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Is Surplus Appropriated Differently in Cereals, Cocoa and Cattle Production? A Systematic Literature Analysis of Class Relations in West African Farming Systems

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ABSTRACT

This paper synthesizes and systematizes existing empirical knowledge on agrarian class relations in West Africa. It contributes to the debate on agrarian transitions, which largely neglects coexisting diverse forms of class relations in land, labour and capital markets, and how these are interrelated with different agricultural production processes. Based on a systematic review of 196 published articles, we developed a typology of class relations, which we then used to analyse linkages between forms of class relations and production processes in three agricultural activities, namely, arable crops, tree crops and (agro-) pastoral ruminant herds. The paper highlights the relevance of specific farming practices as well as herd and plot level analysis for agrarian political economy. Class relations and farming practices are intertwined and mutually dependent. We do not only identify class relations specific to certain agricultural activities, but we also outlined how farming systems and class relations coevolve over time.

1 | Introduction

In processes of agrarian transition, it is not unusual that multiple forms of surplus extraction coexist. Indeed, processes of agrarian transitions are uneven and protracted as documented in the agrarian political economy literature (see, e.g., Chang and Byres 2003; Bernstein 2010). Even in advanced capitalist economies, petty commodity production, agricultural production relying partly or mostly on family labour, has not disappeared, particularly in agricultural subsectors that cannot easily be simplified, standardized and sped up (Bernstein 1994). Likewise, in contemporary lower- middle-income countries, transitions remain incomplete: Coexisting forms of production entail coexisting forms of surplus extraction—through land, labour and capital markets.

Does this persistent coexistence of multiple forms of production despite a global dominance of capitalism mean that the agrarian question of capital has been rendered obsolete, or not? Bernstein and Byres have extensively debated whether transitions towards fully fledged capitalist agriculture—based on private corporate ownership, commodity production and hired labour—will remain incomplete in poor countries (Byres 2016). The debate remains unresolved because it hinges on fundamentally empirical questions (Oya 2013b; Byres 2016). This includes a scarcity of systematic knowledge on the structural conditions in agriculture for many regions of the world, as well as the implications of ongoing changes like large-scale land investments for transformations towards capitalist agriculture.

While the debate has compared transitions under different historical conditions (see Bernstein 2010, 27–32; Byres 2016 for a summary), the implications of different agro-ecological conditions and varying farming practices[1] for these transitions have received limited attention in terms of microempirical analysis. When describing obstacles to transition, agriculture is usually compared with industry in a rather crude way (see Bernstein 2010, 89–91), without exploring systematically which agricultural production activities are most easily organized in a way that makes wage labour an attractive and dominant form of surplus extraction. Exploring variation in agricultural production and farming practices, within their agro-ecological contexts is crucial to understanding variation in the speed and depth of agrarian transitions as well as to appreciate the different impact of different forms of agricultural production on economic development (Cramer et al. 2022).

This paper aims to address the above gaps: We systematize existing contemporary empirical knowledge on agrarian class relations in West African agriculture and analyse the significance of the agronomic context for these relations. The primary focus of the paper is to explore the multiple forms of surplus-transferring arrangements that exist in West African farming systems. Further, we highlight potential and plausible processes of change regarding these class relations. Lastly, we explore weaknesses, biases and research gaps in this literature.

We believe West Africa is a particularly suitable region for this approach, because of its large diversity in both class relations and farming systems, as well as rich and diverse trajectories of agrarian change. Many of its dominant farming practices are in contrast with industrial principles of labour organization (see Bernstein 2010, 90): In tree crops like cocoa or oil palm, production time considerably exceeds labour time; short cropping seasons in semiarid areas require diversified livelihoods; the complexity of interplanted fields contrasts with industrial simplification and standardization.

The paper is based on a systematic literature analysis of all peer-reviewed evidence relevant to the study of class relations in West African agriculture, published between 1980 and 2020. An initial Scopus search identified 1673 studies, of which as many as 196 articles fulfilled our selection criteria, including mostly material not framed within a political economy framework. Thus, we 'translated' empirical categories from diverse analytical traditions into a common class relational framework. All relevant articles were coded in MAXQDA. In addition, information was transferred into an Excel sheet, where each row presented a class relation in a specific administrative area. To explore linkages between class relations and farming context, we also geocoded all articles and included information on agricultural production patterns. Based on the literature, we developed a typology of class relations, which we then used to analyse linkages between forms of class relations and production processes in three agricultural activities: arable crops, tree crops and (agro-)pastoral ruminant herds. A detailed description of the methodology and available literature is presented in Supporting Information S1.

2 | Concepts and Definitions

2.1 | Class

2.1.1 | Class Relations

We define as class relations all economic relations where surplus value is extracted. According to Marx's labour theory of value (Marx 1962, 53–54), only labour creates value. Surplus is the difference between the value a person produces and the value a person receives in the form of money or goods. While surplus is always created by labour, it may be passed on through land and capital markets, for example, when a landlord collects a crop share, or when a moneylender collects interest. In practice, class relations often manifest as concrete contractual relations in the narrow economic sense.

To capture these different aspects of exploitation,[2] we distinguish three key forms of class relations, based on how three key resources enter the labour process[3]:

- *capital relations*: surplus is appropriated within the capital market in the form of interest.
- *land relations*: surplus is appropriated within the land market in the form of land rent.
- *labour relations*: surplus labour is appropriated through the labour market and labour process.

These three sets of relations expand Patnaik's 'labour exploitation criterion' used as basis for class analysis, by adding capital relations to Patnaik's labour and land relations, with the latter seen as 'indirect exploitation' via rent appropriation (Patnaik 1988).

In a next step, we defined subcategories of class relations, according to the concrete factors, goods and services exchanged in these arrangements. Table 1 provides an overview of the class relations identified during the review. Additionally, a more detailed overview is presented in Supporting Information S2.

2.1.2 | Class Positions

Class positions are then defined as a person's location in these class relations (Wright 2005, 14–20). In a simple case, a person engages in only one type of class relation, and their position is unambiguously defined, for example, as a worker or a capitalist. However, in many poor countries, multiplicity of occupation is the norm, rather than the exception (Cochet 2015, 43–45; Oya and Pontara 2015) and individuals participate in multiple class relations, for example, simultaneously renting land and selling labour power. Their class position is thus more complex. As mentioned above, a quantitative approach addressing these complexities is Patnaik's exploitation index (Patnaik 1988; see Bunce 2023 for recent application in South Africa), that aggregates exploitation through land and labour relations into a single measure of class position, reflecting the balance between 'direct' and 'indirect' exploitation. Qualitative approaches look at a household's position in a web of class relations (see, e.g., Illien

TABLE 1 | Inventory of class relations in West Africa based on our systematic literature analysis; the names of subtypes are provided in square brackets.

			Classification
	Type	**Definition**	**Subtypes**
Capital relations	Money lending	Access to value against a repayment of more value at later date	The form of the relation can vary, depending on what is borrowed and what is paid back *[money–money; money–kind; kind–money; kind–kind]*
	Pledging	Loan conditioned on a temporary transfer of means of production until the loan is repaid	To get a loan, the pledgee could pledge land *[money–land]* or trees *[money–trees]*
Land relations	Renting/ leasing	Access to land exchanged for a fixed sum of money or goods	Variation exists regarding what is paid to access the land *[land–money, land–kind, land–tribute*[a]*]* and whether land contained improvements like irrigation *[land and irrigation–money]* or tree crops[b]
	Land-for-labour	Access to land exchanged for labour power	To access land, the tenant might need to provide labour power *[land–labour]* or services *[land–services]* (mostly ploughing)
	Share contract	Access to land for a fixed ratio of output	To access virgin land, the tenant might need to give a ratio of output *[land–harvest share]*. In other subtypes they have to establish tree crop plantations, where either the harvest is shared *[land–harvest share (new trees)]*, or the newly established trees *[land–tree share]*—this can also include sharing the land ownership *[land–plantation share]*. Lastly, some tenants receive land that already contains tree crops *[land and trees–harvest share]*
Labour relations	Wage labour	Selling of labour power	Variation exists regarding the length of employment *[casual/seasonal/permanent]* and the mode of payment *[money/kind/money & accommodation]*
	Services	Selling of labour power with own means of production	Variation exists regarding modes of payment *[services–money; services–kind]*
	Unfree labour	Labour not 'freely' offered on labour market	We distinguish tributary labour, debt bondage and involuntary labour
	Share contract	Labour is remunerated with a share of output	Labourers may receive a share of the harvest *[labour–harvest share]* or a share of offspring *[services–calf sharing]* or milk *[herding–milk]* from the herded animals. The last two may be combined with other cash and noncash remuneration.

[a]Labour power is provided free of charge to a religious or traditional authority.
[b]This arrangement was not identified in the literature, but frequently mentioned by interviewees during fieldwork in Nigeria 2022 conducted by the first author.

et al. 2022). A class position is then defined as a common bundle of class relations.

2.2 | Farming Systems Approach

The farming systems approach constitutes an action-oriented research programme that seeks to understand farming practices, constraints and coping strategies of (resource-poor) farmers (Chambers and Ghildyal 1985). Its strength lies in its meticulous assessment of agricultural practices, often in interdisciplinary contexts. The term 'system' highlights the interactions and resource flows between different components of a farm, also called farm system (Dixon et al. 2001, 2). We distinguish three scales, which are depicted in Figure 1 and described below:

Plots or herds can be described as *livestock management* or *cropping systems* (Cochet 2015, 46–49). This is the level where class relations manifest, for example, as a labour relation connected to a specific task performed on a specific plot.

Farms or households can be classified into *farming systems*. Dixon et al. (2001) define a farming system as 'a population of individual farm systems that have broadly similar resource bases, enterprise patterns, household livelihoods and constraints, and for which similar development strategies and interventions would be appropriate'. One advantage of this concept is that it lends itself to a geographically bound analysis, whereby a farming system can be geographically mapped. Thus, Dixon et al. (2001) identified and mapped nine farming systems in West Africa (see Figure 2 in Section 3). While farmers in these

Concept		Farm Systems	Agrarian System
	Production activities (Cropping system/ Livestock management system)		
Unit of analysis	Plot / Herd	Farm / Household	Village / Region
Class concept observable on this level	Class relations	Class positions	Class structure

FIGURE 1 | Farming system concepts on different scales and their relation to class; adapted from Cochet 2015.

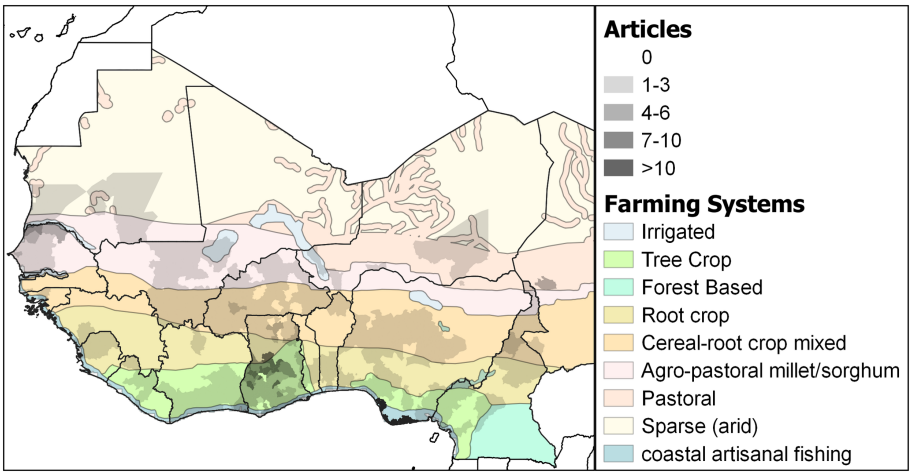

FIGURE 2 | Number of valid articles referring to subnational regions.

areas may face similar agro-ecological contexts and farm similar crop and livestock species using similar agricultural practices, this farming systems classification ignores class aspects that shape farmers' strategies. It is instrumental to this approach to draw the system boundary around the farm. As a corollary, it treats existing economic and political structures merely as external factors, instead of embedding the farm in broader political economic dynamics (Brouwer and Jansen 1989).

At *Village or regional level*, the francophone literature describes *agrarian systems*, which include the agro-ecological context, agricultural production units and their interactions in the social structure (Cochet 2015, 23–28). This concept thus goes beyond Dixon et al.'s (2001) farming systems maps, which assume an aggregate of independent and roughly similar farms in a region. Some anglophone authors do highlight that farming strategies of households in different class positions are clearly distinct, contrasting 'resource-poor' (simple reproduction squeeze) and 'resource-rich' (expanded reproduction) farms (Chambers and Ghildyal 1985; Hart 2000, 45–47). Yet, francophone agrarian systems analysis does explicitly include class relations between such farms.

3 | Results and Discussion

Having unpacked our core categories of analysis in the previous section, in Section 3, we present the results obtained by applying this analytical framework in the systematic review of the available and eligible literature. However, before showing and discussing the results of the analysis, it is necessary to provide a brief overview of the available evidence to highlight potential limitations and sources of bias. While covering a wide range of literature, regarding methodologies, disciplines and research topics, the assessed literature is skewed towards land relations (62% articles); it provides some evidence on labour relations (46% articles) and only limited evidence on capital relations (15% articles). Furthermore, the literature draws disproportionate attention to certain regions (see Figure 2) and crops. Ghana is by far the most researched country (36% of articles), which is connected to Ghana's strong research tradition in the field of agrarian studies: One in five articles was written by or with scholars based at Ghanian institutions. Regarding crops cocoa, oil palm and rice receive most attention—while class relations regarding many prominent food crops like sorghum, groundnut and plantain remain understudied. The literature on livestock focusses almost exclusively on ruminant herding. Supporting Information S1 provides a detailed description of the available literature.

3.1 | Class Relations and Agricultural Production Activities

3.1.1 | The Organization of Production Is Mutually Intertwined With Class Relations in Annual Crops, Tree Crops and (Agro-)Pastoral Ruminant Herds

The systematic literature analysis highlights how class relations and farming practices are intertwined and mutually dependent, by identifying distinct class relations tied to specific agricultural production activities (see Table 2). A related key finding was that the specific agricultural production activity is more decisive for the form of class relations than the overall agronomic context (proxied using Dixon et al.'s 2001 farming system categories). This foregrounds the importance of the plot and herd level for

TABLE 2 | Subtypes of class relations observed, by agricultural production activity.

		Annual crops	Tree crops	(Agro-)pastoral ruminant herds
Capital relations	Moneylending	All forms	Kind–kind, money–money, money–kind	—
	Pledging	Money–land	Money–trees	—
Labour relations	Wage labour	Casual (money/kind) Seasonal–money [Continuous][a]	Casual (money/kind) Seasonal–money [Continuous][a]	— Seasonal money Continuous
	Agricultural services	Services–money		Services–money Services–kind
	Share contract (labour)		Labour–harvest share	Labour–calf sharing Herding–milk
Land relations	Renting/leasing	Land–money Land + irrigation–money Land–kind Land–tribute	Land–money Land–kind Land–tribute	Land–money Land–kind Land–tribute
	Land-for-labour	Land–labour Land–services	—	—
	Share contracts (land)	Land–harvest share	Land–harvest share (new trees) Land–tree share Land–plantation share Land + trees–harvest sharing	—

[a]Only on large-scale plantations.

class analysis, where class relations are actually observable as concrete land or labour relations.

By shifting the unit of analysis, we were able to find concrete linkages between agricultural production activities and class relations. This paper thus compares class relations in three main agricultural production activities: arable cropping, tree crop farming and (agro-)pastoral ruminant herding. We choose these because they are both analytically useful categories and we had sufficient data to make meaningful comparisons between them. In the following subsections, we offer a stylized description of common farming and livestock management practices and outline how class relations are intertwined with these.

3.1.1.1 | **Arable Crops.** Arable crops include root and tuber crops, cereals and legumes, which are grown across farming systems in West Africa, in short or long agricultural seasons, depending on the agro-ecological context. The main production steps are as follows: land preparation (including clearing, burning, seedbed preparation, heaping etc.), sowing or planting (e.g., broadcasting rice, or planting cassava sticks), weeding and lastly harvest (Swindell 1985, 23–27). Especially where cropping seasons are short, labour bottlenecks are known to be a key challenge in production. Farmers may counter these through staggered planting (Swindell 1985, 25), wage labour (see Section 3.1.2 below) and land-for-labour arrangements.

Land-for-labour arrangements were only identified for arable crops (see Table 2).[4] Concretely, we found two variations:

- *land–labour* (also called labour tenancy): Access to land is provided in exchange for labour power to the landlord, often some days per week.
- *land–services*: Access to land is provided in exchange for agricultural services; that is, the tenant provides labour power and some means of production to the landlord, for example, ploughing.

However, not identifying land-for-labour arrangements in tree crop farming does not prove that such practices truly only exist in arable crops but not in tree crops. Absence of evidence is not the same as evidence of absence. In the case of land-for-labour arrangements, we must particularly acknowledge their similarities to labour tributes that chiefs and slave masters had historically extracted from 'strangers'[5] or slaves, including in tree crop farming: A common form of precolonial slavery (i.e., before 1880) in both semiarid and tree crop farming areas required slaves to work masters' fields either for part of the day or for some days per week, while they could work on land set aside for their own use for the rest of the time (Lovejoy 2011, 182, 190–93, 206). Also, in the early 20th century, chiefs in Southwestern Nigeria could call strangers to work on their cocoa farms weekly in exchange for facilitating access to land (Berry 1985, 67). This type of relation became also a norm in the expansion of groundnut production in Senegal in the 20th century, where labour tenants were called *navetanes* or *sourga* (Oya 2015). The fact that land-for-labour arrangements persist in arable farming at least begs the question of whether they have truly disappeared in tree crops—and why.

Another notable gap exists with regards to crop sharing arrangements for intercropping. Where a plot contains multiple crops and wild plants, there may likely be multiple local rules and different class relations attached to different plants. Unfortunately, we could not find any research explicitly outlining how harvest sharing is executed on intercropped fields, that is, whether all or only some crops are shared and in which ratio (beyond action research by Adjei-Nsiah et al. 2008). This is a significant gap, considering how common intercropping is across West Africa, for example, the combination of millet, sorghum and cowpea; or maize and cassava (Richards 1983; Swindell 1985, 190; Adjei-Nsiah et al. 2019; Kassam et al. 2019).

3.1.1.2 | Tree Crops. Cocoa and oil palm are the most prominent smallholder tree crops in West Africa, with coffee, rubber and citrus of secondary importance. Large-scale plantations mostly produce palm oil and rubber. On smallholder farms, tree crops are often grown in association with food crops, in various forms: Arable crops like cassava, plantain, cocoyam and maize are often grown in between cocoa seedlings in newly established cocoa plantations or when replanting gaps in older plantations; fruit trees may provide a shade canopy; and shade tolerant cocoyam may be maintained in the understory. However, in some tree crop regions, food crops are also grown in a fallow rotation system (Colin 2017; Gockowski 2019, 288–289, 295). When arable crops and tree crops are intercropped, there are commonly separate tenure regimes regarding land and trees (Colin 2017; Pehou et al. 2020).

As with arable crops, there is a clear research gap regarding the treatment of interplanted crops for harvest sharing arrangements. Most papers ignored the potential presence of food crops under or above the canopy. Also, class relations in the context of naturally occurring tree species in parklands (including within cultivated plots) are little researched (an exception is Pehou et al. 2020). There is a clear research gap in relation to the treatment of interplanted crops in harvest sharing. As a corollary, reported crop shares in tree crops may significantly misrepresent landowner's shares in proportion to the yield of all crops growing on a plot, given that the proceeds of food crop production are kept by the tenant.

Class relations in tree crop farming are strongly interlinked with the development of frontiers (Amanor 2010). The area under tree crop production in West Africa is continuously expanding, as farmers seek out new forest land to establish new plantations (Gockowski 2019, 283–289). The following share contracts are directly linked to plantation establishment, while they might all be referred to as 'sharecropping', they present fundamentally different arrangements:

- *land–harvest share (new trees)*: Access to land is provided in exchange for a fixed percentage share of the harvest. The tenant must establish a tree crop plantation and manage production.
- *land–tree share*: The tenant establishes a tree crop plantation. Once the trees start producing, the ownership of trees is split with both tenant and landlord receiving a fixed percentage share of trees.
- *land–plantation share*: The tenant establishes a tree crop plantation. Once the trees start producing, the ownership of the plot is split with both tenant and landlord receiving a fixed percentage share of the plantation, including both the trees and the land.

In Ghana and Côte d'Ivoire, all above arrangements are commonly referred to as *abusa* (⅓) and *abunu* (½), depending on the sharing ratio—irrespective of the form of sharecropping. The above arrangements address the longer investment period in tree crop farming and allow landowners to overcome the needed labour investment, by interlinking land and labour markets.

These share contracts have a long history, as they were first used by Ghanian chiefs starting in the late nineteenth century. The chiefs adapted arrangements already used for gold mining, where they were entitled to one third (*abusa*) of the output, to new products like kola, rubber and later cocoa crops. Unlike land sales the practice allowed them to retain control over the land. The practice spread along the cocoa frontier and replaced the alternative arrangements of token tribute and cash rents (Berry 1993, 107; Amanor and Diderutuah 2001; Austin 2007).

3.1.1.3 | (Agro-)Pastoralist Ruminant Herds. In the context of this paper, we use the term (agro-)pastoral ruminant herds to refer to herds or flocks that are herded for at least part of the year and use grazing natural pastures or crop residues as the animals' main feed source. In West Africa, herding is not only a strategy to ensure sufficient access to water and pasture, but it is also necessary to prevent livestock from damaging crops. Consequently, cattle sheep or goats may even roam freely during the dry season (Turner and Hiernaux 2008), and transhumance is practiced during the rainy season (Turner et al. 2011; Shinjo 2017).

The labour relations under which livestock are herded are also linked to the specific characteristics of ruminants—including their physical needs and their function as capital investment. Farmers, traders, Islamic priests and government officials invest in livestock, without intending to manage herds themselves (Turner 2009). As animals are herded daily, wage labour contracts are usually permanent or seasonal (for going on transhumance or avoiding crop damage during the growing season).

To lower the need for variable capital, herders often receive part of their wage from herd outputs such as milk or calves. There are three main forms:

- *Wage labour [seasonal/continuous]*: Selling of labour power for a sum of money or a fixed bundle of goods (continuously or for the duration of one season).
- *Share contract [herding–milk]*: Provision of labour power for herding in exchange for a right to the herd's milk output.
- *Share contract [services–calf sharing]*: Management of a herd providing labour power and means of production (except livestock) in exchange for a share of new-born calves.

The first two relations regard wage labourers who own no or few livestock of their own. In contrast to labour relations in

other farming activities, wage labour and herding for milk are not mutually exclusive, but herders may be paid through a combination of these. Indeed, milk can form a considerable portion of the wage bundle (Hill 1970, 72–75; Ameleke et al. 2020).

In the third relation, often referred to as *livestock loans* or *entrustments*, livestock is managed by a person (usually another livestock owner) different from the owner in exchange for a share of offspring, usually every second or third calf. These livestock management services are often provided by an impoverished pastoral family who manages entrusted livestock together with their own herd (Turner 2009), or by a *kraal* owner[6] who then hires herders on the basis of the first two arrangements (Hill 1970, 66; Ameleke et al. 2020). In both cases, the person entrusted with the livestock is entitled to the animals' milk, but they might pass on rights to some or all of the milk to a hired herder (Hill 1970, 66; Ameleke et al. 2020). These relations display some continuities with practices during slavery where slaves were given livestock to herd and could keep the animals' dairy products and a share of the offspring (Lovejoy 2011, 213). While this arrangement is often mentioned in the literature, only four articles specified its terms explicitly enough to be included in our analysis.

Livestock keepers also have land relations. Renting land is not unique to crop farming. Instead livestock keepers have been paying land rents since precolonial times, at least in areas that seasonally host large numbers of herds. In the dry season, grazing areas of the Inner Niger Delta and Logone floodplain, for example, transhumant pastoralists have been paying in-kind (e.g., a young bull or a cow, and some kola nuts) or respective money rents to access dry season pastures (Moritz et al. 2002; Cotula and Cissé 2006).

We did not find any reports of capital relations regarding ruminant herds. It would be plausible that these truly do not exist, and herd owners instead avoid the extraction of interest by moneylenders by instead selling some of their livestock. However, given the generally low number of articles reporting capital relations this is just as plausibly a case of absence of evidence. We thus asked a researcher with extensive fieldwork experience with West African (agro-)pastoralists about the issue, who confirmed that (agro-)pastoralists take loans in forms aligned with their crop-farming neighbours of different ethnic/caste identities, for example, from merchants. This suggests it is likely a case of absence of evidence, which points to a need for further research regarding the forms and extent of such relations, as well as their role for class differentiation among (West African) pastoralists.

3.1.2 | Casual Wage Labour Is Necessary for and Widespread in Agricultural Production

Despite known biases against reporting rural wage labour (Oya 2013a; Cramer et al. 2014), we found 81 articles that cover agricultural wage labour. It was observed across farming systems—in large-scale plantations as well as on smallholder farms. This shows that while the rural population is not fully proletarianized (and often misleadingly portrayed as simply self-employed farmers), casual wage labour is actually pervasive. In this sense, our review confirms the significance of this labour relation and how it is especially relevant for the poorest and most vulnerable rural dwellers, who depend on finding casual jobs for survival.

Particularly in crop farming, casual wage labour is crucial for overcoming seasonal labour bottlenecks. While herders are often hired seasonally or permanently, in the surveyed literature, casual wage labour is associated with crop production. Table 3 shows the labour bottlenecks in key farming systems that are addressed using casual wage labour. Interestingly, this pattern is reported mostly in the more arid systems of the North, where seasonality is much more pronounced (Chambers et al. 1981, 11–21). Casual wage labour allows employers to externalize social reproduction and training of labourers to marginal farming households during the off-season (Kautsky 1899; Palliere et al. 2018; Gyapong 2020). On the side of labour supply, especially among semiproletarian marginal farmers, wage labour is equally a seasonal necessity, as these households need income to buy food after their stocks of harvested grain have run out, as well as to deal with labour slumps through dry season labour migration (Kautsky 1899; Kremer and Lock 1993).

TABLE 3 | Labour bottlenecks in West African farming systems (for which use of casual wage labour is reported).

Farming system	Task	Location	Source
Agropastoral	Sowing, weeding, harvest	Groundnut Basin, Senegal	(Oya 2015, 49)
	Weeding, soil preparation	Boulgou, Burkina Faso	(Reenberg and Lund 1998)
	Weeding millet/cowpea	Talhout, Niger; Koulikoro, Mali	(Kremer and Lock 1993; Bolwig and Paarup-Laursen 1999; Abdoulaye and Lowenberg-DeBoer 2000)
Cereal-root crop	Land preparation, sowing, thinning, weeding	Hauts-Bassins, Burkina Faso	(Luna 2020)
	Sowing, harvesting	Upper East, Ghana	(Kansanga et al. 2019)
	Transplanting rice during already busy months	Volta, Ghana	(Graf and Oya 2021)
Tree crop	Harvesting, weeding, land preparation	Western Region, Ghana	(Mensah et al. 2020)

3.2 | In West African Agriculture Class Relations and Farming Systems Coevolve

Farming systems and class relations coevolve, as changes in farming practices impact class relations and vice versa. Changing farming practices may not be based on purely agronomic considerations, but rather subtle strategies in wider class struggles. For example, shortening of fallow periods can be a strategy to strengthen tenure security. Simultaneously, the changing farming context also affects the social relations of production, for example, by upsetting the balance of farm systems and their respective intrahousehold relations.

This section analyses changes that were explicitly reported in the surveyed literature. We find most evidence for ongoing changes in the land market, some evidence on changes in the labour market but only few insights about changes in the capital market. Despite limited evidence, we decided to include the aspects below, as the reports of these trends seem plausible, and there was no contradictory evidence. Nevertheless, there is a need for further research to understand the magnitude, speed and implications of these processes.

3.2.1 | Commodification of Access to Land

Many West African farming systems focus on expansion of cultivation in contexts of relative land abundance: through increased cropping area in arable cropping (Kremer and Lock 1993), establishment of plantations in tree crop systems (Hill 1997; Amanor 2010) or herd growth in agro-pastoral systems (Turner 2009). Consequently, this can eventually lead to increasing pressure on land (Benjaminsen 2002; Oladele and Wakatsuki 2008; Amanor 2010). Traditionally, fallows played a key role in maintaining soil fertility. However, fallow periods are declining in area and duration across farming systems (Adjei-Nsiah et al. 2019; Boffa et al. 2019; Gockowski 2019). This trend is intertwined with class and tenure relations: As claims to land are often tied to continued occupation, tenants, fearing their plot will be assigned to someone else, may no longer dare to fallow (Grigsby 2004), or only for nonoptimally short fallow periods (Goldstein and Udry 2008). Another strategy is the establishment of tree crops to ensure long-term occupancy of a plot (Bassett 2009).

There is a trend towards the commercialization of land markets (or commodification of land). Seventeen articles report that arrangements for accessing land for a symbolic tribute are disappearing and are replaced with market (cash) rents. However, no clear spatial pattern emerges (see Figure 3). Commercialization of land markets seems to occur across different farming systems, partly reflecting the broader expansion of the cash economy. Agricultural activities affected are arable crops (four articles), tree crops (three articles) and grazing land (one article). This trend is also evident in new practices like measuring land sizes (Maxwell et al. 1999) and calculating rent based on fixed sums per hectare and year (Saïdou et al. 2007). Historical evidence suggests that this trend started before the end of colonialism in the 1960s. When share contracts for tree crops started spreading along the cocoa frontier in the early 20th century, they replaced alternative arrangements of token tribute and cash rents (Berry 1993, 107; Amanor and Diderutuah 2001; Austin 2007). Similarly, 'strangers' in Côte d'Ivoire accessed land for coffee and cocoa through a local *tuteur*, whom they owed 'perennial gratitude' originally to be expressed in gifts of agricultural products and but later through considerable sums of money, as well as assistance with funeral or schooling expenses (Chauveau and Richards 2008). In present-day southwestern Nigeria, the price of accessing land was converted from a symbolic token into cash with increasing price (Berry 1985, 65).

At the same time, such changes in class relations can be discursively concealed, for example, by framing rents as 'symbolic' payments/tribute, 'gifts' or 'considerations', even if a substantial amount of money was paid.

> In connection with other recent changes, a monetization of land begging was described. [...] Fertilizer and ox plowing services were mentioned as new gifts in begging processes. These gifts are demanded not once, but for every new season.
>
> (Fischer et al. 2020, 7)

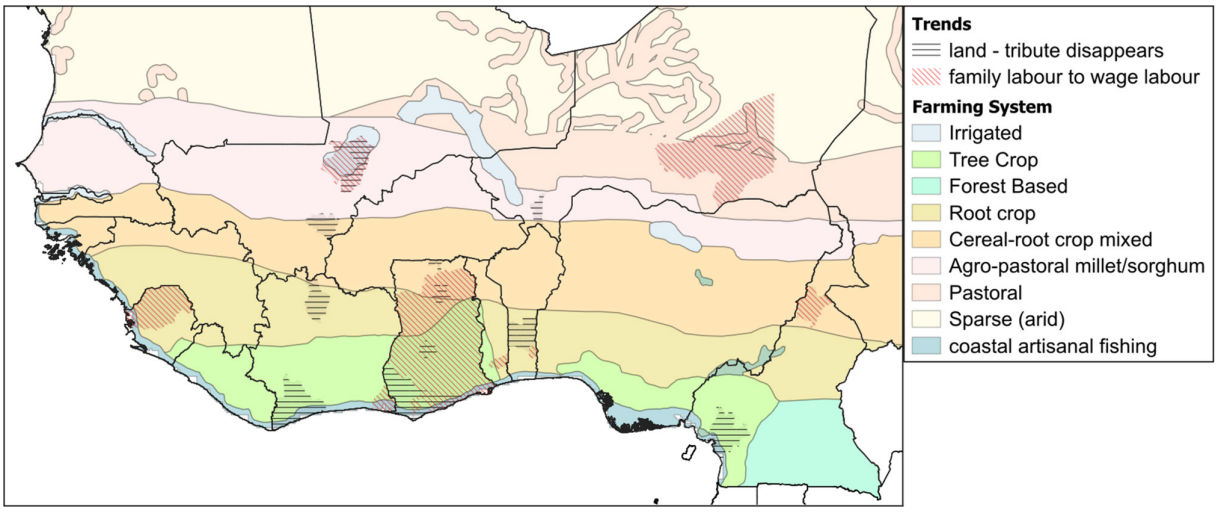

FIGURE 3 | Trends of changes of class relations in the period 1980–2020 in the assessed literature.

> Our study shows that huge compensations were paid to the chiefs in all the five study sites, which they often consider as 'drink money'.
>
> (Ahmed et al. 2018, 578)

This discrepancy made it difficult to assert whether reported 'symbolic gifts' were indeed symbolic, or whether researchers might have insufficiently probed the descriptions given by interviewees and therefore confused discourse with reality; especially, when research focussed on topics other than class or tenure relations.

3.2.2 | From Family Relations to Class Relations

In the past, family heads could accumulate wealth by extracting labour from wives and offspring (Boserup 1982, 33–37). The theoretical implications of asymmetrical relations of production within the family have been a topic of fierce debate about a 'lineage mode of production' among French Marxist anthropologists (Resch 1992, 111–125).[7] Nowadays large families are dissolving in many parts of West Africa (Turner 1999; Amanor 2010; Bainville 2018; Palliere et al. 2018; Luna 2020). This phenomenon may have various reasons: In arable cropping, the introduction of new crops has upset the balance of labour availability between communal and individual fields; and the monetization of the economy increases family member's need for cash and thus individual farms (Bainville 2018; Luna 2020). In tree crops, closing planting frontiers mean that family heads can no longer access enough new land to reward wives and junior kin with plantations. This increases junior kin's strive to relocate and reinvest cocoa profits in farms and nonfarm business elsewhere. Lastly, conflicts over inheritance have made youth reluctant to establish plantations on family land (Berry 1985; Amanor 2010). These trends also reflect broader trajectories of capitalist development and agrarian transitions.

This has resulted in a shift from surplus transfers within family relations to surplus transfers through class relations. Ten articles explicitly mention a shift from family labour to wage labour. Six articles cite declining control over the labour of women and youth,[8] who withdraw labour from husbands, as husbands do not adequately share the family income (Turner 1999; Palliere et al. 2018; Luna 2019). Simultaneously, senior men can prefer receiving land rents from individuals outside the kinship group, instead of providing land to kin for free (Amanor 2010; Kouamé 2010; Colin 2017). Being less integrated in family farming through both providing family labour and receiving family land, youth increasingly seek wage labour on other farms or outside agriculture. Youth may also prefer accessing plots via sharecropping arrangements instead of working on family plots to avoid the risk of inheritance disputes (Turner 1999; Klassou 2002; Torvikey et al. 2016). The above trends seem to mutually reinforce each other in bringing about a shift in which class relations—instead of family relations—play an increasing role in governing land and labour allocation.

3.2.3 | Increasing Exclusion of 'Strangers'

Another observed trend is a deterioration of options through which 'strangers' can access land, pastures and water. In contrast to autochthones who are considered native to a place, the term 'stranger' refers to anyone unable to claim customary rights to land. This includes people who temporarily or permanently migrated to an area, as well as seasonally mobile populations like pastoralists and 'stranger farmers', who seasonally migrate to farm rice as labour tenants (Swindell 1985, 116–117; Cotula and Cissé 2006; Lentz 2013). While the rising tensions between autochthonous and 'stranger' populations has complex and multifaceted reasons, we limit our treatment of the topic to trends directly related to class relations.

Most of West Africa traditionally had welcoming tenure systems where chiefs were obligated to allocate land to everyone who needs it, including migrants (Kea 2004; Chauveau and Richards 2008; Bainville 2018). While ethnicized land relations were present in West Africa before colonial rule (Spear 2003), colonial governments shaped the role of autochthony in land relations. For example, the British grouped peoples with multiple or ambiguous ethnic identities into a fixed set of ethnicities and recruited chiefs among 'local "strong men"—renowned warriors, rich traders, or well-to-do farmers with large houses' (Lentz 2013, 177). The British then insisted that subjects of land-owning chieftaincies should be exempt from paying land rent (Austin 2005, 262–271). This division between autochthonous and 'strangers', often defined along supposed ethnic lines, has become an integral part of 'customary' land tenure systems in West Africa until today (Lentz 2013, 182–184, 221).

As land becomes increasingly scarce, particularly the local youth tries to claim priority in land allocation, which can lead to ethnic conflicts with 'strangers'; for example, Côte d'Ivoire legally excluded foreigners from landownership in 1998 (Chauveau and Richards 2008; Amanor 2010; Kouamé 2010).

With respect to tree crops in some regions, 'strangers' are nowadays not allowed to plant trees or palms, as this would give them long-term claims to the land—a phenomenon described in nine articles. 'Strangers' have been excluded from the recent boom in cashew and mango planting; for example, in central Benin (Saïdou et al. 2007), northern Cote d'Ivoire (Bassett 2009) and Burkina Faso (Etongo et al. 2015; Korbéogo 2018). In Benin's Adja plateau, 'stranger' tenants no longer have the right to plant oil palms, which would secure long-term tenancy (Yemadje et al. 2012). For the same reason, restrictions on tree planting by 'strangers' now also exist in the forest zone (Kwara, Nigeria: Atteh 1985; Ogun and Edo state, Nigeria: Osemeobo 1993; Ejura Sekyedumase, Ghana: Antwi-Agyei et al. 2015; Western Region, Ghana: Mensah et al. 2020). This threatens paths of upwards social mobility through accumulation of tree crop assets for 'strangers' that had been a feature of West African tree crop farming in the past.

Regarding herding, land rents for pastures seem to become more common. Five articles document instances where herders now are required to pay to access pastures and water for which formerly no claims to tributes existed. For example, in Poro region of Cote d'Ivoire, herders pay to have their cattle graze the crop residues from harvested fields (Bassett 2009). In Agogo, Ghana, a large-scale lease to four large pastoralists has

started the practise of informal renting contracts (for money or kind) for access to grazing land (Kuusaana and Bukari 2015; Bukari and Kuusaana 2018). Given these changes are rooted in increased competition for pastoral resources following increased tree planting as well as the spread of rice and vegetable cultivation in lowlands and along water sources (Bassett 2009; Snorek et al. 2017), this may become a wider trend.

4 | Implications

4.1 | The Persisting Diversity of Class Relations Does Not Indicate an Absence of Capitalism

A vibrant diversity of class relations persists in West African agricultural production, despite the conventional notion that rural capitalism would lead to a generalization of the most basic capitalist class relations—wage labour in the labour market, renting in the land market and moneylending in the capital market. Some of this diversity is linked to continuities of precolonial and colonial class relations and indicates that agrarian transitions can be gradual, uneven, highly localized and commodity-specific (Byres 2016). For example, in the Sahel calf-sharing and land-for-labour arrangements show similarities to arrangements that were practiced in the framework of slavery but now with free labour (see Section 3.1).

However, these diverse relations are not simply a remnant of a precapitalist past, but enablers of profit-driven accumulation strategies, as they address crop or livestock specific constraints. By remunerating herders with milk and livestock, employers reduce their need for working capital. Harvest sharing also entails that farmers pay land rent after harvest when they are most able to pay. Share contracts in tree crop farming are not 'precapitalist' but rather spread alongside the rise of 'capitalist' export commodity production. It was exactly the prospect of further accumulation that made farmers spend their available cash on land and seedlings, rather than spending it on wages (Hill 1997, 180–190). In all three agricultural production activities under focus, farmers often prioritize expansion of production. Thus, working capital remains scarce, despite considerable accumulation over the last century. While ubiquitous cash constraints affect and shape labour relations, they do not necessarily prevent wage labour as shown in Section 3.1.2.

4.2 | Farming Practices and Class Relations Are Mutually Interdependent

While we identified class relations specific to certain agricultural activities, farming practices are not an exogeneous given in processes of agrarian change. Crop physiology and climate conditions are given constraints in different social formations. Simultaneously, farming practices also crucially depend on social relations of production and the development of forces of production. For example, tenants' growing reluctance to fallow land (see Section 3.2.1) and growing exclusion of 'strangers' from planting tree crops (see Section 3.2.3) are not predominantly based on agronomic considerations, but rather strategies to retain control over land and secure livelihoods. In contrast, Section 3.2.2 highlights the role of changing agricultural contexts in changing social relations within kinship groups. The organization of the production cycle and the forms of class relations are simultaneously interlinked in struggles over the appropriation of surplus value.

4.3 | The Volume of Surplus Extraction Is Probably Expanding, yet There Is a Lack of Quantitative Evidence

All three described trends—commodification of land, the shift towards class-based exploitation and growing exclusion of 'strangers'—suggest that in both land and labour markets the volume of surplus extraction is growing. The level of surplus is a key factor that determines 'preference' of certain arrangements by different classes. For example, tenants prefer to pay a fixed money rent, when the alternative crop sharing arrangement would equate paying a rent of four times that value—while landowners not in urgent need for cash, prefer harvest sharing (Colin 2012). Everyday negotiations on the forms of class relations are intertwined with negotiations about surplus value (see also Section 3.2.1).

However, evidence on the levels of surplus for different arrangements in different farming activities remains scarce. While we do know ratios of share contracts (although they might need adjustment for intercrops) and interest rates in moneylending, in other relations like pledging, renting land or wage labour the levels of surplus are less straightforward.

4.4 | Directions for Future Research

The systematic review also identified some crucial research gaps: There is little evidence regarding capital relations and their role in reproducing class structures, particularly for (agro-)pastoralist farming. In addition, there remains a clear gap relating to how intercrops are treated in land relations involving harvest sharing. Furthermore, despite their existing and growing economic independence, the roles of women and youth in the class structure are hardly researched. This is a significant gap, given that West African household structures entail considerable economic independence of women and youth, who both commonly operate their own plots or nonagricultural businesses (see, e.g., Kandiyoti 1988 and Section 3.2.2.). As most articles focus on either land, labour or capital relations, the interlinkages and relative importance of different class relations are also little understood: Do people who appropriate much land rent also hire much labour? Are loans used to pay land rents or wages? Lastly, there remains a quantitative knowledge gap regarding the *levels* of surplus transferred through different arrangements, both on individual and society level. This is a critical empirical category in agrarian political economy and therefore a significant limitation for those who want to analyse the evolution of class relations in these contexts. A quantitative assessment of surplus transferred by these relations could provide empirical insights into key aspects of the agrarian question, for example, which class relations in which of the three agricultural production activities transfer the highest volume of surplus and why? Recent research refining Patnaik's exploitation index could provide methodological

guidance when tackling this issue (see, e.g., Illien et al. 2022), but methodological nuance and precision are needed to adapt analytical categories to diverse and complex contexts.

5 | Conclusion

This paper has set out to classify and map class relations in West African agriculture, based on available literature from a wide range of research traditions. To disentangle exploitation in land, labour and capital markets, we distinguished whether surplus extraction is based on land rent, surplus labour or interest. We identified nine types of class relations with altogether 31 subtypes, thereby highlighting the diversity of class relations in West African agriculture.

The paper shows the relevance of farming practices for agrarian political economy, as well as the potential of the herd and plot level for microclass analysis. Class relations and farming practices are intertwined and mutually dependent. Seasonality and crop or livestock physiology shape agricultural labour processes and correspondingly require tailored land and labour relations. At the same time, farming practices are also crucially dependent on social relations of production and the development of forces of production. We did not only identify class relations specific to certain agricultural activities like arable crops, tree crops and (agro-)pastoral ruminant herds; we also outlined how farming systems and class relations coevolve over time as changes in farming practices are linked to changes in class relations and vice versa. Surplus appropriation does indeed take different forms in cereal, cattle and cocoa production. Consequently, we do not expect that the identified consistent trends towards commodification of land and labour markets will dissolve the great diversity and coexistence of various forms of surplus extraction in West Africa.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Endnotes

[1] In this paper, 'farming practices' serves as an umbrella term for any aspect of the agricultural production process on plot or farm level, including crop choice, agricultural activities, cultivation methods, crop rotations and fallowing.

[2] The review does not address certain aspects of exploitation, namely, (1) exploitation of women (and youth) within households is excluded because it is not based on class; (2) 'distress sales', where buyers take advantage of sellers (producers) needs for immediate cash (to buy food and pay debt) to push down prices, are excluded as these happen once a marketed surplus has been generated from production, while our focus is limited to the production process.

[3] We recognize the potential importance of linkages between these different sets of relations (see, e.g., Bardhan 1980; Hart 1986 for an overview). Nevertheless, this distinction presents a useful heuristic tool for the purposes of this review. Empirically, the trick may lie in establishing the dominant form of surplus appropriation even when different forms coexist, coevolve and interact in complex ways.

[4] In a special case, the taungya system practiced in Ghana and Nigeria, tenants access land for arable crops between the landlord's young (timber) trees, which they are tending.

[5] West African land tenure systems tend to distinct individuals who are considered native to a place (autochthones) and those who are not ('strangers'). Section 3.2.3 provides further historical context.

[6] A kraal is an enclosure for cattle or other livestock, where livestock is kept overnight when it is not herded. A kraal owner usually manages multiple herds composed of own and entrusted livestock for which he may hire multiple herders.

[7] In areas where arable crops predominate, production was often organized through extended families discerning a 'communal' food crop field controlled by the family head, and individual fields allocated to women and unmarried juniors by the family head. This can be interpreted as a land for labour arrangement, as the allocation of individual plots is conditional to labour on the 'collective' field. Such organization is, for example, reported in Burkina Faso (Bainville 2018), Sierra Leone (Palliere et al. 2018) and Senegal (Stomal-Weigel 1988). In tree crop farming, labour that women and youth provided when establishing tree crops was often compensated by allocating or inheriting plantations to them (Amanor 2010).

[8] The other four articles mention increasing outside ownership of key resources (land dispossession and absentee cattle owners).

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.