-depth qualitative phenomenologies or ethnographic case studies, 17% provide policy and legal-institutional analyses, and 12% contribute systematic literature reviews and conceptual frameworks. Programmatically, the studies interrogate four main interventions: non-contributory social assistance cash transfers (e.g., PKH, BLT, ASLUT), formal contributory social insurance (pension and employment injury schemes), digital e-government portals, and integrated agro-social safety nets.

Table 1. Profile and Characteristics of the Included Literature (n = 35)

Thematic Cluster & Focus	Author	Geographic Scope	Research Design / Methodology	Social Protection Scheme Examined
Macro Coverage Frameworks & Informality Traps	Bacil et al. (2020); Yemtsov et al. (2018); Putri & Alginda (2026); Patunru & Respatiadi (2017); Long (2019); Anggraini (2018)	Global, Indonesia, Vietnam	Quantitative diagnostics, econometric modeling, policy review	Universal social pensions, contributory schemes (BPJS), agricultural labor insurance
Targeting Errors, Cash Transfers, & Spatial Inequities	Amanda et al. (2024); Suharto (2015); Trisnawati et al. (2025); Yod et al. (2025); Sarkila et al. (2024); Widjaja et al. (2025)	Indonesia (National, Urban-Rural, Frontier/Merauke)	Mixed methods, qualitative case studies, legal-doctrinal	Conditional Cash Transfers (PKH), non-cash food aid (BPNT), village cash funds (BLT-DD)
Benefit Adequacy, Nutrition, & Late-Life Labor	Bakroh (2026); Huzaimah et al. (2023); Nurfitriani et al. (2021); Pratama & Pratiwi (2025); Farhan et al. (2023); Medawati et al. (2024)	Indonesia (Java, Sumatra/ Bangka)	Longitudinal panel econometrics (IFLS), qualitative phenomenology, ergonomic surveys	Social pensions, local elderly food assistance, informal subsistence coping
Productive Safety Nets & Land Rental Decisions	Sun et al. (2023); Tirivayi et al. (2016); Holmes et al. (2007); Brzeska et al. (2015); Sari (2022)	China, Global/Developing regions, Indonesia	Microeconometrics (CHARLS), global systematic reviews, rural sociology	Basic Old-Age Insurance, agricultural input subsidies, productive social safety nets
Administrative Burden: Learning, Compliance, & Psychological Costs	Benoit & Marier (2024); Afif & Sari (2026); Dupa & Cagas (2021); Kurniyawan et al. (2022); Noya (2025); Nawawi (2021); Mulvale & Robert (2021)	Canada, Indonesia, Philippines	Qualitative interviews, participatory action research, public governance analysis	Home care subsidies, senior citizen benefits, integrated social registry (DTKS)
Digital Exclusion & E-Government Burdens	Hegemann & Ritz (2026); Reissig et al. (2022); Giest & Samuels (2022); Nuanmeesri (2019); Poppe et al. (2021)	Global review, Switzerland, Netherlands, Thailand	Systematic review, structural equation modeling (SEM), user-centered software design	E-government portals, automated agricultural subsidy reporting, mobile farmer apps

Coverage: Legal Entitlement versus Effective Protection

The synthesized literature reveals a profound structural chasm between statutory eligibility (de jure coverage) and the actual receipt of benefits (de facto protection) among older farmers. Diagnostic frameworks established by multilateral bodies emphasize that legal entitlement does not automatically translate into effective realization unless delivery systems account for agrarian realities (Bacil et al., 2020; Yemtsov et al., 2018). In developing agrarian economies, this gap is primarily driven by the structural informality trap (Patunru & Respatiadi, 2017; Putri & Alginda, 2026). Contributory pension and occupational injury systems—such as Indonesia's BPJS Ketenagakerjaan—are institutionally premised on steady employer-employee relationships and predictable monthly wage deductions (Patunru & Respatiadi, 2017). Because smallholders and tenant farmers derive their livelihoods from volatile, seasonal harvest cycles, they are structurally priced out of formal insurance,

leaving over 80% of aging agricultural laborers without any formal retirement guarantee (Long, 2019; Patunru & Respatiadi, 2017).

Consequently, older farmers are forced to rely on tax-financed, non-contributory social assistance; yet here, access is systematically curtailed by pervasive exclusion errors and targeting failures (Amanda et al., 2024; Yemtsov et al., 2018). Poverty-targeting instruments, such as proxy-means tests embedded within national social registries (e.g., DTKS), frequently utilize rigid physical asset indicators that misclassify older farmers who possess unproductive land parcels as "non-poor," effectively barring them from basic safety nets (Amanda et al., 2024; Sarkila et al., 2024). Furthermore, conditional social protection models inadvertently generate institutional exclusion (Suharto, 2015). Flagship programs like the Family Hope Program (PKH) condition cash disbursements on maternal healthcare or child schooling metrics; as a result, older, solitary farmers or households without school-aged dependents are systematically deprioritized or dropped from beneficiary rosters (Suharto, 2015). Even specialized social assistance schemes explicitly designed for the elderly (Program Asistensi Sosial Lanjut Usia / ASLUT) suffer from severe fiscal caps, reaching only a minuscule fraction of the indigent rural aged (Anggraini, 2018).

This exclusion is compounded by pronounced spatial and geographic disparities (Trisnawati et al., 2025; Yod et al., 2025). Social protection delivery mechanisms exhibit an entrenched urban bias, relying on centralized administrative hubs and formalized banking infrastructure (Trisnawati et al., 2025). In peripheral rural and frontier regions—as documented in Merauke, Papua—older subsistence farmers confront extreme physical isolation, incomplete civil registries, and exorbitant transportation costs required to reach municipal bank branches, creating a paradox where those in the deepest geographic isolation are least capable of accessing their legal entitlements (Yod et al., 2025).

Adequacy: Income Security and Livelihood Protection

Beyond the barrier of entry, the literature demonstrates that prevailing social protection benefits exhibit severe adequacy deficits, functioning as modest, irregular emergency relief rather than genuine income-security mechanisms (Bakroh, 2026; Long, 2019). Microeconometric evaluations indicate that existing cash transfers replace only an insignificant portion of previous earnings, failing to provide the consumption smoothing necessary to maintain basic welfare in later life (Bakroh, 2026; Yemtsov et al., 2018). Crucially, transfer inadequacy directly undermines food security and dietary adequacy (Bakroh, 2026; Huzaimah et al., 2023). Inadequate social transfers fail to insulate vulnerable seniors from chronic nutritional deprivation; low-income rural elderly are frequently restricted to monotonous, carbohydrate-dominant diets devoid of essential animal proteins and micronutrients, compounding existing geriatric health vulnerabilities (Bakroh, 2026; Huzaimah et al., 2023).

Because institutional transfers fail to satisfy basic survival needs, older farmers are trapped in involuntary late-life farm labor (Bakroh, 2026; Pratama & Pratiwi, 2025). Rather than reflecting active and healthy ageing, continuing farm labor among older rural workers represents a desperate survival strategy driven by the absolute absence of a retirement safety net (Nurfitriani et al., 2021; Pratama & Pratiwi, 2025). Older agricultural laborers must perform arduous, manual field tasks despite degenerative musculoskeletal disorders, deteriorating visual capacity, and extreme occupational risks (Farhan et al., 2023; Medawati et al., 2024). Rapid agricultural modernization intensifies this vulnerability: when heavy machinery like combine harvesters displaces traditional post-harvest manual labor, elderly agricultural workers—lacking institutional transition assistance—are pushed into precarious informal coping mechanisms, including chronic indebtedness to local patrons, asset decumulation, or dependency on fragile kinship charity (Nurfitriani et al., 2021; Sari, 2022).

Conversely, empirical evidence from transitional economies demonstrates that when social pension benefits achieve a threshold of financial adequacy, they generate transformative productive effects (Sun et al., 2023). In rural China, adequate social pension income fundamentally alters elderly farmers' land management behavior: by decoupling daily subsistence from manual agricultural exploitation, sufficient pension transfers give aging farmers the financial security required to exit manual labor, preserve their failing health, and rent out their cultivated land to younger, more efficient agricultural operators (Sun et al., 2023). This finding corroborates global evidence that adequate social protection does not foster dependency, but acts as a productive catalyst that stabilizes rural consumption, enhances agricultural efficiency, and preserves human dignity in old age (Brzeska et al., 2015; Holmes et al., 2007; Tirivayi et al., 2016).

Institutional Challenges and Integrated Policy Implications

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The bottleneck between policy intent and operational reality is governed by profound institutional frictions, best understood through the theoretical lens of administrative burden (Benoit & Marier, 2024; Hegemann & Ritz, 2026). Older farmers seeking social protection confront formidable learning costs arising from opaque bureaucratic communication, complex means-testing rules, and widespread informational asymmetries (Dupa & Cagas, 2021). These are compounded by high compliance costs, wherein frail elderly applicants must secure civil documents, complete intricate bureaucratic dossiers, and travel arduous distances across fragmented municipal jurisdictions (Afif & Sari, 2026; Benoit & Marier, 2024). Furthermore, the literature documents severe psychological costs: discretionary gatekeeping by local street-level bureaucrats, intrusive means-testing verifications, and pervasive social stigma cause acute humiliation, leading many indigent older farmers to forfeit their claims entirely (Afif & Sari, 2026; Kurniyawan et al., 2022).

These institutional frictions are exacerbated by the rapid, uncoordinated push toward e-government and digital service provision (Giest & Samuels, 2022; Hegemann & Ritz, 2026). While digitalization is championed by public authorities to reduce transaction overhead, it frequently manifests as an insurmountable barrier for rural seniors (Hegemann & Ritz, 2026; Reissig et al., 2022). Older farmers disproportionately experience sensory and cognitive decline, low digital literacy, and lack of modern hardware, making automated self-service portals and biometric verification systems engines of structural disenfranchisement (Giest & Samuels, 2022; Nuanmeesri, 2019). Furthermore, public administration suffers from severe governance fragmentation (Nawawi, 2021; Noya, 2025). Social protection, health, and agricultural policies operate in distinct institutional silos with incompatible databases and overlapping mandates, imposing duplicate reporting requirements that overwhelm aging rural citizens (Noya, 2025; Poppe et al., 2021).

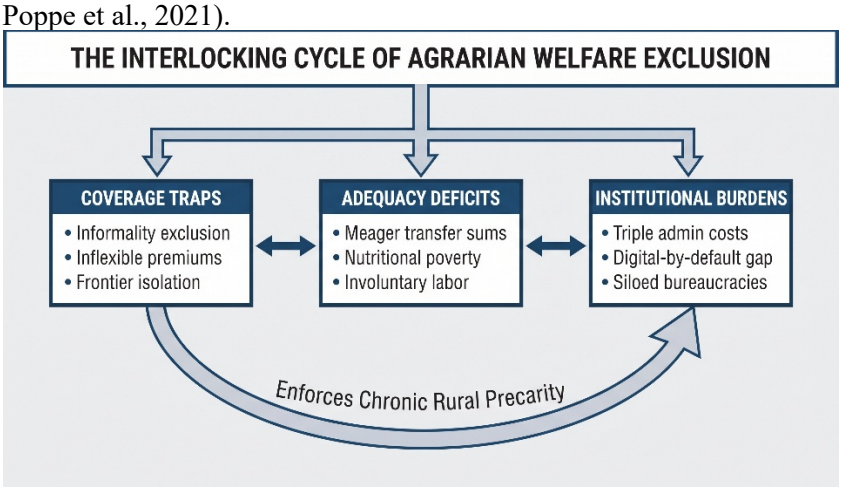


Image 3: Integrated Policy Implications

As conceptualized in the model above, coverage, adequacy, and institutional challenges do not operate as detached vectors; they constitute an interlocking cycle of deprivation. Overcoming this cycle requires an integrated, multi-pronged policy roadmap:

1. Universal Non-Contributory Social Pensions: Transitioning from narrow proxy-means testing toward categorical, universal old-age social pensions for all rural seniors, thereby eliminating administrative learning costs, eradicating exclusion errors, and respecting constitutional social justice mandates (Anggraini, 2018; Putri & Alginda, 2026; Widjaja et al., 2025).
2. Seasonally Adaptive Contribution Architecture: Restructuring formal insurance schemes (such as BPJS) to accommodate agrarian liquidity cycles by replacing rigid monthly premiums with flexible, post-harvest annual contributions subsidized by state agrarian budgets (Patunru & Respatiadi, 2017).
3. De-burdening and Assisted Intermediation: Mitigating digital exclusion by investing in human social infrastructure—such as rural caseworkers, mobile village navigators, and community libraries—that absorb administrative and digital burdens on behalf of elderly farmers (Giest & Samuels, 2022; Hegemann & Ritz, 2026).
4. Co-Production and Interoperability: Designing social programs through participatory co-production with aging farming communities and establishing unified agrifood-social data architectures (single data entry) to dismantle inter-agency silos and ensure dignified old-age security (Mulvale & Robert, 2021; Poppe et al., 2021).

CONCLUSION

This integrative review demonstrates that the welfare precarity of older farmers cannot be understood through isolated policy metrics; rather, it is generated by an interlocking triad of coverage gaps, benefit inadequacy, and institutional frictions. While national policy frameworks frequently acknowledge older adults in statutory terms, agricultural informality, rigid means-testing errors, and spatial isolation systematically depress effective coverage. Furthermore, prevailing social transfers suffer from severe adequacy deficits, failing to guarantee basic nutritional security or provide meaningful income replacement, which ultimately compels vulnerable seniors to continue hazardous, involuntary agricultural labor well into advanced age. Rather than mitigating these vulnerabilities, rigid contribution models, bureaucratic red tape, and unmediated "digital-by-default" public services impose onerous learning, compliance, and psychological costs that disenfranchise rural applicants. Conceptually, this review advances the literature by demonstrating that coverage, adequacy, and administration are mutually reinforcing: administrative burdens depress effective coverage, meager benefits undermine program participation, and the resulting institutional vacuum perpetuates structural agrarian poverty.

Based on these synthesized findings, policy efforts should pursue three context-sensitive directions tailored to specific agrarian political economies rather than implemented as universal blueprints: expanding effective coverage through non-contributory categorical pensions and seasonally adaptive contribution models, strengthening benefit adequacy to guarantee geriatric nutritional security, support basic livelihoods, and prevent involuntary late-life agricultural labor and simplifying administrative implementation by retaining accessible non-digital service pathways, deploying community-based intermediaries, and harmonizing inter-agency data systems to reduce learning, compliance, and psychological burdens.

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