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'Let's Turn the Grass Into Meat': Animal Husbandry as Women's Work in Cold War North Korea

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ABSTRACT

In postcolonial North Korea, the future of the nation was said to be a function of the feedlot. Unobtainable on the battlefields of the recently ended Korean War, liberation and unification of the peninsula became a question of competitive developmentalism. In this context, planners and pundits in the North turned to the female farmhands of the agrarian sector to coordinate the scientific and motherly care of the nation's flocks. As demonstrated in this article, a particular intersection of postwar demographics, scientific mobilisation and patriarchal thought led to the establishment of animal husbandry in North Korea as women's work.

1 | Introduction

1962 was a busy year for Kang Tŏngnyong. Working and living on an agricultural collective in the outskirts of Pyongyang, for months on end, the young farmer's spare time and technical skills were poured into the meticulous work of animal husbandry. Her efforts yielded impressive results. According to reports in the North Korean agricultural press, by managing and merging her responsibilities at home and on the collective, Kang had single-handedly reared 15 pigs, 36 chickens and 273 rabbits. All told, her herds translated into over 1200 kilograms of meat. Kang's story of successful husbandry was to model a new form of gendered and scientific farm labour meant to inspire emulation.[1] If other women in the agrarian sector could, the official story went, just modestly cut into their personal time, refine their use of science in agriculture, mobilise the resources of nature and direct their emotive energies to the nurturing and nourishment of animals, they and the nation would enjoy a similar return.

Kang was one of six 'masters' (*myŏngsu*) of livestock rearing featured in the journal *Animal Husbandry* (Figure 1).[2] That five of the six were women was not incidental. By the early 1960s, female farmhands had become central to state-led efforts to nurture and expand the North Korean livestock sector. This pattern of mobilisation was the dual outcome of context and ideology. Stark demographic shifts accompanied the end of the Korean War, heightening the North's need for female farmworkers. Yet beyond these socio-economic conditions, the framing of husbandry as women's work was also informed by broader assumptions – about affective labour, the transformative potential of applied science and the developmentalist needs of a newly sovereign socialist nation.

The field of husbandry, a term more closely rendered as 'stock production' (*ch'uksan*) in Korean, was shaped by the assertion that women were intrinsically better at nurturing and nourishing livestock. The manifestation of this view in early North Korea was a particular hybrid of late–twentieth-century gender relations common in revolutionary states. Across the socialist world at this time, women workers were mobilised through appeals to equality, and in the same breath tasked with the dual burdens of domestic and professional roles.[3] Here, the work of raising children and maintaining extended households was naturalised under assumptions of gender-specific responsibility. In the case of 1960s North Korea, a similar set of impositions reverberated

FIGURE 1 | 'Masters of Livestock Rearing' celebrated in the North Korean agricultural press, 1963. [Colour figure can be viewed at wileyonlinelibrary.com]

back to the farmyard. There, women workers were constantly presented as emotively better suited for the care of animals, the nurturing of their young, and the preparation of their fodder. Under these circumstances, animal husbandry was established as a sphere where gendered depictions of work and domesticity reified women's labour as inherently affective.

These assertions about what characterised women's work express many of the core features of Cold War–era gender politics in North Korea. From its establishment, the regime encouraged women to take on the laborious roles of mother and housewife while also participating in wage labour, ostensibly on equal footing with men. Although North Korea has touted early state efforts in this domain – such as the famous Gender Equality Law – scholars have noted the disjoint between the state's official emphasis on equity and its maintenance of a clearly bifurcated system of labour.[4] Even in North Korea's cities, where in the mid-1950s the socialist world was collectively attempting to build society anew, women were concentrated in light industry, wage gaps persisted and opportunities for women to advance into managerial roles remained limited.[5]

Attempts to account for this fissure between rhetoric and reality, in the economy and beyond, have long shaped research on the history of gender in North Korea. Starting in the 1990s, scholars began to probe a series of cultural and historical factors to account for the character of gender relations in the North. They focus on the historical complexities that accompanied the imperial and Cold War systems beyond 'idiosyncratic' aspects of North Korea, such as the patriarchal worship of the Leader or persistent Confucian traditions. Scholars writing in this vein have examined how Japanese colonial rule established the heterosexual nuclear family as a desirable model while introducing labour patterns that reinforced gender stratification, or, in terms of domesticity

and consumption, reified specific forms of gendered subjectivity. In this view, early socialist reforms, including constitutional provisions for gender equality, or new institutions, like the Korean Democratic Women's Union, operated within preexisting frameworks that continued to shape the role of women in society.[6] An additional explanation considers the Cold War context, particularly North Korea's postwar reconstruction and its engagement with global socialist (and capitalist) trends. Researchers exploring this line of approach have underscored how gender policies were influenced not only by international socialist movement networks but also by global cultures of domesticity and militarism.[7] For instance, the ways that the postliberation discourse on the 'revolutionary mother' was shaped by Korea's colonial past and contemporary Cold War politics, both of which conceptualised domesticity as a space in need of maternal management.[8] In a similar manner, animal husbandry became codified as another space in need of women's affective labour, understood here as the emotional, relational and care-oriented work historically assigned to women. This is the labour that sustains life, nurtures productivity and reinforces ideological commitments through everyday practices of tending, feeling and maintaining.[9]

Building on these insights, this study on gender relations in the countryside, where most North Koreans in the 1950s and 1960s continued to live, traces the limits of state attempts to reform social relations. However, it does not treat gender inequality as a static, top-down imposition by the state on subjects devoid of agency. Recent histories of twentieth-century socialist states have underscored the everyday as a key site where socialist modernisation was negotiated, rather than simply dictated from above. As this work demonstrates, patterns of labour, domestic care and material culture reflected not only state ideology but also the lived experiences and aspirations of individuals compelled to navigate a topography of everyday contradictions and possibilities.[10]

The role of science in North Korea's postwar drive to increase meat production is the final factor considered in this analysis. As divisions separating the household and the collective lowered, animal husbandry emerged as a venue for a new form of scientific female subjectivity. Recent studies on North Korea's intellectual and institutional history have highlighted the central role of science and technology in state-building before and after the war.[11] Indeed, breaking the singular emphasis on affective labour, female farmhands were also depicted as the calculating scientists of the everyday. In the collective farms of North Korea, this was seen with particular clarity around a variety of managerial issues connected to fields, fodder and food. Which fallow zones could be harvested for cellulose? What plants contained the nutrients needed by specific animals? How should feed be collected, processed and stored? What chemical additives and supplements should be included? How should natural resources be incorporated into an increasingly mechanised system of livestock management? These were complex features of husbandry that agricultural science and technology were supposed to resolve. It would be the creative interventions of North Korea's female farmhands, it was hoped, that would lead to the refined mobilisation both of animals and of large tracts of under-utilised land.

While the discourse of the scientific farmhand enabled the state to harness women's labour, it also provided these individuals with opportunities to assert their expertise and advocate for more recognition of their contributions to the postcolonial project. As women garnered greater compensation for their increasingly technical work, tensions and contradictions surfaced regarding their social status. Examining women's voices on their scientific subjectivity not only complicates the narrative of gender politics in early North Korea but also introduces this crucial analytical framework into the largely gender-blind research on socialist science in North Korea.

Situated between the histories of gender politics and science culture, this paper traces the ways that female farm labour, environmental intervention and the science of animal nutrition intermixed. The North Korean press from this time was full of success stories of female farm technicians who overcame any obstacles to achieve the production quotas demanded by the state. According to official accounts, North Korea's farmhands would achieve success by scientifically managing their herds along with the natural spaces that would nourish them. However, equally important to this campaign were the affective energies of the female workers themselves. Presented as an inherent extension of the domestic realm, collective feedlots and fallow mountain pastures were set out as spaces where workers were to shoulder the emotive burden of nurturing the nation's flocks.

This gendered intervention into the natural and animal realms was more than just a way to boost production. In postwar North Korea, meat was an important way for the state to demonstrate both systemic authenticity and, by the same token, sovereign authority over a divided peninsula. As both North and South Korea pursued programmes of reconstruction, food production and availability became a core metric of success. However, a careful reading of the sources also highlights the tensions and ambiguities at play in these stories of developmental accomplishment. While state aims to increase rural meat production pivoted on the gendered mobilisation of affective and physical labour, these calls also led to new openings for workers to reorient their positions in the commune system. By examining the dynamics that underscored the production processes within the field of husbandry, this paper presents a social history bound by the spatial, gendered and scientific practices orchestrated in the animal farms of North Korea.

The discussion that follows draws from a wide variety of sources dealing with animal husbandry and meat production in early Cold War North Korea. Hardly the sole province of the agricultural press, a new form of scientific and gendered husbandry was the subject of poetry and song, painting and satire, party moralisation and social mobilisation. Against this larger backdrop, the analysis that follows draws heavily from materials published in the early 1960s agro-science serial *Animal Husbandry*, as well as from three other journals by the same publisher, *Village Women*, *Agricultural Technology* and *Advanced Agriculture*.[12]

2 | Meat Consumption, Socialist Plenty and Rural Reform

In late 1950s and early 1960s North Korea, the future of the nation was said to be a function of the feedlot. A constant stream of input from North Korean agronomists and state planners held that the integrated challenges of postcolonial autonomy and

Cold War division were not distant concerns reserved for the realm of realpolitik. Rather, these questions of sovereignty were directly connected to the capacity of rural populations to increase output and, by doing so, embody the superiority of the socialist model.[13] Unobtainable on the battlefields of the recently ended Korean War, political independence, national unification, and the verification of the socialist model now had to be achieved within the realm of competitive developmentalism.

Meat production served as an unlikely measure to help demonstrate the accomplishment of these aims. Starting in the late 1950s, North Korean media outlets began to forecast how reformed agriculture would generously supply hungry people with 'steamed rice and meat soup', a catchphrase presented by none other than Kim Il Sung, himself a rotund illustration of socialism's fecundity. By 1959, the main mouthpiece of the Korean Workers' Party was publishing works that directly linked meat production to the political realisation of socialism. In 1958, for instance, the Vice-Premier Kim Il presented the ambitious goal to produce 400,000 tonnes of meat by 1961, accounting for 40 kilograms of meat per capita.[14] Paralleling these calls were a similar stream of articles on meat production in reference circulars for party members and propaganda officials.[15] Pictorial magazines frequently projected depictions of this socialist plenty, characterised by fantastical images of anthropomorphic crops and giant livestock (Figure 2).[16] Often mixing playful imagery with purposeful messaging, these works underscore themes of technical intervention, economic planning and environmental mobilisation. According to these depictions, postcolonial sovereignty under socialism would be made manifest on the butcher's block, taking the form of a cornucopia unrivalled by an impoverished and market-driven South Korea, still under the occupation of tens of thousands of foreign troops.

Integrating this vision of a socialist and sovereign plenty, the state remained staunchly fixed on increasing rural output through the transformation of the countryside. Redistribution of land in 1948 was followed by the collectivisation of farms ten years later. Parallel with these reforms, the general scientification (*kwahakhwa*) of agricultural production, expressed through the four glowing visions of mechanisation, irrigation, chemicalisation, and electrification was meant to unleash the superior developmental capacity of food production under the leadership of the Workers' Party.[17] Multiple metrics charted the pursuit of this goal. Between the end of the Korean War in 1953 and 1960, the nation's fleet of tractors increased from just 1,542 to 6,313. Correspondingly, the total amount of land cultivated by these machines grew from 10.5 *per cent* in 1956 to 36 *per cent* by the end of the decade. Accompanying this process of mechanisation was the construction of hydraulic infrastructure throughout the countryside. Within a matter of years, the total amount of irrigated farmland in the North doubled.[18]

Pyongyang's expansion of the agricultural economy was helped along by sustained state support. During the Three-Year Plan of 1954–1956 and the Five-Year Plan of 1957–1960, average public investment in the rural sector grew from 9 *per cent* of total expenditures to over 12 *per cent*. By the Seven-Year Plan of 1961–1967, the amount reached just below 20 *per cent*.[19] North Korea's relative abundance of coal and hydroelectric power made it particularly suited to this industrial approach to agriculture, as did the state's expansive fertiliser and chemical industries.[20] This mode of farming was openly energy-intensive, with the tractor and the electric pole symbolising a newly animated nation.[21] Through these markers of modernity, the countryside was placed anew under national dominion and envisioned as a progressive and productive space.

The developmentalist contest that informed North Korea's rural investments was part of the larger history of the Cold War politics of food. Throughout this period, what one ate and where it came from were invariably placed into causal sequences of social analysis, outlines of scientific intervention and platforms of political critique. These issues went well beyond 'kitchen debates' over the developmental potential of the Soviet or American models.[22] Industrialised food production and the agro-scientific systems that underpinned this mode of output denoted thresholds of historical progress and systemic authenticity. Food could function as a symbolic barometer of revolution and a marker of its realisation. At the same time, food could also serve as a singular linchpin to preventing revolution.[23] When denoted with such high stakes, the production and consumption of food became more than a site of Manichean competition; it was a venue for systemic verification. In North Korea, the future promise of a post-revolutionary tomorrow shaped consumption in ways that were analogous to other socialist states.

3 | Scientific Husbandry as Women's Work

The challenge for Pyongyang's state planners was how to reconcile these idealised depictions of socialist plenty with the realities of North Korea's postwar agrarian sector. At the end of the 1950s, a particular intersection of demographic trends, state production goals and gendered depictions of farm labour led to the establishment of husbandry as women's work. This assertion was, by one measure, an entrenchment of long-salient patriarchal formations within the Korean system. However, animal husbandry in postcolonial North Korea also produced openings for women to assert important forms of scientific, economic and political power. With their sterile white aprons and authoritative command over the vast intricacies of livestock production, North Korea's female farmhands wielded a new stature over a lucrative dimension of the integrated domestic and productive spaces of collective farms. Their success was taken as a verification of both individual efficacy and systemic fecundity. At the same time, their relegation to the work of husbandry also bespoke a postcolonial and post-revolutionary society that persisted in the reproduction of gendered tropes of affective capacity.

Gender as an organising principle of rural labour was a central feature of Korea's twentieth-century food economies. During the colonial period, agriculture pivoted on gendered divisions of labour, with men generally working in rice-paddies and fields to produce the most profitable cash crops while women utilised dry-fields for everyday staple foods. By the early 1940s, the expansion of the Asia-Pacific War further heightened the role of women workers in the sector. Wartime urbanisation throughout the Japanese Empire, along with an expanded military draft and the mass conscription of colonial workers, fuelled a gender-specific shift in the Korean countryside as men went off to fight and women went off to farm.[24]

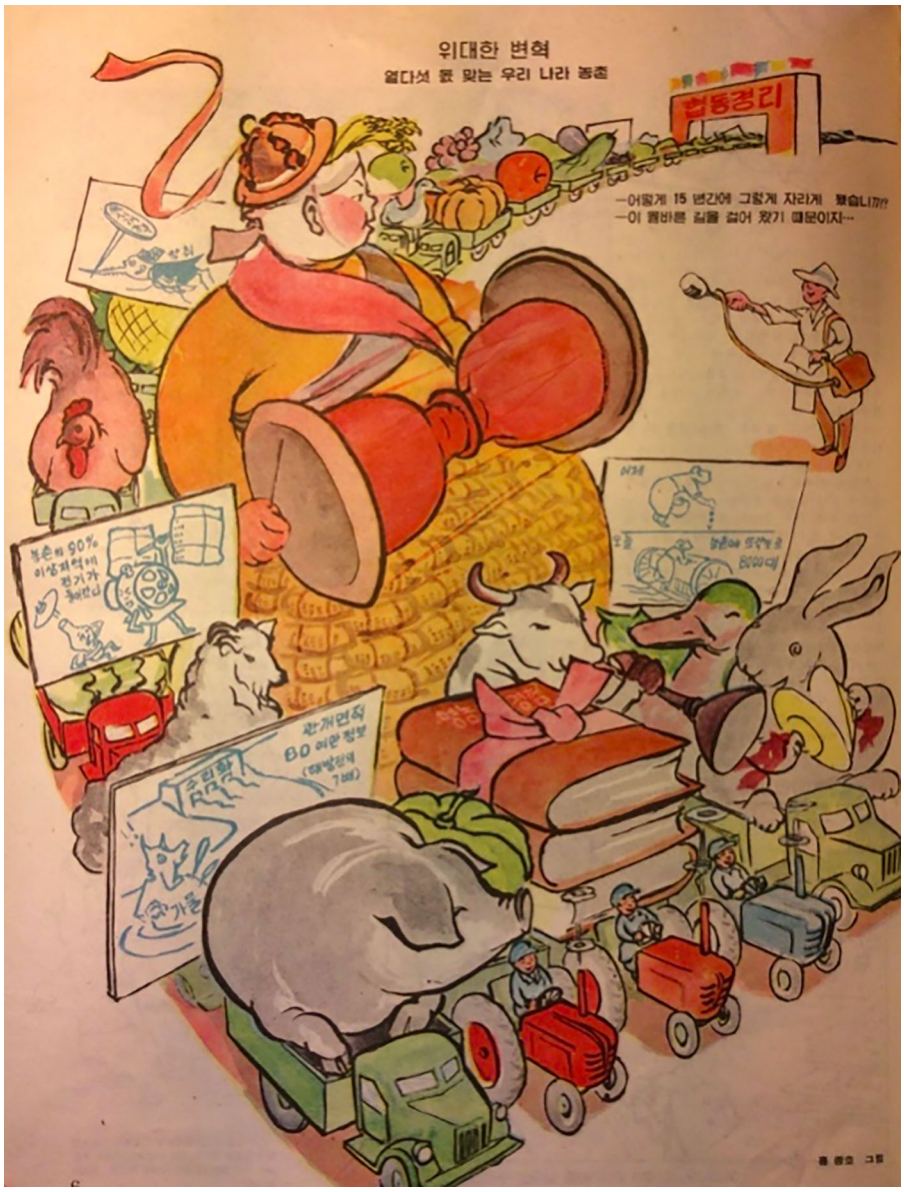

FIGURE 2 | A parade of socialist plenty. 'The Rural Villages of Our Country on the 15th Anniversary of the Great Transformation', 1960. [Colour figure can be viewed at wileyonlinelibrary.com]

Within ten years of the peninsula's liberation in 1945, these trends were codified by post-civil war demographics, the economic forces of reconstruction and official state policy. The Korean War left millions of working-age men dead or disabled. Between 1950 and 1953, the male population in the North was reduced from 49.7 *per cent* of the total to 46.9 *per cent*.[25] Corresponding with this shift, women's participation in the labour sector quickly grew throughout the 1950s – from 26.2 *per cent* of total workers in 1953 to 29.6 *per cent* in 1958 and again to 34.9 *per cent* in 1959.[26] Such increases were geographically uneven and sector-specific. Men who survived the war flocked to choice positions in urban labour markets awash with reconstruction funds. Female applicants were not officially excluded from this work, but explicitly gendered divisions of labour and favouritism towards war veterans meant that urban employment often went to male applicants.[27] As these urbanisation trends deepened, the enormous task of feeding the nation increasingly fell on the mix-gendered workforce of collective farms. By the mid-1950s, women farmhands already constituted roughly 60 *per cent* of the agricultural workforce.[28] By the end of the decade, state proclamations were formalising and further naturalising these trends. As the most significant state-led initiative to mobilise women's labour, Cabinet Decision No. 84 of 1958 called for a greater influx of women into wage labour. It aimed to increase the average female labour force participation to 30 *per cent* across all sectors.[29] However, this decision did not imply full equality between men's and women's labour. Instead, it reinforced gendered assumptions about the types of work deemed suitable for women. For instance, it set a notably higher target – 60 *per cent* – for the education and health sectors. During the 1950s and 1960s, gendered arguments were common, such as the claim on the necessity of 'ensuring the proper placement of women in suitable positions based on their inherent nature (*ch'ejil*) and functions'.[30] Although the 1958 decision did not explicitly mention animal husbandry as a suitable occupation for women

based on these perceived nature and functions, discussions surrounding animal husbandry reflected the assumption that women possessed an intrinsic aptitude for caregiving, as if the notion did not require any further justifications.

The belief that women were intrinsically better caregivers, not only for humans but also for animals, had deeper roots.[31] Throughout the 1930s, the Japanese colonial state and Korean nationalist reformers espoused similar assumptions to promote domestic livestock production, in particular, poultry and rabbits, as a profitable side job for women. Following the many reforms initiated after 1945, North Korea witnessed the gradual development of animal husbandry beyond a household chore and into a task for the collective.[32] This changed the social meaning of this specific form of labour, blurring the divisions between public and domestic work. Despite this shift, however, articles from the time also constantly emphasised the familial parallels that affectively bound female farmhands to their flocks. One indicative story from 1963 celebrated the maternal impulse of a worker who nursed a newborn calf. In this account, a young female farmhand out-mothers nature itself, saving the suckling after the actual mother of the animal proved to be unable to produce her own milk.[33] Similar accounts and visual imagery inundated the press at this time. In addition to the many stories of cross-species parenting found in agricultural journals, general media outlets printed paintings and cartoons celebrating the motherly work of husbandry.[34] The cover image of the January 1964 issue of *Animal Husbandry*, for instance, presented a female worker feeding a piglet with a paternal smile. Clad in white and surrounded by an implausibly orderly pigsty, such images passed husbandry as a labour of love (Figure 4).

Intersecting with these depictions of affective labour were the ways that husbandry afforded women workers with a particular hold on technical and scientific expertise. Going beyond discussion of affect, popular North Korean serials also stressed that it was the methodological discipline, utilitarian logic and experimentation of these workers that buttressed their success. These traits situated women literally behind the tractor wheel of the transformations underway in the countryside.[35] Almost always depicted as youthful providers and sustainers of animal life, the technical skills of female stock keepers helped compose idealised renditions of the workers as young and energetic. The vanguard of the farmyard, their political progressivism was demonstrated in the mode of their work and the forms of scientific knowledge they integrated into their responsibilities.

These themes were common in publications like *Animal Husbandry, Rural Women* and the *Women of Chosŏn*. In particular, the omnipresent image of the female farmhand clad in a white work apron would have immediately stood out as a marker of scientific praxis to the readership of the day. In this context, this refers to the routinised, material enactment of scientific knowledge in daily life, an expression of science not as abstract theory but as an applied logic shaping everyday tasks, social roles and ideological commitments. For decades, the white apron had been associated with the hygienic and scientific management of domestic space.[36] Its migration to the farmyard during this period of collectivisation and mobilisation illustrates the extension of this logic into new domains. On the rural worksite, the apron stood not only for cleanliness and care, but for the broader idea of a modern, rationalised and scientifically governed way of life.

Scientific intervention was a running topic in articles on herd management, animal nutrition, barnyard design and general hygiene. The precise head counts and meticulous percentages that habitually accompanied these stories further conveyed the common currency of empirical precision shared between the subjects, authors and readership.[37] Through their participation in this applied science of husbandry, female farmhands emerged as local sources of pedagogical authority and holders of status among the other members of the commune.[38] Magazines frequently included accounts of women workers whose technical knowhow around the farm translated into local lectureships and communal recognition from male and female colleagues alike.[39] The question and answer sections, as well as pedagogical columns in the magazines, often served as a space where such workers boasted their personal approaches and creative methods acquired on their farms. Lacking sufficient material resources such as mass-produced fodder, the state relied on individual dynamism and creativity to solve many of the technical problems related to rearing animals.[40] Taken together, this technological and scientific authority developed alongside the gendered formulation of the field, establishing the pivotal role women maintained in this vital sector of the agrarian economy.

3.1 | Turning Mountains to Meat Through Scientific Labour

Few topics better manifested this dynamic than the question of animal nutrition in the use of animal fodders from hills and mountains. Constrained by the geographic realities of the peninsula, North Korea's communes lacked any additional land to grow animal feed. The solution espoused by agronomists was for farmers to turn to the nation's many mountainous and forested zones. Mountainous and heavily forested, the physical geography of North Korea imposed specific challenges to industrialised and large-scale agriculture. Unlike in other states, wide tracts of arable land could not be spared to grow the feed crops used in the mass production of animal-based protein. Throughout the colonial and postcolonial periods, livestock production was limited by the more pressing need to expand grain harvests for human consumption. However, in the eyes of state planners and pundits in the agricultural press, these geographic conditions also offered specific possibilities for expanding output. Plans to recreate nature went well beyond the irrigation and land reclamation projects of the day. Exerting dominion over national space also implied the sound management and utilisation of previously undomesticated tracts. Fallow space was presented as an untapped resource that, if properly accessed, could be transformed into a rich source of animal protein.[41] In the North Korean press, the extraction of nutritional value out of lands marked as wild, and the further conversion of this fodder into flocks, demonstrated the protean character of the socialist model and established the comparative capacity of the state to govern sovereign space. When directed onto these, purportedly unused mountainous zones, state planning, technoscientific intervention and the affective character ascribed to women's work would renew nature and the nation both.

The field of animal husbandry aggregated these views of natural space, rationalised agriculture and gendered labour. Turning to the fallow and mountainous land, which reports at the time set at roughly 80 *per cent* of the North's territory, was a potential solution to food shortages.[42] The brush and undergrowth of these locales, pundits argued, could serve as a rich source of fodder as well as new zones for animal forage. According to one appraisal from 1960, the mountain's 'unlimited' supply of wild plants could annually translate into 5 million tonnes of fodder.[43] If this vast amount of plant life, the argument went, could be collected and properly processed, it would serve as an ideal source of feed for a growing population of domesticated livestock.[44] In the field of animal husbandry, this reorientation to the natural realm was most clearly captured under the slogan 'Let's Turn the Grass into Meat'. At the core of this message was a particular notion of environmental conversion and energy exchange. This view emphasised that the physically laborious process of collecting mountain forage, itself a reservoir of bioenergy, could translate into a vast source of animal protein. One particularly vivid rendition of this process can be found on the cover of *Bow and Arrow* from the summer of 1959 (Figure 3).[45] In the image, farmhands are first shown descending from the mountains pushing handcarts packed with wild fodder. Then, they unload the raw material by hand onto a conveyor belt that carries it aloft for storage. At this point, the processes of mechanised agriculture are abbreviated within the cellulose silo. Whatever happens within, the end product is a series of glimmering trucks shipping loads of cheerful, fattened livestock, parading their way to the abattoir.

Husbandry specialists were to draw on the power of scientific knowledge and technical creativity to convert these fallow lands into rich sources of meat. However, the process was hardly straightforward. Farm animals could be picky eaters, undergrowth could often be difficult to identify, and the window to harvest wild fodder was uneven and limited. A seemingly endless series of articles attempted to familiarise readers with these complexities.[46] With little more to work with than general descriptions and rough illustrations, female farmhands were asked to scientifically identify a vast array of vegetation (Figure 5).[47] This could be an enormous task of discernment. For instance, a 1963 ecological study of the northwestern Chagang Province introduced 265 varieties of wild vegetation suitable for livestock consumption. However, intermixed with these species were 297 varieties that were not.[48] Plants like bush clover, white evening primrose, arrowroot, purslane, plantage, amaranth, alpine knotweed and sunroot were indeed all edible, but generally just to pigs. Rabbits, sheep, poultry, beef cattle, dairy cows and horses all had different nutritional requirements and dietary preferences that had to be resolved.[49] However, for those who could manage such challenges, scientific knowledge could convert personal success and professional status on collective farms.

Similar opportunities for professional achievement appeared through the many technical procedures connected to animal nutrition. Preparing food for animals, particularly wild fodder, was a complex and procedural process that pressed farmhands to excel at the role of the citizen scientist. Managing silage was a technically complex series of interventions, scientifically calibrated to maximise the nutritional content for fodder. Raw material drawn from fallow lands often had to be physically milled to help break up the cellulose in the plants.[50] Common processing steps also included the drying or soaking of fodder to facilitate storage and improve the digestibility of feed.[51] A very common method expounded by the agricultural press of the 1960s was the use of fermentation to further refine fodder and increase its nutritional value.[52] In the case of one recipe for cow and pig feed, this 'Grass Kimchi' was created out of a combination of water, salt, bone meal and grass. After further heating and several days of ripening, the kimchi was ready to slop (Figure 6).[53] Such images underscored a rational, procedural approach to livestock rearing that fused technological skill with the everyday economy of barnyard care. Other additives were more reminiscent of the pharmacy than of the kitchen. To increase the nutritional value of animal feed, farmers were called on to include vitamin and mineral supplements.[54] Similarly, recipes for feed preparation could also be tailored to meet the health needs of livestock.[55] For instance, one 1963 article emphasised the creative work of the farmhand Kim Poksun. Her 'dozens of experiments' on fermented grass eventually yielded both an ideal recipe for her pigs and an effective example of the kinds of creative science encouraged by the state.[56]

Likening refined animal feed to kimchi epitomised the dual character of women's work on North Korean animal farms. Extending a gendered division of labour in the kitchen to the farmyard, fodder preparation and its nutrition were commonly presented as a domestic chore, and at the same time, an instance of applied scientific knowledge. Such tasks mixed the affective labour of the domestic setting with the procedural sentiment of the laboratory. Measured processing, preparation and cooking culminated in a collaged image of domestic scientists feeding happy flocks. When done well, the official message went, these tasks allowed skilled workers to gain recognition through their perfection of rationalising rations. Pressed into the sector by gendered tropes and postwar demographics, this emphasis on modern and creative husbandry allows some of the most marginalised workers in the North Korean system an opening to shape their subjectivities as scientists of the everyday.

These visions of energy conversion, Taylorist management and gendered labour mobilisation that defined North Korean discussion of husbandry concealed a range of complications.[57] Preparing an adequate supply of fodder was a particularly onerous task. State planners demanded double-cropping for every inch of cultivated land, which already required an extensive amount of commune labour.[58] Outside of their field work, foragers had to repeatedly trek the same rugged terrain as different wild plants became ready to reap.[59] Once more, many types of vegetation were best harvested in the early months of the summer and late spring. These were precious weeks, already amply occupied by the need to fertilise and seed the new season's crops. To make matters worse, collecting fodder was considered menial work that could be done during a farmhand's spare time. As a result, the task was often not sufficiently weighed in the workload calculation systems used by the collectives. Even when it was, experts could never clearly articulate what amounted to a successful day of fodder collection.[60] Variations in geography, tools, weather and plant matter made a standardised survey of collection rates and production goals almost impossible. For instance, an article in *Animal Husbandry* from 1963 presented 400 to 500 kilograms

FIGURE 3 | Enviromental moblisation from the mountain to the meat market, 1959. [Colour figure can be viewed at wileyonlinelibrary.com]

of fodder as a reasonable harvest for a day of foraging.[61] A month later, the same magazine reported on an agricultural work team that counted 50 kilograms of fodder as the output of a half day's work.[62] A month before, another article inserted the variable of a push cart in reaching the ratio of 150 kilograms of kudzu for a 1.15–1.2 working day. Elsewhere in this report, a full day of labour was translated into 200 kilograms of other plants.[63]

There were few explicit complaints in the magazines from this time about the formulas used to calculate the labour of foraging, but the repetitive appearance of articles on the topic suggests how collecting fodder continued to be a difficult and uneven task. Tending to animals and searching out their food in the forest and mountains was not just taxing and dirty; it could also bef quite dangerous. Almost the entirety of the North was sprinkled with unspent munitions from the recently ended civil war. Landmines and unexploded shells were a common and threatening part of the environment for flocks and herders alike. Once more, female farmhands were exposed to the elements, dangers of isolation, stark terrain, poisonous plants and marauding predators. In one dramatised account of these hazards, Ri Pohwa, a work team leader on a livestock farm in South Hwanghae province, had to traverse a series of backroads and water hazards by night, all the while clutching a sickened pig to her chest.[64] Elsewhere, an article from *Women of Chosŏn* told of the three-day skirmish between the shepherdess Kang Ogyŏn and a pack of raiding wolves.[65]

FIGURE 4 | Cover image from the magazine *Animal Husbandry*, 1964. [Colour figure can be viewed at wileyonlinelibrary.com]

Taxing and dangerous though it was, these contributions by the women of the husbandry sector did not automatically translate into a heightened stature within the leadership structures of the field and farm. The writers and editors for media outlets like *Animal Husbandry* were overwhelmingly male, and an examination of their coverage of the sector suggests that women were analogously limited from assuming high-ranking positions and official recognition. This found expression through the animals women were tasked to raise. Cows and horses were often viewed as a repository of rural capital and an important source of muscular energy. Articles and images from the North Korean press suggest that, aside from milking, bovine and equine rearing was generally relegated to men. By contrast, smaller and more prolific animals like pigs, poultry, goats and rabbits almost always appeared as the work of women and children. The scientific praxis that undergirded North Korean husbandry was analogously divided. Agricultural researchers, biologists and veterinarians were generally male, while the menial tasks of applied science were performed by women technicians.

Husbandry's ambiguities, dangers and lack of social cachet were compounded by the dirty and smelly nature of the work. Like their male colleagues moving to the city, many female farmhands were not interested in a life on the farm, let alone the pigsty. Some saw the work as unbefitting of their gender. For instance, one Kang Ogyŏn requested a reassignment to do fieldwork, complaining that 'this [husbandry] is too trivial for young women, isn't it?'[66] Another woman, Kang Ch'angbok, expressed a similar view, stating that 'managing pigs was inferior to working in a farm's field unit'.[67] For the writers at *Animal Husbandry* and *Women of Chosŏn*, these complaints were simply a narrative tool that helped highlight the eventual transformation

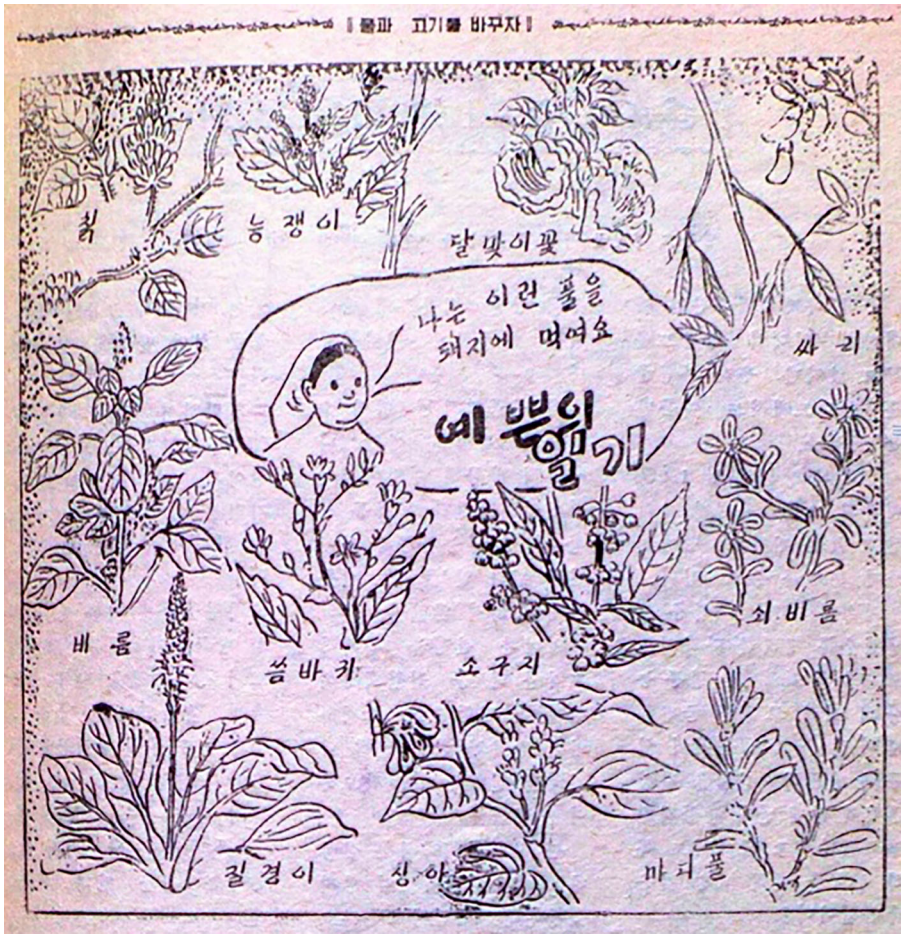

FIGURE 5 | "I can feed these kinds of plants to the pigs." From the cartoon 'Cutie's Diary,' 1963. [Colour figure can be viewed at wileyonlinelibrary.com]

of the two Kangs into model animal rearers. Yet, these and other cases also point to the fact that husbandry, whether framed as motherly or scientific, was not the preferred vocation for women with alternative options.[68]

4 | Conclusion

Husbandry as women's work in late 1950s and early 1960s North Korea, and its corresponding systems of animal nutrition and environmental management, tied into some of the most pressing concerns confronting the postcolonial state. Increasing the supply of animal protein meant much more than furnishing the domestic market with a highly sought-after commodity. The capacity of the North's agricultural system to produce meat was taken as a marker of systemic authenticity and developmentalist superiority. Once more, given that rural poverty was among the most defining characteristics of the recently ended colonial period, prosperity was an expected outcome of postcoloniality. On a peninsula defined by the geopolitics of Cold War division, the plenty of a socialist pantry was as much a claim to sovereignty and a marker of historical rupture as it was the outcome of a new mode of production.

With these implications in mind, agronomists and state planners turned to the fallow lands and female farmhands of the North to expand meat output. Pressured by the geography of the region as well as the concurrent need to expand grain harvests, the mountains, forests and hills of North Korea appeared in the press of the day as an untapped storehouse for the nation's fodder needs. Brimming with plant life, pundits downplayed the laborious and technical nature of collecting wild fodder and instead conflated fallow space with meat itself. According to this logic, the task of domestication was a spatial one. The wild hills and forests of the North could be brought to heel through the measured intervention of the nation's farmers. Asserting dominion over such tracts of land was a utilitarian solution to material shortages, but it was also a demonstration of control over the still-contested space of the peninsular nation.

Postwar demographics, patriarchal ideologies, and explicitly gendered divisions of labour ensured that this vast project of animal husbandry fell to the female farmhands of North Korea. With the war-torn countryside emptied of male labour, but still heavily informed by familial formations and patriarchal praxis, these farmers were presented as the emotively suited and technically skilled keepers of the nation's flocks. In the national press, female farmhands appeared as the techno-scientists of the feedlot by entering the mountains to collect fodder, converting previously inedible plant-like material into silage and slop. However, these same outlets also passed these workers as homogenous sources of maternal affect, nourishing and nurturing their animals in

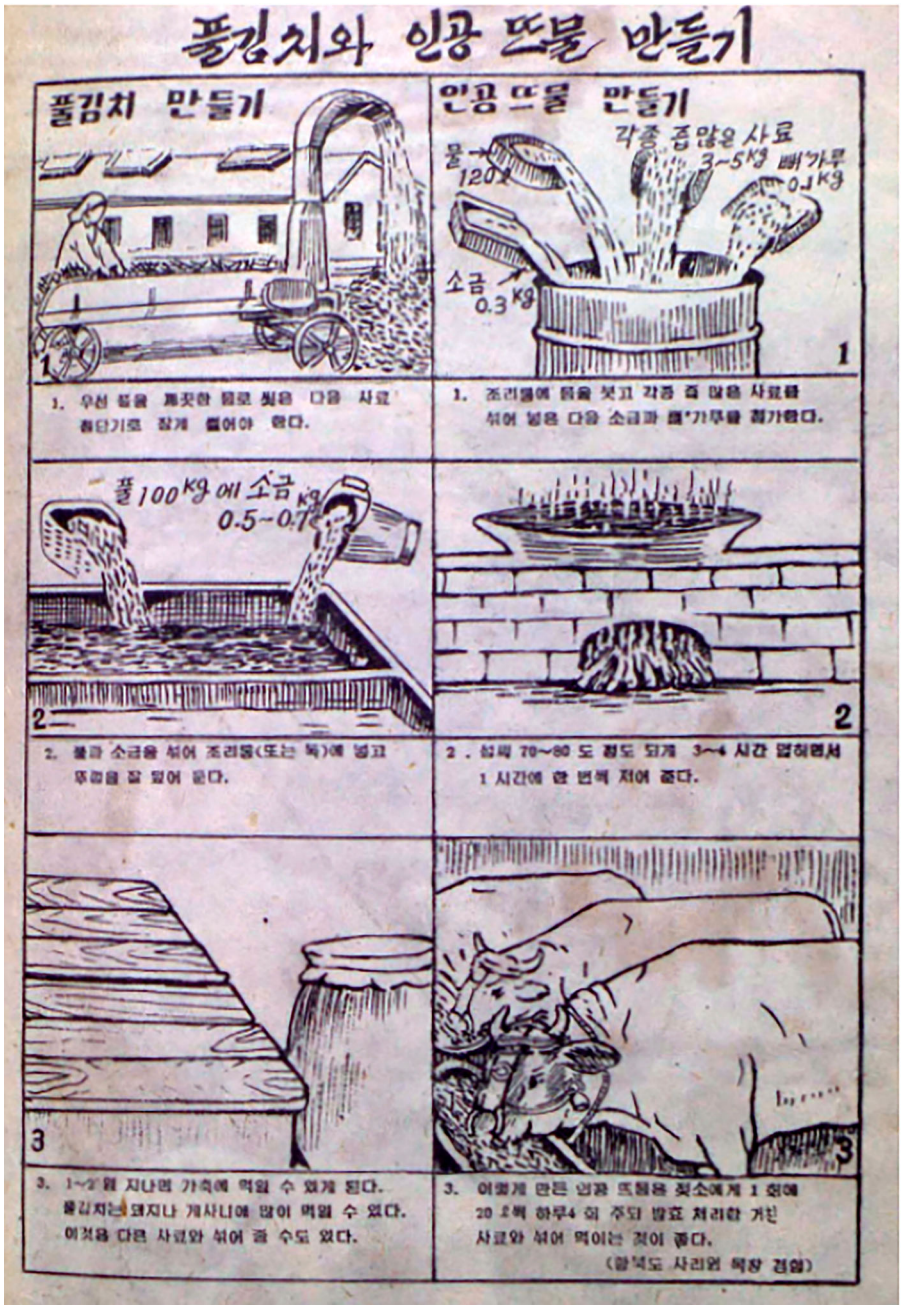

FIGURE 6 | A guide to making grass kimchi, 1963. [Colour figure can be viewed at wileyonlinelibrary.com]

ways that were often asserted as innate. The scientification of animal husbandry brought with it a popularisation of expertise and authority. However, as seen in the case of early Cold War North Korea, the science of husbandry also readily lent itself to the naturalisation of gendered unevenness on the nation's animal farms.

Endnotes

[1] Kim Kungnyŏn, 'Puŏp ŭro twaeji 15 mari, t'okki 273 mari, tak 35 mari sayuk', *Suŭi ch'uksan* 45 (Mar. 1963), pp. 7–9.

[2] *Suŭi ch'uksan* (Jan. 1963).

[3] For the central place of domesticity in socialist mobilisation of women, see Donna Harsch, *Revenge of the Domestic: Women, the Family, and Communism in the German Democratic Republic* (Princeton: Princeton University Press, 2016). For other recent works on the women and labour in socialism, see also Melanie Ilic (ed.), *The Palgrave Handbook of Women and Gender in Twentieth-Century Russia and the Soviet Union* (London: Palgrave Macmillan, 2017); Susan Zimmermann, 'The Agrarian Working Class Put Somewhat Centre Stage: An Often Neglected Group of Workers in the Historiography of Labour in State-Socialist Hungary', *European Review of History* 25 (2018), pp. 79–100.

[4] Yun Miryang's work is considered as a pioneering work on North Korean women with its focus on policy. Yun Miryang, *PukHan ŭi yŏsŏng chŏngch'aek* [North Korean Policies on Women] (Seoul: Hanul, 1991). Since her work, scholars have provided versatile empirical works on North Korean women's lives in North Korean early history. For one representative work, see Pak Yŏngja, 'PukHan ŭi kŭndaehwa kwajŏng

kwa yŏsŏng ŭi yŏkhal (1945–80-yŏndae): Kongjang kwa kajŏng ŭi chŏngch'i sahoe wa yŏsŏng nodong ŭl chungsim ŭro' [The Process of Modernisation and the Role of Women in North Korea from 1945 to the 80s: With a Focus on the Political Society and Female Labor in the Factory and the Home] (unpublished doctoral thesis, Sungkyunkwan University, 2004). In the most recent English scholarship, Suzy Kim and Andre Schmid have included gender as a crucial component in their monographies on early North Korean history. Suzy Kim, *Everyday Life in the North Korean Revolution, 1945–1950* (Ithaca: Cornell University Press, 2013); Suzy Kim, *Among Women across Worlds: North Korea in the Global Cold War* (Ithaca: Cornell University Press, 2023); Andre Schmid, *North Korea's Mundane Revolution: Socialist Living and the Rise of Kim Il Sung, 1953–1965* (Berkeley: University of California Press, 2024).

[5] Pak, 'PukHan ŭi kŭndaehwa kwajŏng kwa yŏsŏng ŭi yŏkhal'. See also Pak Yŏngja, 'PukHak ŭi yŏsŏng nodong chŏngch'aek (1953–1980-yŏndae)' [North Korean Policy on Women's Labor (1953 to the 1980s)], *PukHan yŏn'gu hakhoebo* 8 (2004), pp. 123–146.

[6] For instance, Andre Schmid, *North Korean Mundane Revolution*; Suzy Kim, 'Revolutionary Mothers: Women in the North Korean Revolution, 1945–1950', *Comparative Studies in Society and History* 52 (2010), pp. 742–67; Sonia Ryang, 'Gender in Oblivion: Women in the Democratic People's Republic of Korea (North Korea)', *Journal of Asian and African Studies* 35 (2000), pp. 323–49.

[7] See Schmid, *North Korean Mundane Revolution*; Kim, *Among Women across Worlds*; Kim, 'Revolutionary Mothers'; Suji Choi, 'Gender Politics in Early Cold War North Korea: National Division, Conscription, and Militarized Motherhood from the Late 1940s to 1960s,' *Journal of Peace and Unification* 8 (2018), pp. 1–27.

[8] Kim, 'Revolutionary Mothers'; Choi, 'Gender Politics in Early Cold War North Korea'; Pak Yŏngja, 'PukHan ŭi yŏsŏng chŏngch'i: 'Hyŏksinjŏk nodongja—hyŏngmyŏngjŏk ŏmŏni roŭi chaegusŏng' [North Korea's Gender Politics: Remaking the Reformed Worker-Revolutionary Mother], *Sahoe kwahak y'ŏngu* 13 (2005), pp. 356–89.

[9] Michael Hardt and Antonio Negri, *Multitude: War and Democracy in the Age of Empire* (London: Hamish Hamilton, 2005).

[10] Schmid, *North Korean Mundane Revolution*. Despite its focus on an elite woman in North Korean leadership, Suzy Kim's work also stresses women's agency in the North. Kim, *Among Women Across Worlds*. See also Harsch, *Revenge of the Domestic* for the case of DGR. In the case of rural women in socialist China, see Gail Hershatter, *The Gender of Memory Rural Women and China's Collective Past* (Berkeley: University of California Press, 2011).

[11] Kang Hoje. *PukHan kwahak kisul hyŏngsŏngsa* [History of Science and Technology in North Korea] (Sŏnin, 2007); Eunsung Cho, 'The Thread of Juche: Vinalon and Materially-Embodied Interdependencies in North Korea, 1930–2018' (unpublished doctoral thesis, Columbia University, 2020); Derek Kramer, 'A New Kind of Energy: Atomic Science in the Cold War Koreas: 1945–1958' (unpublished doctoral thesis, University of Toronto, 2021);Donghyun Woo, 'Leveraging Uneven Cooperation: Socialist Assistance and the Rise of North Korea, 1945–1965' (unpublished doctoral thesis, University of California, Los Angeles, 2022).

[12] Produced by the Agricultural Publishing House the four journals are romanised as *Suŭi ch'uksan*, *Nongch'on nyŏsŏng*, *Nongŏp kisul*, and *Sŏnjin nongŏp*, respectively.

[13] For instance, see 'P'anihan hyŏnsil', *Hwasal* 113 (Nov. 1959), pp. 8–9. See also the contrasting images in *Hwasal* 146 (Sept. 1961), pp. 6–7.

[14] 'Ch'uksanmul saengsanŭl kŭpsokhi palchŏnsik'il te taehan Tang Chungang Wiwŏnhoe Sangmu Wiwŏnhoe hwaktae hoeŭi kyŏlchŏng silhaeng taech'aek e taehayŏ', *Rodong sinmun* (Dec. 10, 1958).

[15] Kim Samyŏng, 'Tang ŭi kyŏngje chŏngch'aek ŭl ch'ŏlchŏhi kwanch'ŏl sik'ija: chayŏn chirijŏk chokŏn ŭl olk'e iyong hayŏ ch'uksan ri ro chŏnhwan sik'igi wihan saŏp kyŏnghŏm', *Tang kanbu dŭl ege chunŭn ch'amgo charyo* 8 (Aug. 1959), pp. 2–6; Ri Yŏnguk, 'Tang ŭi ch'uksan chŏngch'aek ŭl kwanch'ŏl sik'ija: san kyŏnghŏm ŭl ch'ukchŏk hago ilbanhwa hanŭn t'ujaeng ŭl t'onghayŏ tang ŭi ch'uksan chŏngch'aek ŭl chŏnghwakhi kwanch'ŏl', *Tang kanbu dŭl ege chunŭn ch'amgo charyo* 9 (Sept. 1959), pp. 25–9; Pae Kiho, 'Tang ŭi ch'uksan chŏngch'aek ŭl kwanch'ŏl sik'ija: posujuŭi wa sogŭksŏng ŭl kŭkpok hago tamojak ŭl silsi hayŏ saryo munje rŭl haegyŏl hayŏtta', *Tang kanbu dŭl ege chunŭn ch'amgo charyo* 9 (Sept. 1959), pp. 29–32; 'Kach'uk saryo rŭl chŭngsan hayŏ ch'uksan ŭi t'odae rŭl t'ŭnt'ŭnhi haja', *Sŏndongwŏn such'ŏp* 12 (June 1958), pp. 23–4.

[16] ''Widaehan pyonhyŏk', *Hwasal* 129 (August 1960), 6.

[17] 'For more on North Korean agriculture in the 1950s and the 1960s, see Chong-Ae Yu, 'The Rise and Demise of Industrial Agriculture in North Korea', *The Journal of Korean Studies* 12 (2007), pp. 75–109; Kim Sŏngbo, *Nam-PukHan kyŏngje kujo ŭi kiwŏn kwa chŏn'gae: PukHan nongŏp ch'eje ŭi hyŏngsŏng ŭl chungsim ŭro* [The Origin and Development of the Economic Structure of South and North Koreas: With a Focus on the Formation of the Agricultural System of North Korea] (Seoul: Yŏksa pip'yŏngsa, 2000); Chŏng China, 'PukHan sahoejuŭi nongch'on t'eje ŭi tŭngjang paegyŏng' [The Backgrounds of Theses on the Socialist Rural Question in North Korea], *Sahak yŏn'gu* 123 (2016), pp. 227–28.

[18] Chŏng, 'PukHan sahoejuŭi nongch'on t'eje ŭi tŭngjang paegyŏng'.

[19] Yu, 'The Rise and Demise of Industrial Agriculture in North Korea', p. 87.

[20] Yu, 'The Rise and Demise of Industrial Agriculture in North Korea'.

[21] See, for instance, the picture in 'Widaehan pyŏnhyŏk', *Hawsal* 129 (July 1960), p. 6.

[22] Shane Hamilton, *Supermarket USA: Food and Power in the Cold War Farms Race* (New Haven: Yale University Press, 2018); Shane Hamilton, *The Kitchen Debate and Cold War Consumer Politics: A Brief History with Documents* (Boston: Bedford/St. Martin's, 2014).

[23] Nick Cullather, 'The Foreign Policy of the Calorie', *The American Historical Review* 112 (2007), pp. 337–64.

[24] For more details about gendered labour in rural Korea, see Yi Songsun, *Ilche ha chŏnsi nongŏp chŏngch'aek kwa nongch'on kyŏngje* [Wartime Agricultural Policy and Rural Economy under Japanese Rule] (Seoul: Sŏnin, 2008).

[25] Kukka kyehoek wiwŏnhoe chungang t'onggyeguk, *1946–1960 Chosŏn minjujuŭi inmin konghwaguk inmin kyŏngje palchŏn t'onggyejip* [The Collection of the Statistics of the Development of People's Economy in the DPRK] (P'yŏngyang: Kungnip ch'ulp'ansa, 1961), p. 18;cited from Kim, *Nam-PukHan kyŏngje kujo ŭi kiwŏn kwa chŏn'gae*, p. 343.

[26] Pak, 'PukHan ŭi kŭndaehwa kwajŏng kwa yŏsŏng ŭi yŏkhal', p. 52.

[27] For about the role of war veterans in reconstruction, see Sŏ Hongsŏk, 'PukHan nongŏp hyŏptonghwa sigi chedae kunin ŭi hwaltong kwa nongŏp hyŏptong chohap ŭi konggohwa', *Han'guksa hakpo* 74 (Feb. 2019), pp. 375–418.

[28] Kim Sŭngjun, *Uri nara ŭi inmin'gyŏngje palchŏn, 1948–1958* [The Development of People's Economy in Our Country] (Kungnip ch'ulp'ansa, 1958), p. 185; cited from Kim, *Nam-PukHan kyŏngje kujo ŭi kiwŏn kwa chŏn'gae*, pp. 343–44.

[29] 'Inmin kyŏngje kak pumun e nyŏsŏngdŭl ŭl tŏuk kwangbŏmhi inip-sik'il te kwanhan naegak kyŏlchŏng ch'aet'aek', *Rodong sinmun*(20 July 1958).

[30] Kim Tongch'an, 'Roryŏk poch'ung saŏp ui palchŏn', *Rodong* 8 (Aug. 1958), p. 11.

[31] For a study of an analogous dynamic, see Tom Quick, 'Puppy Love: Domestic Science, "Women's Work", and Canine Care', *Journal of British Studies* 58 (2019), pp. 289–314.

[32] This observation is credited to Andre Schmid's unpublished paper, 'Rabbits, Labour, and Pre-fab: Visualizing the Political Economy of the 1950s and 60s'. For more research on the gender in early North Korean years, see the works in footnotes 8, 9, 10.

[33] Kim Yŏngsŏp, 'Ŏmi ŏpsi songaji rŭl killŏnaen Yŏ Sukpok tongmu', *Suŭi ch'uksan* 43 (Jan. 1963), p. 23.

[34] Kim Pyŏngju, 'Han ch'agyugong ŭi iyagi', *Nongch'on nyŏsŏng* (Oct. 1959), pp. 18–19; Kim Namyong, "Ch'uksanban 'ŏmŏni'", *Ch'ŏllima* 7 (July 1964), p. 141. See also images on the front covers of *Chosŏn nyŏsŏng* (Mar. 1965), *Hawlsal* 58 (July 1956), and *Chosŏn misul* (July 1959).

[35] For instance, 'Nongch'on kigyehwa sŏn'guja taehoe kyŏrŭi pattŭlgo', *Chosŏn nyŏsŏng* (Jan. 1960), 12–13; Kim Tongch'un, 'Ch'ŏnyŏ ttŭrakttorŭ unjŏnsu,' *Chosŏn nyŏsŏng* (Jan. 1964), pp. 48–9 and 62–3.

[36] Jordan Sand, *House and Home in Modern Japan: Architecture, Domestic Space, and Bourgeois Culture, 1880–1930* (Cambridge: Harvard University Asia Center, 2005), pp. 72–3.

[37] Kim, 'Puŏp ŭro twaeji 15 mari, t'okki 273 mari, tak 35 mari sayuk'; 'Saekki twaeji 197 mari rŭl modu killŏ naegi kkaji', *Suŭi ch'uksan* 46 (Apr. 1963), pp. 7–8; 'Mobŏm yangdon'gong', *Nongch'on nyŏsŏng* (Nov. 1959), pp. 20–21.

[38] Kim Sigŏn, 'Kilcha ka t'aekhan kil', *Suŭi ch'uksan* 46 (Apr. 1963), 42–3; 'Ch'ŏllima kisu ŭi ilgi chung esŏ', *Suŭi ch'uksan* 49 (July 1963), pp. 42–3; Ri Tonghak, 'Han chongch'uk chagŏp panjang', *Suŭi ch'uksan* (May 1964), pp. 45–6; Ha Chaegyŏng, 'Sadongbŏl ŭi sarangsŭrŏun sae sedaedŭl', *Suŭi ch'uksan* 58 (Apr. 1964), pp. 44–6; Kim In'gun, 'Chŏt tchanŭn kisul ŭl paeugikkaji', *Nongch'on nyŏsŏng* (Aug. 1959), pp. 11–12; 'Mobŏm yangdon'gong'; Kim, 'Han ch'agyugong ŭi iyagi'; 'Kach'uk chal kirŭnŭn yŏsŏng', *Chosŏn nyŏsŏng* (Oct. 1963), p. 28.

[39] Kim Sigŏn, "Kilcha ka t'aekhan kil," *Suŭi ch'uksan* 46 (Apr. 1963) pp. 42–43; Kim In'gun, "Chŏt tchanun kisul ŭl paeugikkaji," *Nongch'on nyosong* (Aug. 1959), pp. 11–12.

[40] For the state limit and the so-called *chabalsŏng* discourse of individual creativity, see Schmid, 'Comrade Min, Women's Paid Labour, and the Centralising Party-State', in Alf Lüdtke (ed.), *Everyday Life in Mass Dictatorship: Collusion and Evasion* (New York: Palgrave Macmillan, 2016), pp. 191–2.

[41] Claims for extensive use of lands and mountains can be readily found in the general press of the day. For instance, see Kim, 'Tang uĭ kyoŋgje choŋgch'aek uĭ ch'oĭchoĭi kwanch'oĭ sik'ija'; 'Kyŏngjerim chosŏng saŏp e chŏkkŭk nasŏja', *Chosŏn nyŏsŏng* (Apr. 1961), p. 6; 'Han ch'i ŭi ttang to akkiŏ', *Chosŏn nyŏsŏng* (Apr. 1961), p. 10; Kim Ch'anghŭp, 'Chayŏn saryo ŭi iyong', *Sŏnjin nongŏp* (Jan. 1958), pp. 32–3.

[42] Kim P'ungyŏng and Pak Tŏksŏp, 'Manp'o mit Kanggye chigu nae myŏt kaji chayŏn saryo wŏnch'ŏn', *Suŭi ch'uksan* 48 (June 1963), pp. 12–13.

[43] 'P'ul kwa kogi rŭl pakkuranŭn tang ŭi ch'uksan chŏngch'aek ŭl kyesok ch'ŏlchŏhi kwanch'ŏl haja', *Suŭi ch'uksan* 59 (May 1964), p. 2.

[44] 'San ŭl olk'e iyong hayŏ kach'uk saryo rŭl haegyŏl', *Suŭi ch'uksan* 47 (May 1963), pp. 30–31.

[45] *Hwasal* 105 (July 1959).

[46] 'Saryo kiji rŭl konggohi chosŏng haja', *Suŭi ch'uksan* 46 (April 1963), 18–19; 'Saryo wŏnch'ŏn ŭl chŏkkŭk t'amgu iyong haja', *Suŭi ch'uksan* 47 (May 1963), pp. 2–3; Cho Kijung, 'Yŏrŭmch'ŏl saryo saengsan kwa kach'uk kirŭgi: kaduk namu ip kaji rŭl kach'uk saryo ro', *Suŭi ch'uksan* 47 (May 1963), pp. 4–6; 'San ŭl olk'e iyong hayŏ kach'uk saryo rŭl haegyŏl'.

[47] 'Yeppŭn ŭi ilgi', *Suŭi ch'uksan* 48 (June 1963), p. 6.

[48] Kim and Pak, 'Manp'o mit Kanggye chigu nae myŏt kaji chayŏn saryo wŏnch'ŏn'.

[49] For instance, the list for pigs can be found from Chŏn Sŏkpong, 'P'ul ro twaeji saryo rŭl haegyŏl', *Suŭi ch'uksan* 48 (June 1963), pp. 5–6.

[50] Hong Sunp'il, 'Saryo punswaegi ŭi iyongnyul ŭl nop'yŏ', *Suŭi ch'uksan* 45 (Mar 1963), pp. 32–33; Ch'oe Ryŏnsun, 'Saryo chŏltan'gi ŭi iyongnyul ŭl irŏk'e nop'inda', *Suŭi ch'uksan* 48 (June 1963), pp. 33–4; Kim Kŭnsŏng, 'Ssillossŭ chŏltan'gi ŭi kojang t'oech'i pangbŏp', *Suŭi ch'uksan* 49 (July 1963), pp. 27–8; Chŏng Kŭnu 'Himdŭn chagŏp ŭl kigyehwa', *Suŭi ch'uksan* 49 (July 1963), pp. 29–30.

[51] Nongŏp wiwŏnhoe suŭi ch'uksan kwalliguk, 'Mallinp'ul ŭi yurisŏng kwa saengsan', *Suŭi ch'uksan* 48 (June 1963), pp. 4–5; 'In'gong ttŭmul ŭn twaeji ŭi choŭn saryo', *Suŭi ch'uksan* 49 (July 1963), p. 32; 'Mallin p'ul saengsan pangbŏp', *Suŭi ch'uksan* 49 (July 1963).

[52] 'Orije kyun e ŭihan kŏch'in saryo ŭi chori', *Nongŏp kisul* (Feb. 1960), pp. 27–9; Ri Changsu, 'Hyomo ro ch'ŏngsaryo rŭl ttŭiunda', *Suŭi ch'uksan* 48 (June 1963), pp. 35–6; 'Saengnuruk e ŭihan saryo ch'ŏri', *Suŭi ch'uksan* 48 (June 1963), pp. 37–8.

[53] 'P'ulgimch'i wa in'gong ttŭmul mandŭlgi', *Suŭi ch'uksan* 47 (May 1963).

[54] 'Kach'uk ege wae kwangmulchil saryo rŭl mŏgyŏya hamnikka', *Suŭi ch'uksan* 49 (July 1963), p. 46; 'Pit'amin i pujok hagŏna chŏnhyŏ mŏgiji mothal ttae pit'amin chongnyu pyŏl ro ŏttŏn hyŏnsang i irŏnamnikka?', *Suŭi ch'uksan* 50 (Aug. 1963), p. 45.

[55] Kim Kyuyŏp, 'Twaeji sayanggong Pak Manŏk tongmu', *Suŭi ch'uksan* 44 (Feb. 1963), pp. 43–5; Sin Sŏkho, 'Karae namu ro yang ŭi 12chijangch'ung ŭl kuje,' *Suŭi ch'uksan* 45 (Mar. 1963), pp. 28–9; 'Mobŏm yangdon'gong'.

[56] 'Kach'uk chal kirŭnŭn yŏsŏng', *Chosŏn nyŏsŏng* (Oct. 1963), p. 28.

[57] 'Nongŏp hyŏptong chohaptŭl esŏ kagŭm mokchang ŭl ŏttŏk'e chojikhal kŏdin'ga', *Sŏnjin nongŏp* (May 1959), pp. 4–7; Ri Kyŏmsŏk, 'T'okki kirŭgi', *Sŏnjin nongŏp* (Dec. 1958), pp. 42–5; Hŏ Kyŏngwŏn, 'Pyŏngari ŭi puhwayul ŭl 95% ro pojang', *Sŏnjin nongŏp* (May 1959), p. 11; 'So ka yŏwige toen kŏt ŭn kwalli ilkundŭl ŭi much'aegimsŏng e itta', *Nongŏp kisul* (Mar 1959), pp. 63–4; Kim Chongŭi, 'Uri nara esŏ chuyo kach'uk chŏnyŏmbyŏng kwa ŭi t'ujaeng esŏ ŏdŭn sŏnggwa', *Nongŏp kisul* (Aug. 1960), pp. 20–22.

[58] Pae, 'Tang ŭi ch'uksan chŏngch'aek ŭl kwanch'ŏl sik'ija'; 'Tang ch'uksan chŏngch'aek kwanch'ŏl esŏ kisul ilkundŭl ŭi yŏkhal ŭl chego haja', *Nongŏp kisul* (July 1959), pp. 2–4.

[59] For instance, an article provides a detailed list of wild plants to be collected in each month from April to October: 'San ŭl olk'e iyong hayŏ kach'uk saryo rŭl haegyŏl'. A similar article can be seen with 'P'urŭn p'ul kkombea chojik', *Nongŏp kisul* (June 1960).

[60] For more details about Taylorist labour regime in North Korea, see Kim Yŏnch'ŏl, *PukHan ŭi sanŏphwa wa kyŏngje chŏngch'aek* [The Industrialisation and Economic Policies of North Korea] (Seoul: yŏksa pip'yŏngsa, 2001). See also Cheehyung Harrison Kim, *Heroes and Toilers: Work as Life in Postwar North Korea, 1953–1961* (New York: Columbia University Press, 2018).

[61] 'Mallin p'ul kwa ssillossŭ saengsan e taehan noryŏk chojik kwa noryŏgil p'yoŋgga', *Suŭi ch'uksan* 49 (July 1963), p. 34.

[62] 'Pukch'ang-gun esŏŭi mallin p'ul saengsan', *Suŭi ch'uksan* 50 (Aug. 1963), p. 21.

[63] 'Uri ch'uksan chagŏppan esŏŭi noryŏgil kyesan', *Suŭi ch'uksan* 48 (June 1963), p. 37.

[64] Kim Hyŏnil 'Kuamsan ŭi yŏch'uksan chagŏp panjang: Hwangae nam-do Ongjin-gun naengjŏng hyŏptong nongjang ch'uksan chagŏp panjang Ri Pohwa tongmu e taehan iyagi', *Suŭi ch'uksan* 45 (Mar. 1963), pp. 42–4.

[65] An Koryŏng, 'Konghun sayanggong: P'yŏngnamdo Pukch'anggun Sŏksan hyŏptong nongjang Kang Ogyŏn tongmu e taehan iyagi', *Chosŏn nyŏsŏng* 205 (Nov. 1964), pp. 50–51.

[66] An, 'Konghun sayanggong', p. 51.ibi

[67] 'Nae ka mannan ch'uksan panwŏndŭl', *Chosŏn nyŏsŏng* (July 1959), p. 18.

[68] 'Ch'uksanŏp esŏ irŏn chŏm ŭn koch'ipsida', *Nongch'on nyŏsŏng* (July 1959), p. 4; 'Mobŏm yangdon'gong'.