Integrating Agricultural Insurance with Human Resource Management in Polish Farms

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***Abstract*— Farm insurance is usually assessed through premiums, indemnities and the stability of agricultural income, whereas human resource management is discussed as a separate field. In a farm, this separation is artificial: a weather loss, machinery failure or illness of a key person quickly becomes a staffing, workload, retention or succession problem. The purpose of this paper is to explain how agricultural, social and employee insurance can support workforce resilience in Polish farms. The study uses an integrative review of 25 scientific publications written exclusively by Polish authors and a mechanism-based conceptual synthesis. The analysis identifies three links between insurance and human resource outcomes: cash-flow continuity, personal-risk protection and organisational confidence. It also proposes an insurance-HRM fit model for family-only, hybrid and employer farms. The findings show that insurance creates human resource value only when coverage reflects the farm's labour model, claims can finance a predefined continuity response, and prevention remains the first line of control. Insurance should therefore be managed as part of workforce planning rather than as an isolated annual purchase.**

***Keywords*— agricultural insurance, human resource management, farm resilience, workforce continuity, risk management, Poland**

I. INTRODUCTION

Agricultural production exposes the same organisation to several kinds of uncertainty at once. Weather may reduce yield, a disease may affect livestock, a machine may stop during a short production window, and an accident may remove the only person who knows how to perform a critical task. These events are normally placed in separate management categories. Crop losses belong to insurance and finance, while absence, workload, retention and succession belong to human resource management (HRM). This division is convenient for textbooks and administrative procedures, but it does not reflect the way a farm actually operates. In a farm, the production system and the human system are tightly coupled.

Polish agriculture makes this coupling especially visible. A large part of the sector is based on family farms, where the owner is simultaneously an investor, manager and worker. Some holdings rely almost entirely on family labour, some combine family work with seasonal employees, and others employ a permanent team. The person who decides whether to insure a crop may also organise work, train a successor, operate machinery and cover a staffing gap. Consequently, a loss that appears on the asset side of the farm's balance sheet can rapidly change working hours, delay remuneration, cancel training or push skilled workers towards a more stable employer.

Polish research provides solid knowledge about each side of this problem, although the two streams are rarely brought together. Agricultural economists have examined farmers' risk attitudes, the use of subsidised crop insurance, index solutions, agricultural social insurance and the financial effects of insurance (Janowicz-Lomott and Łyskawa, 2016; Kaczała and Łyskawa, 2020; Sulewski et al., 2020). HRM scholars, in turn, treat employees' health, engagement, competence and continuity as resources that require deliberate investment and protection (Król and Ludwiczyński, 2006; Juchnowicz, 2012; Pocztowski, 2018). Research on group life and health insurance shows directly that absence, accidents and the loss of key employees are insurable dimensions of human resource risk (Ostrowska-Dankiewicz and Tomczyk, 2017).

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The missing element is a management explanation of how an insurance contract can affect workforce decisions in an agricultural enterprise. An indemnity does not train an employee, prevent a fall or solve a succession dispute. It may, however, preserve the cash and time needed to do those things. Likewise, group health or accident cover does not replace safe work organisation, but it may shorten the financial distance between an accident and treatment, rehabilitation or return to work. The relevant question is therefore not whether insurance is an HR instrument by definition. It is whether and under what conditions risk transfer protects the farm's capacity to deploy, retain and renew its human resources.

The purpose of this article is to develop a conceptual framework that integrates agricultural insurance with HRM in Polish farms. Two research questions are addressed. First, through what mechanisms can insurance influence the continuity and quality of human resources in a farm? Second, how should the insurance-HRM configuration differ between family-only, hybrid and employer farms? The contribution is an insurance-HRM fit model that links risk events, insurance instruments, claims-funded responses and desired workforce outcomes. The model is intended as a basis for later empirical testing and as a practical decision structure for farm managers.

II. MATERIALS AND METHODS

The paper uses an integrative literature review combined with mechanism-based conceptual analysis. This approach was selected because the research problem lies between two established fields and the purpose is theory building rather than an estimate of a single causal effect. The review was completed on 2 August 2026. Searches covered Polish academic repositories, journal platforms, university research databases and publisher records. Combinations of Polish and English terms were used, including agricultural insurance, crop insurance, farm risk, farmers' social insurance, accident at agricultural work, human resources, employee absence, group life insurance, employee benefits and workforce continuity. Backward reference tracing was used only to locate publications that met the same authorship condition.

A strict source rule was applied: every item in the analytical corpus had to be a scientific article, academic book or scholarly book chapter written exclusively by a Polish author or a team of Polish authors. Publications with a mixed Polish and foreign author team were excluded, even when they concerned Poland. Legal acts, commercial reports, press materials and insurer websites were not treated as sources. The final corpus contains 25 publications issued between 2006 and 2024. Four themes were coded: agricultural risk transfer, demand and insurance behaviour, human resource continuity, and occupational or social protection.

The synthesis followed a three-stage logic. First, each publication was read for an explicit finding relevant to risk, labour or continuity. Second, findings were translated into a common chain: risk event, immediate operational or financial effect, likely HR response, and potential role of insurance. Third, the chains were compared across three labour models: family-only farms, hybrid farms using family and hired labour, and farms acting as regular employers. This procedure produced the insurance-HRM fit model presented below. It does not claim statistical validation. Its propositions are analytical results derived from verified Polish scholarship and are framed for subsequent field research.

III. RESULTS

A. THE FARM-SPECIFIC NATURE OF HUMAN RESOURCE RISK

In a conventional enterprise, ownership, management and labour can be separated. In a family farm, one person may occupy all three roles, and another family member may provide indispensable work without a formal job description. This concentration changes the meaning of human resource risk. The absence of one operator may be both a loss of labour and a temporary loss of managerial authority, supplier relations and tacit knowledge. Agricultural HRM must therefore cover not only employees but also owners, family co-workers, successors and seasonal staff.

The economic value of labour also varies strongly with farm size and production profile. Econometric research on Polish family farms shows that the determinants of labour profitability differ between economic-size classes and that there is no single strategy for improving work profitability (Kusz et al., 2022). This finding has a direct insurance implication. A uniform package cannot be expected to create the same HR value in a small family holding and in a larger farm with permanent employees. Insurance design must follow the actual labour process, not only acreage or insured value.

Human capital influences the farm's ability to use finance, subsidies and innovation. Research on Polish farm households in less-favoured areas links education with better financial management and greater interest in innovative solutions (Pastusiak et al., 2021). HRM literature similarly treats competence, engagement and development as resources built over time rather than interchangeable units of labour (Król and Ludwiczyński, 2006; Pocztowski, 2018). A disruption that forces a farm to cancel training or lose an experienced worker therefore destroys more than current output. It weakens a capability accumulated through learning and repeated cooperation.

Agriculture also has a demanding safety profile. Bombrych and Parzonko (2014) demonstrated that differences between employment and insurance statuses complicate the measurement and protection of people working in agriculture. Rorat, Thannhauser and Jurek (2015), in an analysis of 120 fatal farm-related incidents in Lower Silesia, pointed to transport and machinery as major sources of fatal injury and called for prevention adapted to age and gender. A pilot study by Kucaba et al. (2017) found that farmers' declared first-aid familiarity was not matched by complete knowledge. These findings make one boundary clear: insurance may finance consequences, but prevention, training and work design remain essential.

B. THREE TRANSMISSION CHANNELS BETWEEN INSURANCE AND HRM

The first channel is cash-flow continuity. A production shock reduces revenue at the same time as the farm may need additional labour, repairs or replanting. Without a liquid reserve or timely indemnity, management may respond by delaying remuneration, reducing hired hours, cancelling training or relying on excessive family labour. Agricultural insurance can interrupt this path by converting part of an uncertain loss into a contractual claim. The effect is indirect but important: the policy protects the budget from which workforce commitments are financed.

Polish insurance research supports the plausibility of this channel. Kaczała and Łyskawa (2020) showed that the effect of subsidised crop insurance on the financial result depends on the insured crop and loss scenario. Kurdyś-Kujawska et al. (2021) found that farms with the highest land productivity had an average value of insurance cover about twice that of farms with the lowest productivity. These results do not prove an HR effect, but they show that insurance, financial performance and productive capacity are connected. The conceptual extension proposed here is that part of the protected capacity consists of wages, working time and competence.

The second channel is personal-risk protection. Agricultural social insurance, accident cover, life and health insurance, and properly designed group programmes can reduce the financial consequences of illness, injury, disability or death. Pawłowska-Tyszko (2024) explains the economic, social and strategic reasons for a distinct agricultural social insurance system. Ostrowska-Dankiewicz and Tomczyk (2017) identify absence, employee accidents and the loss of key staff as risks that group life and health programmes can help to manage. Applied to farms, this channel includes treatment and rehabilitation, support for a worker's family, replacement costs and the continuity of a key-person role.

The third channel is organisational confidence. A credible protection package can signal that the farm plans beyond one season and takes its obligations seriously. In HRM, perceived security is not identical to engagement, but it can create conditions in which engagement is more likely. Juchnowicz (2012) stresses that engagement requires a coherent set of organisational and motivational conditions. Sajkiewicz (2016) shows that employee expectations differ by age, which matters in agriculture because farms often combine generations. Insurance benefits should therefore be explained, differentiated where possible and connected to a broader employment proposition. A policy that employees do not understand has little motivational value.

Table 1 summarises the mechanism. It deliberately distinguishes an insurance payment from an HR outcome. The relationship exists only when the farm has decided in advance how a claim will protect people and work.

TABLE 1. INSURANCE-HRM TRANSMISSION MATRIX

Risk layer	Insurance instrument	HR mechanism	Workforce outcome
Weather and production	Crop, livestock or index cover	Preserves working capital after an insured loss	Payroll and seasonal labour continuity; less pressure on family work
Assets and interruption	Buildings, machinery and business interruption cover	Finances restoration or temporary operating capacity	Fewer cancelled shifts; retention of trained operators
Health and key people	Agricultural social, accident, life, health and key-person cover	Supports treatment, rehabilitation, replacement and family security	Return to work, lower personal financial shock and stronger succession readiness
Liability	Farmer, employer and third-party liability cover	Transfers eligible claims and legal costs	Protects resources available for wages, benefits and reputation

Source: author's own conceptual synthesis based on Polish-authored literature.

C. INSURANCE DEMAND AS A HUMAN RESOURCE CONSTRAINT

A theoretically useful insurance package is not automatically purchased. Polish studies repeatedly identify limited participation, heterogeneity of demand and a gap between formal insurance obligations and effective protection. Janowicz-Lomott and Łyskawa (2016) critically assessed the universality of subsidised crop insurance, while Weremczuk (2017) discussed the unresolved prospects of the subsidised system. Wicka (2014) and Kurdyś-Kujawska (2017) show that farmers' opinions, farm characteristics and perceived need shape insurance decisions. Czuba's (2020) empirical research further confirms that the agricultural insurance segment is not homogeneous from the purchaser's point of view.

Affordability is part of the explanation. Kaczała (2023) estimated income elasticity for agricultural insurance in Poland using 2006-2020 data. The elasticity relative to GDP was 3.05 for compulsory crop insurance and 2.06 for voluntary crop insurance, compared with 0.78 for farmers' liability and 0.65 for farm-building insurance. Crop cover therefore behaved as a superior good in the analysed period. From an HR perspective, this matters because the farms most exposed to a cash-flow shock may postpone the very insurance that could protect their labour budget. Subsidy design, payment schedules and advisory support can consequently affect workforce resilience as well as insurance penetration.

Understanding and trust are equally important. Kaczała and Łyskawa (2012) found that acceptance of drought index insurance depends on how farm operators perceive the concept. Index insurance can offer faster and more objective settlement, but basis risk can also produce a payment that does not correspond to the farm's actual loss. For HR continuity, timing is valuable only when the trigger is sufficiently aligned with the event that threatens working capital. Product simplicity, clear

exclusions and a claims procedure understood before the season are therefore HRM issues as well as insurance issues.

Soliwoda (2016) placed crop and livestock insurance within the broader challenges of agricultural policy, while Janowicz-Lomott and Łyskawa (2009; 2014) argued for a wider risk-management architecture that can include public support and mutual funds. The HR implication is that a farm should not expect one policy to cover every disruption. Insurance, mutual arrangements, reserves, diversification and prevention should form a layered system. This is particularly important for drought, whose systemic character cannot be addressed adequately by a single isolated contract (Kaczała, 2019). The purpose of the layers is not to eliminate uncertainty but to stop an external shock from becoming an avoidable loss of people or competence.

D. THE INSURANCE-HRM FIT MODEL

The proposed model starts with the farm's labour configuration. A family-only farm is exposed to concentration of knowledge, work overload and succession risk. A hybrid farm adds seasonal recruitment, induction, supervision and the uncertain availability of temporary labour. An employer farm must also manage retention, benefits, occupational safety, legal responsibility and payroll continuity. Each configuration creates a different priority for insurance. The portfolio should therefore be selected after mapping critical people and tasks rather than by renewing last year's policies without review.

TABLE 2. INSURANCE-HRM FIT BY FARM LABOUR MODEL

Labour model	Dominant people risks	Priority insurance configuration	Required HR control
Family-only farm	Key-person dependence, overload, informal roles and succession	Social and accident insurance; life or key-person cover; crop, livestock, building and machinery cover	Named substitute, task documentation, first-aid training and succession plan
Hybrid farm	Family dependence plus seasonal recruitment, induction and supervision	Family protection plus seasonal accident or health cover, liability and rapid production-loss protection	Induction checklist, verified competence, workload limits and claim-funded replacement plan
Employer farm	Absence, retention, payroll continuity, occupational injury and benefit expectations	Group life and health, accident, employer liability, business interruption and production cover	Benefit communication, safety system, cross-training and payroll continuity protocol

Source: author's own insurance-HRM fit model.

The model uses a simple decision sequence. First, identify the people whose absence would interrupt a time-critical process and record the knowledge that is concentrated in each role. Second, map external and personal events to their immediate workforce consequences: extra hours, replacement, temporary accommodation, delayed payroll, rehabilitation or succession. Third, apply prevention and organisational controls, including training, maintenance, task rotation, first-aid competence and documented substitution. Fourth, insure the remaining consequences when a suitable product exists. Fifth, prepare a claims-to-HR protocol that states who files the claim, what evidence is kept and which workforce expense receives priority.

This sequence also clarifies the limits of insurance. Crop cover that reimburses yield loss after several months may support annual income but may not finance urgent replacement labour. A liability policy protects against third-party claims but does not provide a benefit to the injured worker. Social insurance may provide statutory protection but not the full cost of a replacement manager or a successor's training. Group life insurance may strengthen the benefits package but cannot correct unsafe routines. Fit must therefore be assessed through the loss, payout timing, beneficiary and intended HR response.

IV. DISCUSSION

The analysis changes the usual unit of evaluation. Agricultural insurance is often judged by insured area, premium, subsidy or indemnity. These measures are necessary, but they do not show whether the payment preserved the farm's productive capability. The insurance-HRM perspective asks an additional question: did protection prevent a temporary loss from turning into long-term depletion of labour, competence or trust? This question is especially relevant in family farms, where the financial boundary between the household and the enterprise is permeable.

The framework is consistent with evidence that Polish farmers are, on average, strongly risk averse, although attitudes and responses differ across farms (Sulewski et al., 2020). Strong risk aversion does not necessarily produce comprehensive insurance. A farmer may distrust claim settlement, underestimate a personal risk, rely on expected public aid or lack liquidity for the premium. The same person may insure a building because the obligation is clear and leave the continuity of a key role unprotected. HR risk mapping can make this inconsistency visible because it begins with the consequence for work rather than with the insurance product.

The proposed approach also avoids treating insurance as a substitute for prevention. Polish studies on accidents and first aid indicate that safer machinery, training, personal protective equipment and knowledge remain fundamental (Bombrych and Parzonko, 2014; Kucaba et al., 2017; Rorat, Thannhauser and Jurek, 2015). An insurer may reinforce prevention through underwriting, discounts or assistance services, but the farm manager still controls task allocation, rest, supervision and maintenance. The appropriate relationship is complementary: prevention reduces frequency and severity, while insurance finances residual consequences.

There are managerial implications for insurers and public institutions. Product descriptions for agricultural clients could show not only covered assets but also continuity scenarios, such as financing replacement labour after a key-person event or protecting payroll after an insured production loss. Claims processes should be assessed for speed because a late payment may have little value for a short agricultural window. Advisory

services could combine crop, property, liability and personal protection instead of presenting them as unrelated contracts. Mutual funds may complement commercial insurance where correlated or difficult-to-insure losses restrict market capacity (Janowicz-Lomott and Łyskawa, 2014).

For farm managers, the practical implication is to assign ownership of the insurance-HRM interface. In a small holding this may be the owner and a family successor; in a larger entity it may involve finance, safety and personnel responsibilities. The annual review should be scheduled before renewal and should examine changes in production, machinery, workforce composition, employee expectations and critical competences. A benefit that was appropriate for a permanent team may not protect seasonal workers, while a crop sum insured based on an old production structure may fail to stabilise the current labour plan.

The paper has limitations. It is a conceptual synthesis of Polish-authored scholarship and does not test whether insured farms retain workers more effectively or recover faster after a loss. The literature is richer on crop and property risk than on insurance-supported HR decisions in farms. The proposed labour models simplify a sector with many legal forms and mixed-income households. These limitations define a research agenda. A next step should survey farm managers about coverage, workforce structure, absence, claims experience and continuity actions. Case studies after comparable insured and uninsured losses could then examine whether the three proposed transmission channels occur in practice.

V. CONCLUSIONS

Agricultural insurance and human resource management are linked by the continuity of the farm as a working organisation. Weather, biological, asset and personal shocks affect people through cash flow, absence, workload, confidence and succession. Insurance can reduce these consequences, but the effect is not automatic. It depends on adequate coverage, timely and understandable claims settlement, and a prior decision about how the payment will protect work and competence.

The article identifies three mechanisms: cash-flow continuity, personal-risk protection and organisational confidence. It also proposes that the insurance portfolio should fit the labour model. Family-only farms need strong protection against dependence on one or two people and should connect social, accident, life and production cover with succession and substitution plans. Hybrid farms must add seasonal-worker safety, liability and rapid continuity financing. Employer farms require a broader system that links group benefits, occupational risk, business interruption, liability and payroll continuity.

The main managerial lesson is straightforward: the policy schedule should be read together with the workforce plan. For every material risk, the farm should know who is exposed, which task may stop, when cash will be needed and what the claim is expected to finance. This approach does not expand insurance beyond its proper role. It defines that role more precisely. Prevention reduces the probability and severity of harm; HRM builds competence and commitment; insurance protects the financial capacity to sustain both when a residual risk materialises.

The proposed insurance-HRM fit model is an original conceptual result and requires empirical validation. Its value lies in making a hidden connection measurable. Future research can test whether claims speed, coverage adequacy and personal protection predict recovery time, retention, training continuity or succession readiness. Such evidence would help farmers, insurers and public institutions design protection that preserves not only crops and buildings, but also the human capability on which agricultural production depends.

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