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## The Hindi-Speaking Intelligentsia and Agricultural Modernisation in the Colonial Period

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**Abstract:** This paper is a study of the perceptions of the emerging Hindi-speaking intelligentsia about agricultural modernisation in the British colonial period. It discusses the meaning of agrarian change for this emerging class, especially with respect to the interrelationship between the techniques and methods of agricultural production on the one hand, and the socio-economic aspects of agricultural production on the other. It is based on a survey of writings that appeared in some important literary and popular science Hindi periodicals of the late nineteenth and early twentieth century. The study finds that there was a strong perception among Hindi publicists of the colonial period of the utility of science and technology in agriculture. While acknowledging the importance of science, there was an understanding among them that the expansion of production and productivity in agriculture was also dependent on the prevailing socio-economic context.

**Keywords:** history of agriculture, history of science, vernacular periodicals, Hindi periodicals, science in the vernacular, science and colonialism, agriculture and colonialism, popularisation of science, scientific agriculture.

In his landmark analysis of the Indian economy of the early 1960s, Daniel Thorner wrote that colonial India suffered from “the world’s most refractory land problem,” because of a “built in depressor” in the structure of its agrarian economy (Thorner 1962). This built-in depressor, a result of the policies implemented by colonial rule, constrained the growth of the productive forces in agriculture. These policies prevented any significant investment in agricultural development, and acted as an inherent disincentive to the adoption of modern methods and techniques by Indian cultivator classes. In other words, the relations of production promoted by colonialism acted as a fetter to the application and further development of the productive forces in agriculture.

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Thorner's analysis suggests that the process of agricultural modernisation in colonial India had two constituent elements: the expansion and modernisation of productive forces – that is, the knowledge, techniques, and methods of agricultural production – and changes in agrarian relations and institutions. Agricultural modernisation required a productive interplay between these two elements. This study deals with the perceptions of the historical actors themselves regarding the interplay between technological change (both real and potential) and the institutional arrangements (relations of production) prevailing in the countryside during colonial rule. We confine ourselves to examining these perceptions as they emerged in the world of the Hindi-speaking intelligentsia of India from the mid-nineteenth to the mid-twentieth century. How did the ideas and world view of the Hindi "literati"<sup>1</sup> make sense of the encounter between rural socio-economic institutions and the possibility of technological change? This question is the central concern of this paper.

The indigenous scientific community in nineteenth-century India was a part of an emerging intelligentsia – a privileged and increasingly urban class that was the first to take to modern education.<sup>2</sup> The educated elite played a significant role in the rise and growth of economic nationalism in the late nineteenth century. It was instrumental in shaping the Congress party as a political platform that represented a broad nationalist consensus.<sup>3</sup> The Indian intelligentsia were the first to articulate a response to colonial policy with regard to India's economy and society. In doing so they also contributed to the nationalist debate on modernisation (including the modernisation of agriculture), especially from the late nineteenth century onwards.

The world view of this class was prominently reflected in the burgeoning press of the period – in the active publication of books and pamphlets, and in regular contributions to journals and periodicals. The nineteenth century also marked the formative years of the print medium in many Indian languages, such as Bengali, Hindi, Urdu, Marathi, Tamil, and Gujarati. Also aiding the process of scientific debate were schoolbook societies, like the Calcutta School Book Society and the Agra School Book Society, which catered to the demand for textbooks for primary education. Indian writings in the Indian-language print medium, periodicals in particular, provide an important source for examining the evolving character of the Indian response to colonialism, and the response of the intelligentsia in particular.

#### *THE HINDI-SPEAKING INTELLIGENTIA*

The onset of the twentieth century witnessed a remarkable advance in Hindi literary writing. The literary journal *Saraswati* was founded in the year 1900 and it very soon came under the editorship of Mahavir Prasad Dwivedi. *Saraswati* greatly

<sup>1</sup> See Bhattacharya (2015).

<sup>2</sup> See D. Kumar (1997), section on response and resistance.

<sup>3</sup> See Chandra (2004), for a detailed account of economic nationalism as it developed in the late nineteenth century.

influenced the development of Hindi for the next few decades.<sup>4</sup> The composition of the Hindi literati remained more or less the same. The three founding members of the Kashi Nagari Pracharini Sabha, arguably the most influential association to promote the cause of Hindi in this era<sup>5</sup> – Shyam Sundar Das, Ram Narayan Mishra, and Shiv Kumar Singh – were indicative of the continuity. All of them were associated with Banaras and had careers in education (King 1994, p. 143).

Given their complex origins, the Hindi intelligentsia appear to have exhibited a two-fold character. On the one hand, they were receptive to new knowledge coming from the west. Yet they also exhibited a marked tendency to preserve the old social order, and the traditional world of thoughts and ideas. It is this contradiction perhaps that renders a special interest to the enquiry into the evolving views of this elite with regard to the modernisation of agriculture. By the 1930s, concerns relating to the conditions of the peasantry entered the freedom movement debate, with the Congress putting these on its agenda of action under pressure from socialist leaders like Dr Sampurnanand and Jayaprakash Narayan in the United Provinces and Bihar, respectively. At the same time, this era also saw the emergence of politically radical peasant movements such as the one led by Swami Sahajanand in Bihar.

This paper tries to gauge the meaning of agricultural improvement for this intelligentsia by studying their writings that appeared in popular Hindi periodicals and journals of the late nineteenth and the early twentieth century. The study, however, does not venture beyond the 1930s, when a more radical and political train of thought entered the debate around agriculture, which soon became a part of the larger freedom struggle.

Among the range of issues that occupied the columns of these journals, two are of particular interest to us. The first is the writing on agrarian issues that focused on the state of deprivation in rural India, particularly in the region of the Indo-Gangetic plain – the nation's "heartland," as the emerging nationalist discourse was to increasingly portray it. The second is the increasing preoccupation in these writings with science and technology. This burgeoning interest not only reflected a view of science as an indispensable instrument of economic advance, but also viewed the grasp of modern science as an essential attribute of a modern nation in the making. It is interesting to note, however, that on the question of adopting a scientific world view, the Hindi intelligentsia, due perhaps to its dual character that

<sup>4</sup> Ram Vilas Sharma (1977) defines this period of the history of modern Hindi literature as *Dwivedi Yug*. See Mody (2008) for a glimpse of the influence of *Saraswati* on early twentieth-century writings in Hindi. *Saraswati* and the periodicals that followed, including *Madhuri*, *Maryada*, *Vishal Bharat*, *Sudha*, *Veena*, *Ganga*, and *Vigyan*, contributed a lot to the standardisation of modern Hindi as a language as well as in the expansion of its literature. See King (1994, pp. 23–48) for a detailed survey on the amount of literature published in various forms – viz. newspapers, periodicals, books, etc. – in this era. Also see the relevant portions of *Aadhunik Kaal* in Shukla (2002).

<sup>5</sup> See King (1994) for a detailed work on the Sabha.

we have noted earlier, predominantly articulated a perspective yoked to revivalism; and as a class, it was more often than not backward-looking and reactionary.<sup>6</sup>

This inherent contradiction in the world view of the Hindi-speaking elite defined its approach to the issue of agricultural modernisation. While reflecting on this, this paper will also throw some light on the evolution of a particular viewpoint on agrarian issues that has become a part of received wisdom in post-independent India.

#### *HINDI WRITING ON AGRICULTURAL MODERNISATION IN THE SECOND HALF OF THE NINETEENTH CENTURY*

Hindi writing on agriculture starts appearing in the mid-nineteenth century. Interestingly, this was around the same time that writers like Lallu Lal and Sadal Mishra were beginning to refine Hindi prose writing by integrating dialects like *Braj Bhasha* and excluding Persian influences. The boundaries of modern Hindi, however, were not yet rigid (see King 1994, pp. 27–9). Some of the earliest attempts at science writing in Hindi date to this point in time.<sup>7</sup> According to Shivgopal Mishra, the first book in Hindi on agriculture was *Krishi Komudi* (Commentary on Agriculture), published in Mumbai in 1856 by Lal Pratap Singh (Mishra 2004, p. 30). In a few years' time, books like *Mousam ki Kahani* (Story of Weather), *Kheti ki Europeya Paddhati* (The European Approach to Agriculture), and *Europeya Kheti ke Auzaar* (Tools of European Agriculture) were released (Mishra 2001, p. 40). The next few decades witnessed the publication of a number of such books, and by the end of the century there were as many as 25 titles in Hindi on the subject of agriculture.<sup>8</sup>

These books discussed the importance of different agricultural inputs and various steps in the process of cultivation. In large part, they appear to have been akin to instruction manuals, rich in scientific and technical information at the district level about the land, types of soils and their chemical constituents, the importance of ploughing, sowing, fertilizers, irrigation, the biological structure of plants, the importance of crop rotation, and so on.<sup>9</sup> There was also information on different non-native crops that

<sup>6</sup> It would require an independent study to critically analyse the content of Hindi writings of the late nineteenth and the early twentieth century on aspects of science, as well as to look at the influences on the literati that shaped these writings. A reflection of these tendencies does not find much expression in the writings on the improvement of agriculture, but in the more general writings on science.

<sup>7</sup> The origins of science writing in Hindi perhaps go back to the Agra School Book Society of 1833. *Bhuglolsaar* (1840), written by Pandit Omkar Bhat, and Badri Lal Sharma's *Rasaayan Prakash* (1847) were some of the earliest science books published by the Society. It was in this era that Raja Shiv Prasad Sitarey Hind, who played an instrumental role in the formulation and publication of the early Hindi textbooks, wrote *Vidyankur*, regarded as the first science textbook in Hindi.

<sup>8</sup> Mishra (2004, pp. 25–52). Mishra also estimates that by this time, around 141 books on science in Hindi had been published. Interestingly, the number of books on agriculture was comparable only with the number of books on mathematics, 44; and *ayurveda*, medicine, and health, 23.

<sup>9</sup> See, for instance, the description of *Krishikosh* written by Choudhary Hari Singh Verma in 1870, as given in Mishra (2001, p. 41). Also see similar descriptions of *Kshetra Sanhita* published in 1880 by Rudra Pratap Singh, and *Kisan Vidya* published in 1896 by Balram Das.

had been introduced in the region, as can be seen in *Krishi Shiksha*, published in Calcutta in 1900. Some of the books also dealt with horticulture, cattle protection and cattle rearing, methods for the conservation of produce, sugarcane farming, and honeybee farming (Mishra 2001, pp. 41–3). Mishra points out that the language of these books – a blend of Urdu, Persian, and Hindi – was simple and easy to understand (*ibid.*, p. 43).

The periodicals of the late nineteenth century were primarily literary in nature, but they also carried articles on a variety of social and economic subjects, including agriculture and science.<sup>10</sup> The last decades of the century witnessed the emergence of some subject-specific periodicals dedicated to agriculture and related topics. Some of the earliest periodicals focused on agriculture (and related subjects like animal husbandry) were *Krishi Hitkarak*, which began publication from Amaravati in 1890; *Gouraksha*, published from Nagpur in 1891; and *Gousevak*, published from Banaras in 1894.

Commentators who wrote in Hindi periodicals sought reasons for the agrarian distress and appalling conditions in which the cultivating classes<sup>11</sup> lived and worked.<sup>12</sup> They expressed a strong sense of disaffection with the state of agricultural production and productivity. An article published in 1880 noted: “If we consider matters seriously, it becomes obvious that day-by-day the golden land is losing its fertility. It does not produce as much as in the past.”<sup>13</sup> Declining fertility was often associated with the ever-increasing pressure on agricultural land, for which these early writers sought a scientific explanation. The causes identified were many, and included growing internal and external trade, rising agricultural rent and its stringent collection, and usurious interest payments demanded by moneylenders. This forced the cultivator to continuously try to produce on whatever land he could access. This in turn meant that land was not allowed to be left fallow for a season or two. The

<sup>10</sup> For instance, *Kavivachan Sudha*, a Hindi literary periodical by Bharatendu Harishchandra, which began publication in 1867, did cover some scientific subjects, although such coverage was fairly sporadic and infrequent. *Kashi Patrika*, which began publication in 1876, published on science with some regularity and was, in fact, termed the first scientific periodical by Professor Ramdas Gour, an academic who worked in Banaras and Allahabad. He actively worked for the cause of popularisation of science in Hindi. See his essay “Hindi Main Vaigyanik Sahitya,” (Scientific Literature in Hindi), *Vigyan*, December 1919, pp. 110–6, which traces the development of science literature in Hindi. Similarly, *Sarsudhanidhi* and *Hindi Pradip* occasionally published articles on science; however, such instances were few and far between.

<sup>11</sup> A clear-cut differentiation between different classes of cultivators seems to be absent in the Hindi periodicals of the late nineteenth and early twentieth century. Terms like *kisan*, *krishak*, and *kashtkaar* appear to have been used interchangeably.

<sup>12</sup> Bharatendu Harishchandra, writing in the *Kavivachan Sudha* in March 1874, used the metaphor of “beggars” to describe the conditions of Indian cultivators. He wrote: “The condition of those who cultivate is such that they appear like beggars, and those who are non-enterprising do not even get food to eat.” Quoted in Ram Vilas Sharma (1977), p. 13. Also see the essay “Bharatiya Kisanon ki Aisi Duravastha Kyun Hai?” (Why is the Condition of the Indian Farmer so Miserable?), *Sarsudhanidhi*, July 19, 1880, which discusses the parlous condition of Indian cultivators.

<sup>13</sup> “Vaigyanik Krishi ki Avashyakata” (The Need for Scientific Agriculture), *Sarsudhanidhi*, October 4, 1880.

over-exploitation of land, by not giving it time to rest and revitalise, had an adverse effect on its fertility.<sup>14</sup>

These concerns led to a discussion on how this state of affairs could be reversed or improved upon, and to some of the earliest arguments for the modernisation of agriculture. It is striking how these arguments clearly associated agricultural modernisation with a transformation in the socio-economic conditions of agricultural production. Indeed, in some of them, agricultural modernisation appears to have hinged on a transformation of land relations, including establishing cultivators' rights over land and its produce.

#### IMPEDIMENTS TO THE MODERNISATION OF AGRICULTURE

##### *The Zamindar–Kisan Relationship*

The writings identified the key actors involved in the modernisation process as being the State, the *zamindar* (both cultivating and non-cultivating), and the tenant farmer (who cultivated with or without hired labour).<sup>15</sup> Some of the writings of the late nineteenth century recognised an antagonism in the relationship between the *zamindar* and the *kisan* (peasant), but were ambivalent about it. While there was definitely an awareness of the hardship faced by the peasantry, some writers expressed sympathy for the *zamindar* as belonging to an economically insecure class frequently trapped in a cycle of indebtedness that sometimes even resulted in distress sale of the *zamindari*. They argued that the interests of both classes could be served through some variant of a “permanent settlement” that would contribute to the improvement of agriculture and agricultural production.<sup>16</sup> Both the *zamindar* and the cultivator would benefit from such an arrangement, which in turn would encourage them to invest more effort in production. Without this the *zamindar* was perceived to be like a *thekedar* (contractor) who sub-contracted to a range of farmers, with the cultivator eventually getting small units of land for temporary periods.<sup>17</sup> All those involved in such temporary arrangements were insecure and disinterested in any improvement of the land, as improvements would only lead to more taxation and greater competitive bidding for land. For instance, an essay titled “Bharatiya Kisanon ki Aisi Duravastha Kyun Hai?” appearing as early as 1880 stated:

The *zamindars* ask why we should apply efforts for the improvement of land. In case our investments lead to some special increase in produce, that may then attract the attention of the rulers. There is no permanent settlement to ensure that the rent would be fixed. In view of this he is compelled to lease the land out in contract, which can ensure his own

<sup>14</sup> *Ibid.*

<sup>15</sup> A more careful analysis will reveal many nuances within this broad classification. There were also a number of somewhat varying official positions that were associated with land and revenue collection. However, for the purpose of our analysis here, this broad characterisation appears sufficient. See Asiya Siddiqi (1973) and M. H. Siddiqi (1978) for more details.

<sup>16</sup> See, for instance, “Bharatiya Kisanon ki Aisi Duravastha Kyun Hai?” *Sarsudhanidhi*, July 19, 1880.

<sup>17</sup> *Ibid.*

profit. The contractor has no attraction to the land to devote any efforts on its improvement. He has to ultimately give it to the peasants in small fragments.<sup>18</sup>

Under a permanent settlement, the essay noted:

The *zamindar* will get the freedom to lease out the land on a regular rent permanently. In a similar fashion, when small peasants too will get small land holdings for permanent tenures, then their condition will eventually improve. This would be so because, first of all, rights of possession over land will encourage the peasant to love his land, consequently he will put in more effort to make it productive. Secondly, the *zamindar* too will now be secure and therefore invest for the productivity of land.<sup>19</sup>

This view of a non-antagonistic relationship between the *zamindar* and the cultivator, and the assumption of a non-exploitative coexistence between them, is striking.

Other points of view, however, saw antagonism between them as integral to the relationship between the *zamindar* and the peasant, and not as a consequence of excessive colonial taxation alone. The following short passage from a note written following deliberations that took place after the announcement of the Tenancy Bill 1888, reflects this.

Our kind Government primarily wanted a deliberation on the following three concerns: 1) Permanent possession rights of the peasantry over the land, 2) Just rent on the land as per its capabilities, 3) Rights to the peasantry to donate or sell land. However, Babu Krishnadas Pal [the *zamindar's* representative] does not want to give any of these rights to them.<sup>20</sup>

That said, we must note that in none of the late nineteenth-century writings do we encounter evidence of criticism of the land revenues demanded by the Government.

### *Agricultural Credit*

The periodicals of that time regarded the availability of easy credit as important for the improvement of agricultural production and productivity, as well as for the betterment of the cultivator. Irregular and invariably high rates of interest charged by moneylenders were perceived to be one of the foundational reasons for agricultural stagnation. The commentators felt that easy provisioning of credit at soft interest rates, which could then be directed to investments in agriculture, was the solution. Some of the earliest writings in this regard talked of the need to advance *takavi* loans to the cultivators for productive purposes, through revenue officials, against

<sup>18</sup> *Ibid.*

<sup>19</sup> *Ibid.*

<sup>20</sup> Sadanand Mishra, "Bhoomi Kar Sambandhi Aaeen aur Zamindar Pratinidhi" (Laws Related to Land Tax and the Representatives of *Zamindars*), *Sarsudhanidhi*, March 19, 1883. Also see Sadanand Mishra, "Kar Sambandha Aaeen ka Prastav" (Proposals Suggested by Tax Laws), *Sarsudhanidhi*, March 12, 1883. Babu Krishnadas (Kristodas) Pal was a representative of the *zamindars* of Bengal and Bihar in the Commission established by Lord Ripon. The Maharaja of Darbhanga was the other prominent representative of the *zamindars*.



collateral such as land.<sup>21</sup> The flaws in this type of credit were also highlighted. Such a system, it was argued, blocked the opportunity for availing further loans, as once land was kept as collateral, the moneylender's basic motive for giving loans, namely land appropriation, was eliminated. Moreover, access to the administrative machinery at the office of the Collector was also reported as a serious problem, made worse by corruption among the officials.<sup>22</sup>

The periodicals suggested that *krishi* banks operating as cooperatives could be a solution to the problem of indebtedness. Moneylenders could lend through these banks at legally regulated interest rates. The Government could also help these banks with funds at soft rates of interest. We also come across suggestions to legally bind moneylending rates as well as to regulate the recovery mechanisms exercised by the moneylenders, with the Government acting as a regulator of the interest rates. The problem with these ideas, as noted in some of the writings, was that they could not succeed due to the overwhelming grip of the moneylenders over the village economy, which ensured the failure of all such experiments at the level of implementation. The moneylender was in a position to successfully manipulate all the regulations. The following passage, quoted from a discussion in the December 1882 issue of *Sarsudhanidhi* on the "path of upliftment of cultivators," describes the grip of moneylenders over the agricultural credit market.

Despite such rules, it is futile to hope that the moneylenders will not persecute the peasantry. They have already tasted blood and now there is no chance that they will lend at soft interest rates. If the Government ensures that the borrowers do not pay more than the regulated interest rates, then the moneylenders will manipulate the loan papers and increase the principal amount. If the borrower does not agree, then they will not receive the loan. Thus the borrowers will be compelled to accept these papers.<sup>23</sup>

Apart from these two aspects, namely land relations and the institution of credit, we do not come across discussions in this period on other dimensions of the socio-economic conditions of agricultural production. At the same time, we find very little writing on the actual application of modern science and technology in the process of agricultural production. This is along expected lines, given the fact that Hindi writing on science itself was very limited till this time.

## WRITINGS ON AGRICULTURAL MODERNISATION FROM 1900

### *The Emergence of New Publications*

As already discussed, Hindi literary writing showed remarkable advance with the onset of the twentieth century. The periodical *Saraswati* symbolised this evolution,

<sup>21</sup> This idea was based on the old Mughal system of *takavi* loans, given to cultivators for purposes like purchase of seeds, digging of wells, etc.

<sup>22</sup> Based on an article titled "Krishijeevion ka Uddhar kis Prakaar ho Sakta Hai" (The Ways to Improve Farmers' Lives) *Sarsudhanidhi*, December 4, 1882.

<sup>23</sup> *Ibid.*

marked on the one hand by various experiments with new genres in prose writing, and on the other, by regular writing on a whole range of different subjects (Mody 2008). The volume of writings on agriculture also witnessed substantial growth, resulting in the publication of around 103 books on agriculture in the period under review (Mishra 2001, pp. 43–50).<sup>24</sup> A number of textbooks were also published, targeted at students of agricultural schools and colleges. Shivgopal Mishra names some important authors in this genre of writing: Gayadutt Tiwari, Ram Prasad, Mukhtar Singh, Shitla Prasad Tiwari, Tej Shankar Kochak, and Shankar Rao Joshi (*ibid.*, p. 50). The Hindi periodicals of this period frequently published on the subject of agricultural modernisation. These articles appeared in the general literary periodicals as well as the popular science periodical, *Vigyan*.<sup>25</sup> Mishra estimates the number of articles on agriculture appearing in Hindi periodicals before 1947 to be 355, of which *Vigyan* published more than 200 (Mishra 2004, p. 53). There was definite indication of a growing conviction among the Hindi intelligentsia that modern methods and scientific techniques of cultivation constituted an important aspect of agricultural modernisation.

The significant Hindi periodicals which regularly published material related to agriculture and livestock were *Saraswati*, *Vishal Bharat*, *Veena*, and *Vigyan*. Apart from these, quite a few periodicals specifically devoted to agriculture and agriculture-related subjects also began publication in this period (see Table 1). Further, provincial governments and Agricultural Departments facilitated the publication of agriculture-specific Hindi periodicals, like *Hal* in the United Provinces and *Kisan* in Bihar, in the latter part of the first half of the twentieth century.<sup>26</sup> The number of periodicals dedicated to agriculture and agriculture-related subjects was second only to those focused on *ayurveda* and medicine (see Mishra 2004, pp. 49–61).

This was also the period when Hindi science writing in general witnessed considerable growth.<sup>27</sup> Apart from *Saraswati* and *Vigyan*, popular literary periodicals of that time like *Madhuri*, *Maryada*, *Vishal Bharat*, *Sudha*, *Veena*, *Ganga*, etc., regularly published discussions related to science.<sup>28</sup> The pursuit of

<sup>24</sup> The number of Hindi books on agriculture in this period was, once again, second only to books on *ayurveda*, medicine, and health; more than 200 books were published on these subjects.

<sup>25</sup> *Vigyan*, which is in publication till date, was started by the Vigyan Parishad (Vernacular Scientific Literary Society), established in 1913 in Prayag (Allahabad).

<sup>26</sup> For this paper I was only able to access issues of *Hal* and *Kisan*.

<sup>27</sup> The number of science books in Hindi published between 1900 and 1947 has been estimated to be 774, as compared to just 141 in the pre-1900 era (Mishra 2001, p. 15).

<sup>28</sup> Mishra (2001, p. 5). A remarkable overlap can be observed between science writers and general literature writers in Hindi. Literary figures like Mahavir Prasad Dwivedi (of *Dwivedi Yug* fame), Shyam Sundar Das (who established the Nagari Pracharini Sabha), Balkrishna Bhat (editor of the magazine *Hindi Pradip*), Chandradhar Sharma Guleri, and others frequently wrote on science subjects in these periodicals. In fact, Dwivedi even authored books – *Audhogiki* and *Vigyan Varta*, for example – which dealt with aspects of science or science in general. On the other hand, science writers like Trilokinath Verma, Gorakh Prasad, Ramdas Gour, Fuldev Sahai Verma, and Swami Satyaprakash were part of Hindi literary institutions like the Hindi Sahitya Sammelan, and wrote in many literary journals on science-related topics.

**Table 1** *Agriculture-specific periodicals*

Name of the periodical	Year in which publication began	Place of publication
<i>Kisan Mitra</i>	1911	Patna
<i>Kisanopkarak</i>	1913	Pratapgarh
<i>Krishi Sudhar</i>	1914	Mainpuri
<i>Krishi</i>	1918	Agra
<i>Kisan</i>	1919	Fatehpur
<i>Kisan</i>	1920	Unnav
<i>Kisan (Saptahik)</i>	1921	Prayag
<i>Kisan (Pakshik)</i>	1924	Kanpur
<i>Kheti Bari Samachar</i>	Unknown	Indore
<i>Haldhar</i>	Unknown	Itawa

Source: Mishra (2001, 2004).

science appears to have been almost a matter of cultural pride, a mark of civilisation.<sup>29</sup> The notion of the development of Hindi as a national language significantly influenced the growth of Hindi writing in general, and Hindi science writing in particular.<sup>30</sup>

As in the earlier phase, the periodicals from 1900 onwards reflected an overwhelming concern with the deteriorating state of Indian agriculture, its declining productivity,<sup>31</sup> and the dismal living conditions of the cultivators.<sup>32</sup> Other manifestations of agrarian distress, like the perpetual indebtedness of cultivators, were also frequently discussed, as was the persistent deficit in food

<sup>29</sup> “A civilised community today gains respect/pride due to science, therefore the pursuit of science and scientific progress is the sole means to gain respect in these times,” *Nagari Pracharini Patrika*, as quoted in Mishra (2012), p. 6.

<sup>30</sup> For example, the very first article of the first edition of *Vigyan* in April 1915, titled “Apni Charcha” (Our Discussion), written most probably by the editors, Pandit Shridhar Pathak and Lala Sitaram, stated: “Like the humans who strengthen their different body parts through exercise, similarly there is a need to strengthen different parts of language. It is a matter of sorrow, however, that the scientific part of Hindi literature remains incomplete and weaker than other parts. This periodical has taken birth in order to complete this void.” *Vigyan*, vol. 1, no. 1, April 1915, p. 1.

<sup>31</sup> See, for instance, Gopal Damodar Tamaskar’s essay titled “Gram-Sudhar ke Kuch Prasna” (Some Questions on Rural Development), *Saraswati*, vol. 28, no. 1, January 1927, pp. 48–55. The essay repeats the argument of growing pressure on agricultural land, which in turn does not allow it the time to naturally regenerate its capacities, leading to a decline in its productivity.

<sup>32</sup> See, for instance, the essay titled “Kheti aur Kala-Kaushal” (Agriculture and Artistry): “India is a land of cultivators. Agriculture is the business of 90 per cent of the people and they all feed themselves only by virtue of it. But perhaps in no other country in the world is the condition of the peasantry as depressing as it is here.” Mishra, “Kheti aur Kala-Kaushal,” *Madhuri*, Magh 305, Tulsī-Samvat, Year 7, part 2, no. 1, March 1992, pp. 116–8.

availability faced by a significant section of the Indian population. It was often argued that this was the consequence of inadequate agricultural production.<sup>33</sup> The alarming recurrence of devastating famines further reinforced the call made in writings of this period for agricultural modernisation and increased food production.<sup>34</sup>

The growing nationalist sentiment among the Hindi intelligentsia added another dimension to their criticism of the existing conditions. Agricultural modernisation and improvement of production were the prime concerns of national economic development, the writers argued. Modernisation was also seen as a means to “revive the glorious past,” when agriculture in India was supposed to have been well developed, producing enough to feed its own people.<sup>35</sup> This kind of commentary tended to hark back to a halcyon past that did not survive into the present because of subsequent misrule and neglect.<sup>36</sup> Such writings even occasionally asserted that the agricultural practices of ancient India were an inspiration to many other countries.<sup>37</sup>

#### IMPEDIMENTS TO THE MODERNISATION OF AGRICULTURE

The discussions on agriculture in the Hindi periodicals of this period reflect a growing consensus on the importance of modern science in increasing production and

<sup>33</sup> See, for instance, Dayashankar Dubey’s analytical essay, titled “Bharat Mein Aadha Pet Bhojan Paneywalon ki Sankhya,” (The Number of Undernourished Persons in India) *Saraswati*, vol. 21, no. 2, February 1920, pp. 65–74. The essay has detailed calculations on the information given by various Government reports in order to obtain figures of average food stock production and consumption for the years 1911 to 1918. Based on the analysis, it concludes that there is a deficit in agricultural production, and recommends an increase in foodgrain production. In another essay, the same author, writing again in *Saraswati*, explicitly outlines his political concerns on the issue of food production; concerns that are clearly less than radical. Dayashankar Dubey’s view, articulated in 1920 in somewhat dramatic terms, is that such extreme hunger and lack of food would stoke the fires of Bolshevism, “burning already in Middle Asia and Russia,” and pose a serious threat to the social and economic order. To the author it appears obvious that it is the suffering arising out of desperate hunger that enhances the vulnerability of the poor to Bolshevism. See Dayashankar Dubey, “Anaj Ki Kami Door Kaise Ho?” (Ways to Deal with Food Scarcity) *Saraswati*, vol. 21, no. 4, April, pp. 196–9.

<sup>34</sup> See, for instance, the essay by Rudradatta Bhat, “Durbhiksh aur Ussey Bachney ke Upay” (How to Avoid Famine), *Maryada*, vol. 7, no. 6, April 1914, which concludes that dealing with the menace of famines requires scientific development of agriculture as well as social development of cultivators.

<sup>35</sup> See, for instance, Gangaprasad Agnihotri, “Bharat mein Krishi ki oor Upeksha,” (Neglect of Agriculture in India), *Saraswati*, vol. 28, no. 6, June 1927, pp. 1459–61.

<sup>36</sup> See Rudradatt Bhat, “Prachin Samay mein Bharatiya Krishakon ke Samajik va Arthik Dasha” (The Social and Economic Conditions of Indian Farmers in Ancient Times), *Maryada*, vol. 7, no. 6, April 1914, pp. 372–6, for an example of the glorification of Indian agriculture and the conditions of cultivators in the ancient past.

<sup>37</sup> Gangaprasad Agnihotri, in his essay “Bharat mein Krishi ki oor Upeksha,” *Saraswati*, vol. 28, no. 6, June 1927, invoked the “respect” accorded by “ancient seers and sages” to agriculture, “which was then followed by China and Japan, and is now being followed by the Western nations.”

productivity in agriculture,<sup>38</sup> but with transformation of agrarian relations and institutions as a necessary precondition. The writings stressed the importance of appropriate socio-economic conditions for the proper application and adoption of modern science and technology in agricultural production. The following sections will examine each of the issues that the intelligentsia of the early twentieth century identified as holding back the emergence of a scientific and modernising outlook for agriculture.

### *Inequalities in Land Relations*

The unequal relationship between the *zamindar* and the cultivator as the primary obstacle to agricultural improvement persisted as the dominant view at least till the late 1920s, marking a shift from writings before 1900 that tended to be uncritical of the role of the *zamindar*.<sup>39</sup>

A 1918 article in *Saraswati* discusses in detail the various clauses in the Oudh Rent Act of 1886, which tried to secure the interest of the cultivators. The article concludes by highlighting the tyranny of the *zamindar*:

The biggest mantra of cultivation is to keep the *zamindar* in good spirits. The peasant can get all kinds of concessions despite failures in his ventures, like crops getting destroyed due to lack of rains or frost or any other accidents that occur, provided he has the sympathy of the *zamindar*. On the other hand, a bit of arrogance will upset the *zamindar* and can lead to a total uprooting of the peasant's existence.<sup>40</sup>

*Zamindars* were portrayed as a parasitical class with no interest in improving agriculture. Their only interest was "to collect rent, and they share no responsibility whatsoever."<sup>41</sup> The *zamindar* was compared to the domestic cat, the "*gharelu billi*, who just eats the butter but never even attempts to contribute to its making."<sup>42</sup> It

<sup>38</sup> By this time there was acknowledgement among the commentators that in the face of the pressure on land for production, it was not possible to allow it to rejuvenate naturally, and therefore, it needed regular external inputs for maintaining and further enhancing its productivity. See, for instance, the series of articles on fertilizers: Pathik, "Khad aur Khad Dalna" (Manures and Their Application), *Vigyan*, vol. 6, no. 1, October 1917, pp. 34–6; Harnarayan Bottham Sripal Singh, "Kritrim Khadein," (Fertilizers), *Madhuri*, Marghshirsh 305, Tulsi-Samvat, Year 7, part 1, no. 5, December 1928. The essay by Gopal Damodar Tamaskar, "Gram-Sudhar ke Kuch Prashna," *Saraswati*, vol. 28, no. 1, January 1927, pp. 48–55, can be taken as an example of the growing consensus on the importance of modern science in improving agricultural production. The essay, after discussing the declining productivity of land, goes on to list the different ways to deal with this situation. These methods suggest the application of scientifically improved implements and modern methods of cultivation.

<sup>39</sup> See, for instance, the views expressed by Sam Higginbottom in an article titled "Bharatvarsh mein Krishi ka Bhavishya" (The Future of Agriculture in India), *Maryada*, vol. 14, no. 1, May 1917, pp. 77–83, on unequal power relations in the efforts that go into cultivation. He wrote: "at times these relations are advantageous for the peasantry but often that is not the case. And in such a scenario the cultivator feels insecure and scared. He feels that the fruits of his labour will be usurped from him. He becomes hopeless and dispassionate." Such views appeared frequently in the Hindi periodicals of that time.

<sup>40</sup> Gangadhar Pant, "Avadh ke Zamindar aur Kashtkaar," (The *Zamindars* and Cultivators of Oudh), *Saraswati*, vol. 19, no. 6, June 1918, pp. 286–97.

<sup>41</sup> Rudradatta Bhat, "Durbhiksh aur Ussey Bachne ke Upay," *Maryada*, vol. 7, no. 6, April 1914.

<sup>42</sup> *Ibid.*

was also argued that since the productivity of an average peasant was invariably more than that of a *zamindar*, the rights over land of the former should be more than that of the latter. Such transfer of rights, it was argued, would prove to be advantageous to the masses and the nation, and could lead to significant gains in agricultural production.<sup>43</sup>

Transformation of land relations was perceived as one of the most important aspects of agricultural modernisation in other writings of the period as well. An essay appearing in the August 1917 issue of *Vigyan* analysed the frequent complaints of low productivity made by both cultivators and *zamindars*.<sup>44</sup> It claimed that given the success of the Kanpur agricultural farm in boosting agricultural production by utilising improved seeds, iron ploughs, and proper irrigation, the root of the problem of low productivity lay elsewhere. The essay argued that it was the insecurity of the cultivator that prevented him from applying improved inputs and methods:

The cultivator does not even have the surety of cultivating it [the same land] for the next year. As per the Tenancy Act of United Provinces, the peasants get security of tenancy after they cultivate for 12 continuous years, but for the first 11 years he does not have any hope/prospect/belief of retaining the land for the consecutive year. If the belief is established that he will be secured for even those 11 years, he will put fertilizers in the land, plough it properly, and ensure its productivity.<sup>45</sup>

Such arguments for security of the cultivators and increased rights for them over the land they cultivated as a precondition for modern agriculture and agricultural development can be seen in the writings of the first two decades of the twentieth century. Security of tenure would give peasants the confidence to employ improved methods of production.<sup>46</sup> There were critical commentaries on the non-permanent nature of the rent paid by the cultivators to the *zamindar* due to the absolute power vested in the latter to fix and then arbitrarily raise the rent.<sup>47</sup> It was widely perceived that this problem was leading to tenants losing their land. In the face of such insecurity, the probability of cultivators retaining the fruits of their efforts was negligible. This made them lethargic to change and non-enterprising, according to some commentators.<sup>48</sup>

<sup>43</sup> "Gram-Sudhar ke Kuch Prashna," *Saraswati*, vol. 28, no. 1, January 1927, pp. 48–55.

<sup>44</sup> "Zameen ki Paidavaar mein Kami," (Decline in Land Productivity), *Vigyan*, vol. 5, no. 5, August 1917, pp. 205–6.

<sup>45</sup> *Ibid.*

<sup>46</sup> See "Sarkar aur Kisan," *Saraswati*, vol. 27, no. 2, February 1926, pp. 236–7, which argues for scientific agriculture as a means to enhance agricultural productivity, as had been achieved in the western countries. However, such an achievement, it contends, is possible only when cultivators have rights over the land they cultivate.

<sup>47</sup> See, for instance, the essay "Kanoon Lagan aur Kanoon Kashtkari ke Muqadmen," *Saraswati*, vol. 28, no. 1, January 1927, pp. 140–3, which gives an example of the arbitrary rise in agricultural rent demanded by the *zamindars*.

<sup>48</sup> *Ibid.*

## *The Burden of Land Tax*

While the question of land tax did not receive much attention in the late nineteenth century, by the first couple of decades of the twentieth century, the Government's land tax rates were frequently criticised by observers. Madan Mohan Malaviya's article in the April 1914 issue of *Maryada* noted, "The only way to improve the situation of the cultivator is by reducing the rent paid by him."<sup>49</sup> He further stated that all other measures – such as making available easy credit to the cultivators to protect them from moneylenders, extension of irrigation facilities, introduction of new crops, and scientific methods of cultivation – while important,

will not lead to any fundamental improvement, as such improvement is possible only when it is ensured that the cultivators retain higher proportions of the produce and that the rent rates are not increased, while at the same time neither the Government nor the *zamindars* have the right to evict the cultivator.<sup>50</sup>

K. D. Malviya, writing in the April 1914 issue of *Maryada*, discussed the possibility of the Government substantially reducing the land rent for the next ten years, and compensating for the revenue foregone by taxing "unproductive" commodities like alcohol and opium, increasing duty on imports, or even reducing the budget of the military and the police. Such an experiment, he claimed, would bring about significant development of agricultural land.<sup>51</sup> This perception continued at least till the early 1930s. Writing in 1929 on the need for an investigation of land revenue in India, G. S. Pathik commented that it was both the Government tax and the *zamindari* rent, including the excessive rights enjoyed by the *talukdars* and *zamindars* in provinces like United Provinces, that were the causes of economic problems in agriculture.<sup>52</sup>

It was argued that in a situation where any such attempt by the farmer was likely to attract increased rent, it was irrational to expect him to try and improve agriculture by the application of scientific methods. It is interesting to note that although both aspects of land relations, namely, security of tenure and a moderate quantum of rent, were initially perceived as important for encouraging the use of improved techniques, with the advance of the twentieth century, it was the latter argument that gradually began to gain ground. By the 1930s, it appears that the Government's revenue demand, and not insecurity of tenure, was regarded as the fundamental hindrance to investment in improved agricultural production; the question of tenure receded into the background.

<sup>49</sup> Madan Mohan Malaviya, "25 Sainkra Lagan Kam Honi Chahiye," *Maryada*, vol. 7, no. 6, April 1914, p. 337.

<sup>50</sup> *Ibid.*

<sup>51</sup> K. D. Malviya, "Humari Sarkar aur Kheti ka Lagan" (Our Government and the Land Tax), *Maryada*, vol. 7, no. 6, April 1914, pp. 376–80.

<sup>52</sup> G. S. Pathik, "Maalguzaari ki Jaanch," (An Enquiry into Land Revenue), *Saraswati*, vol. 30, (month not known), 1929.

## *Land Fragmentation*

By the late 1930s, writings on the land question took a significant turn away from the earlier emphasis on property rights, security of tenure for tenants, and the fixation of rent as measures to advance agricultural productivity. The land question was still deemed to be of overriding importance for agricultural modernisation, but now the greater concern was about dealing with the scarcity of land and its declining quality owing to the pressures of a growing population. Two dimensions of this refurbished version of the “land problem” can be identified. The first dealt with the productivity of the land; the second concerned itself with the consequences of the sub-division of land and its fragmentation, leading to small and dispersed land holdings.

From the early twentieth century onwards, the problem of land fragmentation was perceived to be one related to the organisation of agricultural production. An essay appearing in the March 1920 issue of *Saraswati* discussed this problem in some detail.<sup>53</sup> Small and dispersed land holdings, the essay claimed, increased the time and effort required for cultivation, and reduced efficiency. They also raised the cost of cultivation as resources were wasted.

If there are ten farms at ten different places, the farmer will need to dig ten wells. When the fact is that he does not have the capacity to dig even one well. As a result, such huge cost implications scare him away from taking the effort to dig any well whatsoever. He cannot connect the well to a pump or engine, as no one can afford that kind of expenditure for such a small piece of land.<sup>54</sup>

Here we see an understanding of the advantages that arise from economies of scale. Fragmentation of land was seen as a serious barrier to innovation as it prevented the use of agricultural implements, experimentation with different varieties of seeds and crops, and other modern techniques. Moreover, land fragmentation gave rise to certain logistical problems: supervision, for instance. Such concerns were frequently raised in the essays published in the periodicals.

The solution put forward to address the problem was land consolidation or *chakbandi*, along with measures to prevent further fragmentation. Scattered village experiments to implement this solution find occasional mention in the writings. By the second half of the 1930s, references to this issue became more frequent. There were two mechanisms for bringing about consolidation of land that found mention: the formation of cooperatives, and legal enforcement of *chakbandi* by the provincial Government. An article in *Saraswati* in 1939 discussing these issues concluded that the legal route was essential for the success of the *chakbandi andolan* (movement for land consolidation).<sup>55</sup> It noted that Punjab had been the stand-out success story of the

<sup>53</sup> Champaram Mishra, “Kheton ka Sangathan aur Ekikaran,” (Consolidation of Agricultural Land), *Saraswati*, vol. 21, no. 3, March 1920, pp. 158–61.

<sup>54</sup> *Ibid.*

<sup>55</sup> Shankarsahai Saksena, “Bharatvarsha mein Kheti ki Bhoomi aur Uski Samasyaen” (Problems with Agricultural Land in India), *Saraswati*, vol. 40, no. 3, March 1939, pp. 282–8.



cooperatives' effort towards land consolidation, but even here the limitations of existing mechanisms were being felt. The problem with cooperatives, these discussions pointed out, was the requirement of total consensus for land consolidation. On the other hand, a law could implement the same process with the support of the majority behind it.

From the perspective of the application of modern techniques, fragmented land presented many practical problems. The examples cited included "the non-feasibility of usage of various modern implements;" "the impracticality of extending irrigation facilities;" "the difficulties in collection of livestock excreta to be used as manure, since the animals were not located in the fields, and the huge amount of wastage in carrying fertilizers to different places;" and "the impossibility of trying modern methods or new crops as every small patch of land used by a peasant was surrounded by land in the possession of other cultivators."<sup>56</sup> There was also the problem of the cost of modern techniques and practices. The efficiency thus attained, per unit of effort, both in terms of time and money, was judged to be very low.

### *Agricultural Credit*

Credit as a factor inhibiting agricultural modernisation found frequent mention in the Hindi periodicals of the twentieth century. The peasant "was always indebted, as he owns very little land and is overburdened by rents, leaving him with no money at all."<sup>57</sup> The situation was made worse by drought or flood, accidents like the death of livestock, or even during family and social celebrations like marriage. All such events forced additional loans on the cultivator.

The periodicals ascribed growing indebtedness to the crippling interest rates charged by moneylenders.<sup>58</sup> A significant proposal to counter the bargaining power of the moneylenders was to form collectives or cooperatives of cultivators.

Till the time the Government has not regulated the interest rates, our cultivators should organise panchayati banks in every village. Even if they do not have enough funds to cater to credit requirements, the practice of lending and borrowing loans through a panchayat should be encouraged. This practice of borrowing loans through a panchayat can help a borrower to get loans from the moneylender at softer interest rates.<sup>59</sup>

By the 1920s, the establishment of credit cooperatives, along with land consolidation and the reduction of land rent, was the most frequently discussed solution to the

<sup>56</sup> See Champaram Mishra, "Kheton ka Sangathan aur Ekikaran," *Saraswati*, vol. 21, no. 3, March 1920, pp. 158–61.

<sup>57</sup> Matadeen Shukla, "Hindustan mein Krishakon ki Dasha" (The Condition of Farmers in India), *Maryada*, vol. 15, no. 6, April 1918, pp. 268–74.

<sup>58</sup> See, for instance, Yugal Kishore Singh Shastri, "Bharat mein Sahkar Andolan," (The Cooperative Movement in India), *Madhuri*, Kartik 308, Tulsi-Samvat, Year 10, part 1, no. 4, November 1931, pp. 491–5.

<sup>59</sup> Umashankar Mehta, "Bharat ke Kisan" (Farmers in India), *Madhuri*, Phalgun 306, Tulsi-Samvat, Year 8, part 2, no. 2, April 1930, pp. 234–6.

problem of low agricultural production and productivity.<sup>60</sup> By the 1930s, there appears to have been a realisation that cooperatives could have extended functions, beyond providing credit to the cultivators. The examples of other countries, such as Denmark and Germany, were cited as inspiration for the success of cooperatives in agriculture. The need to expand the reach and scope of these cooperatives was articulated in this period.

These organisations have been considerably successful in rescuing the cultivators from the claws of the moneylenders. They do various kinds of works, like giving loans at soft interest rates, renovation of houses, collecting and selling the produce of the village, etc. Most importantly they engender a sense of cooperation among the cultivators, who then become ready to consolidate their small farms, and use modern agricultural implements cooperatively in such consolidated land masses. The use of tractors in Gujarat and Sindh is a result of such cooperation; otherwise, single farmers could never have afforded such implements.<sup>61</sup>

It was evident to these writers that in the prevailing conditions, the benefits of higher productivity would automatically accrue to the moneylender in the form of higher interest payment, even though superficially it would appear as though higher productivity would provide greater income to the cultivator. The felt need, therefore, was to ensure easy credit in such a way that the profits were retained by the cultivators. Scientific agriculture, it was believed, could be effective only when the cultivators were successfully rescued from the clutches of the moneylenders.<sup>62</sup>

#### THE CALL FOR "GRAM SUDHAR"

While the cooperative movement continued to be perceived as the ideal institutional framework for agricultural modernisation, the late 1930s witnessed the rise of the more comprehensive notion of *gram sudhar*, or village improvement, which incorporated various dimensions of rural development. This notion broadened the scope of rural development to include social investment in education, health, hygiene, social reforms, reducing indebtedness and expenditure on avoidable litigation, and so on. Modernisation of agriculture now came to be regarded as just one of the dimensions, albeit an important one, of *gram sudhar*. Thus there was a

<sup>60</sup> An article appearing in a 1931 issue of *Madhuri* described the situation succinctly: "They have to go to the *mahajan* to buy raw materials and then again sell their commodities at soft prices." Yugal Kishore Singh Shastri, "Bharat mein Sahkar Andolan," *Madhuri*, Kartik 308, Tulsī-Samvat, Year 10, part 1, no. 4, November 1931, pp. 491–5.

<sup>61</sup> Harikrishna Jaitlee, "Bharatiya Kisanon ke Unnati ke Sadhan," (The Means of Progress for Indian Farmers), *Saraswati*, vol. 33, no. 4, April 1932, pp. 405–8.

<sup>62</sup> See, for instance, Yugal Kishore Singh Shastri, "Bharat mein Sahkar Andolan," *Madhuri*, Kartik 308, Tulsī-Samvat, Year 10, part 1, no. 4, November 1931, pp. 491–5. The essay claimed that "no amount of scientific means can help the condition of the cultivator till the time he realises the means of freedom from *sahukars* and *mahajans* and is able retain the profits of agricultural development."

shift of focus from the objective of wholesale reform of agrarian institutions to a more general and blurred goal of rural welfare.<sup>63</sup>

The growing popularity of the idea of *gram sudhar* is apparent in the writings of the 1940s, especially in official agricultural periodicals like *Hal*. It appears to have been a response to Gandhi's call in the 1930s for village improvement. The Gandhian slogan of *gram sudhar* marked a rejection of the demand for radical agrarian transformation that militant sections of the freedom movement were in favour of.

#### ILLITERACY AND THE DEMAND TO BROADBASE EDUCATION

In the imagination of the emergent middle class, education of the cultivating masses was an important precondition for agricultural modernisation. Madhavrao Sapre, a Hindi journalist and writer of repute, argued in favour of the benefits of education in the essay "Kisanon ki Shiksha."<sup>64</sup> Not only would education make the cultivators aware of their rights and their exploitation at the hands of *mahajans*, *zamindars*, and officials, it would also help in spreading awareness about the application of scientific methods of cultivation. The essay described the impressive improvements in agriculture brought about in Denmark, and concluded that the education Danish cultivators had received underpinned the success of government schemes for the reduction of rent, provisioning of easier credit, and ensuring security of tenancy.<sup>65</sup>

Much of the writing on education encouraged the implementation of a form of education for cultivators that was practical,<sup>66</sup> could be easily implemented, and delivered in the vernacular.<sup>67</sup> A view that commonly appeared in writings in the periodicals was that the contemporary system of education produced clerks, and that even students graduating from agricultural colleges were taking up clerical work. A more practical form of education, it was argued, was necessary to ensure that the knowledge provided by schools and colleges directly helped the agricultural sector. Alongside, an appeal was made to agricultural institutes to apply themselves

<sup>63</sup> See, for instance, Premnarayan Mathur's discussion of the various issues that *gram sudhar* planned to focus on, in "Gramoddhar ka Prashna" (The Question of Rural Development), *Saraswati*, vol. 39, no. 2, February 1938, pp. 149–52.

<sup>64</sup> Madhavrao Sapre, "Kisanon ki Shiksha" (The Education of Cultivators), *Saraswati*, vol. 18, no. 6, June 1917, pp. 320–2.

<sup>65</sup> *Ibid.*

<sup>66</sup> For instance, a commentary appearing in the May 1920 issue of *Saraswati* stated: "The education system in England helps the boys in villages to become accomplished cultivators, and the girls become efficient in house work, in very little time." It appreciated the fact that children in British villages learnt the basic tenets of science and other skills related to cultivation. "Dehaat mein Shiksha Prasaar," *Saraswati*, vol. 21, no. 5, May 1920, p. 276.

<sup>67</sup> In the January 1920 issue of *Saraswati* we find a review of the book *Ganna aur Shakkar*, written by S. C. Banerjee (a chemist in the Agricultural Department, United Provinces), which, while welcoming the effort of writing such a scientific book in Hindi, went on to emphasise that such literature should be accessible to those who practise cultivation, and not just to students, professors, or "babus." They should be written with the purpose of implementing scientific methods. The review concluded that the real test of such knowledge was its utility in the field.

to practical research that considered the specific economic and geographical conditions of India's villages.<sup>68</sup> This reflected a clear recognition among the developing Hindi middle class of the practical and instrumental dimensions of education and scientific knowledge.

The provision of such education, it was noted, was primarily the responsibility of the Government. The essay "Kisanon ki Shiksha" appealed to educated citizens to dedicate themselves selflessly to the act of spreading knowledge, even while it acknowledged that educated Indians were not attracted to cultivation and were instead busy in the pursuit of clerical employment.

All the educated and civilised countries practise scientific agriculture. As a result they are growing in wealth. But the lack of education in India and the poverty of cultivators prevent modern scientific agriculture from taking root here. The educated and endowed class can gain by cultivating in the way it is done in the western countries, but their inclinations are otherwise.<sup>69</sup>

As a matter of fact, there was an overwhelming perception in the writings of this era that the Government was primarily responsible for bringing about institutional changes in the countryside, as seen in many articles that contained such demands or appeals to the Government. While some mention was made of what was expected of the *zamindars*, the main demands were directed at the Government. Such expectations came to be articulated more sharply in the 1930s. For instance, a 1931 article in *Vishal Bharat* talked about a number of specific improvements to be taken up by Government departments in order to boost the agricultural economy. These ranged from providing the cultivator with education and finance for agriculture, to extending irrigation facilities, and making available "scientific" seeds, fertilizers, and implements.<sup>70</sup>

There was also a strong argument in these writings on the need for education on aspects of scientific agriculture itself, so as to encourage and assist the proper and widespread application of the new knowledge in agriculture. The lack of education among cultivators prevented the proper utilisation of available scientific resources, and was an enduring argument that seems to have prevailed through the first few decades of the twentieth century up to Independence.

#### SUCCESS STORIES FROM OTHER COUNTRIES

Success stories of agricultural improvement through the use of scientific methods appear to have made a significant impression on the Hindi intelligentsia. Countries

<sup>68</sup> See Gopal Damodar Tamaskar, "Gram-Sudhar key Kuch Prashna" (Some Questions on Village Improvement), *Saraswati*, vol. 28, no. 2, February 1927, pp. 48–55.

<sup>69</sup> "America mein Krishi Karya" (Agriculture in America), *Saraswati*, vol. 28, no. 6, June 1927, pp. 1392–4.

<sup>70</sup> Shiv Kumar Sharma, "Krishi ki Dasha" (The State of Agriculture), *Vishal Bharat*, vol. 8, no. 6, Poush 1988, December 1931, pp. 697–704.

which had already achieved significant success in developing their agriculture, like England, Germany, United States of America, Japan, and the Soviet Union were hailed as examples of what science and technology could achieve. Numerous articles discussed how these countries utilised modern science at different stages of the production process.<sup>71</sup> The success stories were presented as opportunities that India had lost.

Indians cannot compete with Europeans in agricultural work. Indians are lagging even in the only profession left for them. The West is leading even in agriculture. The reason for this lead is the use of science. Their cultivation processes are much more developed than ours.<sup>72</sup>

The article concluded by urging the adoption of modern methods of cultivation by “transcending traditional means, as has been successfully done by the Europeans, in order to go beyond mere feeding the families.”<sup>73</sup> A tone of shame and despair sometimes entered the discussion. Narayansingh, in his article titled “Bharatvarsh ki Daridrata,” identified two problems of Indian agriculture. The first was the law of diminishing returns, *Kramagat Hwas Niyam*, which operated in agriculture across the world.<sup>74</sup> The second was specific to Indian agriculture, namely, its inability to transcend traditional methods of cultivation and utilise modern science and technology.<sup>75</sup>

It is a matter of immense shame and sorrow that despite being the residents of a principally agriculture-based nation, we are unaware of the methods that can increase the value of agriculture. We lack the intellectual capability to conceptualise and bring about new techniques of cultivation, new implements, and machines. We are stuck with the same old implements and manures and outdated processes, which have not seen any development since thousands of years. After all, in the absence of any education in science and technology, how are we supposed to bring about any development?<sup>76</sup>

Another example of the success of modern agricultural science that apparently impressed the Hindi-speaking elite was the experimental farm. Discussions of the kind of experimental research conducted in these farms, as well as suggestions as to how their work should expand and reach the cultivators, are to be found in Hindi writings on agriculture.<sup>77</sup>

<sup>71</sup> See, for instance, Krishna Sitaram Pendharkar, “Gehu ki Kheti” (Wheat Cultivation), *Maryada*, vol. 11, no. 6, April 1916, pp. 270–6; or Vishnumanohar Shashikar, “Mahayuddh aur Krishi Unnati,” (The World War and Agricultural Development), *Maryada*, vol. 16, no. 2, June 1918.

<sup>72</sup> “Bharatiya Krishi” (Indian Farmers), *Saraswati*, vol. 28, no. 2, February 1927, pp. 276–7.

<sup>73</sup> *Ibid.*

<sup>74</sup> Narayansingh, “Bharatvarsh ki Daridrata” (Poverty in India), *Maryada*, vol. 5, no. 3, January 1913, pp. 158–64.

<sup>75</sup> *Ibid.*

<sup>76</sup> *Ibid.*

<sup>77</sup> See, for instance, Narayan Dulichand Vyaas, “Gobar ki Urvara-Shakti Badhane ke Upaya,” (Enhancing the Quality of Dung to Improve Soil Fertility), *Madhuri*, Asarh 307, Tulsi-Samvat, Year 9, part 2, no. 6, August 1931, pp. 884–8. The essay describes the experiments done by Pusa on the use of *gobar* (cow-dung) as a fertilizer, and quantitatively illustrates the results of these experiments.

Our land has become less fertile. Even a produce of 10 maunds of grains per acre is regarded as very good. Officials of the Agricultural Department have produced double and triple of this amount in similar lands by using modern implements, fertilizers, and proper irrigation, etc. It would be great if all our cultivators are able to do the same and become capable of producing at least double the amount.<sup>78</sup>

There were disagreements on the appropriate use and extent of modern agricultural science and techniques in agriculture. For instance, an article in *Saraswati* criticised the agricultural farms for ignoring the ground realities faced by cultivators. It argued for gradual improvements in the methods that were already in use, rather than making sudden improvements that required new implements and substantial capital. It criticised agricultural officials “for living in a dream world, in ignorance of the real condition of the cultivators, devoid of modern tools, money, and knowledge.”<sup>79</sup> However, such disagreements were rarely about the need for improvement *per se*, or about the efficiency of modern science and technology. They generally pertained to the suitability of modern methods and techniques in the existing socio-economic or geographical environment.

With the advance of the twentieth century, the argument in favour of intensive farming to ensure better yields gained strength. There was a realisation, though not often expressed, that there were definite limits to the enhancement of production by extending arable land through irrigation. This further bolstered the perceived importance of intensive cultivation using more advanced techniques.<sup>80</sup>

#### TECHNICAL WRITINGS

Technical commentaries on different aspects of scientific agriculture were also published in the periodicals. Here the discussions were about how new practices could be applied to different stages of agricultural production, like soil preparation, ploughing, and sowing. Writings on the importance of specific inputs like manure and fertilizers, detailed descriptions of their intrinsic chemical constituents, the appropriate ways to use them, and the positive impact of their use on production and productivity appeared in the publications, as did discussions on improved tools and implements like the iron plough. The commentaries often analysed local methods and inputs, and described how scientific improvements could be made through incremental efforts and the scientific principles at work behind local methods. Crop-specific discussions – on different operations involved in the cultivation of a particular crop – prescribed scientific ways to cultivate the crop.

<sup>78</sup> Dayashankar Dubey, “Anaj ki Kami Door Kaise Ho?” *Saraswati*, vol. 21, no. 4, April 1920, pp. 196–9.

<sup>79</sup> Gopal Damodar Tamaskar, “Gram Sudhar ke Kuch Prashna” (Some Questions on Village Improvement), *Saraswati*, vol. 28, no. 2, February 1927, pp. 204–9.

<sup>80</sup> See, for instance, the essay by Harikrishna Jaitlee titled, “Bharatiya Kisanon ki Unnati ke Sadhan,” *Saraswati*, vol. 33, no. 4, April 1932, pp. 405–8. Here the author showed a clear awareness of the fact that “most of the better quality land has already come under the plough. Only bad quality land remains, which, if cultivated, will reduce productivity.” He further claimed that the cost of cultivation on such land would only be prohibitive and recommended “intensive cultivation, like Japan.”

Some of the striking features of these discussions need to be specifically mentioned. Many of the commentaries were prescriptive in nature, and reflected attempts to blend experimental and scientific knowledge – though often in an uncritical fashion. The essay “Neel ki Kheti” by Murarilal Bhargav is a typical example.<sup>81</sup> It referred to a popular view among farmers that the west wind gives a good indigo crop with a rich colour content. It then went on to explain the scientific principle underlying this perception. Indigo being a leguminous crop, absorbs nitrogen from the air. “Western winds,” the essay explained,

help in easy absorption because eastern winds have a lot of water content, which prevents easy extraction of nitrogen. Moreover, the eastern winds enhance the moisture content of the plants and wash the chemical content off the leaves.<sup>82</sup>

Finally, the Hindi writings clearly indicated a belief among the intelligentsia that the primary responsibility to facilitate the absorption of improved techniques lay with the Government. There was almost total agreement that promoting irrigation infrastructure like canals and wells was the duty of the State, and that it had been so historically.<sup>83</sup> There was an occasional view expressed that *zamindars* too must cooperate in constructing such infrastructure.

The absolute responsibility of the Government was also expected in the realm of scientific research, training, and extension work. Such responsibilities were, on rare occasions, expected of the *zamindars* too. For instance, the *Saraswati* issue of February 1927 published an article titled “Bharatiya Krishi,” which argued that owing to the ignorance and poverty of the cultivators, the first step towards scientific agriculture should be initiated by educated *zamindars*. It suggested a series of concrete steps: setting up “experimental farms where cultivation is done using modern methods, which then produces encouraging results;” “organising agricultural fairs and exhibitions in different regions;” and “distributing prizes to those who have taken initiatives to modernise their method of cultivation.”<sup>84</sup> Such references to the benevolent role of *zamindars*, however, were few and far between.

Expectations of the Government also included providing the initial support for the establishment of credit cooperatives, as well as cooperatives to purchase and maintain implements. The Government was also held responsible to ensure the availability of scientifically treated seeds, pesticides, and fertilizers, providing scientific education through agricultural schools and colleges, facilitating research for improving productivity, etc. Interestingly, by the 1920s, the frequent demands

<sup>81</sup> Murarilal Bhargav, “Neel ki Kheti” (Indigo Cultivation), *Vigyan*, vol. 7, no. 4, July 1918, pp. 157–9.

<sup>82</sup> *Ibid.*

<sup>83</sup> Matadeen Shukla, in an essay titled “Hindustan mein Krishakon ki Dasha” (The Condition of Farmers in India), *Maryada*, vol. 15, no. 6, April 1918, pp. 268–74, asked for greater Government support for irrigation. He said: “From the times of the *Mahabharata*, Hindu kings have had reservoirs constructed and wells dug for the irrigation of farms. Even the Muslim kings significantly associated themselves with this work, and the Yamuna canal is an example of their initiative.”

<sup>84</sup> “Bharatiya Krishi” (Indian Farmers), *Saraswati*, vol. 28, no. 2, February 1927.

being made on the Government were on occasion also accompanied by strong criticism of the State for neglecting its duty to facilitate scientific agriculture.<sup>85</sup>

### CONCLUSION

This paper limits itself to examining the attitude and understanding of the emerging Hindi intelligentsia of the late nineteenth and early twentieth century regarding agricultural modernisation.

The study attempts to capture the meaning of agrarian change for this emerging class, especially with respect to the interrelationship between techniques and methods of agricultural production on the one hand, and the socio-economic context of agricultural production on the other. We have examined several issues of substantial interest related to the modernisation of agriculture in the colonial era through a detailed study of the writings in some of the leading Hindi periodicals that engaged with science in general, and with modern agricultural science and technology in particular.

Interestingly, while some of the earliest books on agriculture in Hindi, which were published in the mid-nineteenth century, were like knowledge manuals, rich in scientific and technical information, the periodicals that began publication in the late nineteenth century reflected a growing concern with the prevailing social and economic conditions – a concern that persisted through the first half of the twentieth century. We witness a strong sense of dissatisfaction with the state of agricultural production and productivity very early in these writings, and in the ongoing discussions on how to change the state of affairs. Agrarian change was an important and early concern for the emerging Hindi intelligentsia.

The discussions in the writings clearly associated agricultural modernisation with a measure of transformation in the socio-economic conditions of agricultural production. At the same time, there was recognition of the need to apply modern science and technology for the advance of Indian agriculture. By the beginning of the twentieth century, the argument for intensive production with higher levels of productivity appears to have gained strength. However, there was a significant change with regard to opinions on the appropriate socio-economic context in which modernisation would occur.

From the late nineteenth century to the second and third decades of the twentieth century there occurred some interesting and significant shifts in the perceptions about social and economic issues in Indian agriculture. In discussions of the land question, for example, late nineteenth-century writings identified insecurity of

<sup>85</sup> See, for instance, the sharp critique by Matadeen Shukla in “Hindustan Main Krishakon ki Dasha,” *Maryada*, vol. 15, no. 6, April 1918, pp. 268–74, which accused the British of not taking proper steps to facilitate scientific principles in agriculture.



tenure and rates of rent, which were subject to arbitrary increases by the Government or the landlord, as being two key impediments to improving agriculture. In later years the high quantum of Government taxation came to be seen as the fundamental obstacle to the adoption and application of science and technology. Around the same time, land fragmentation was identified as an important barrier to the utilisation of modern methods and techniques in agriculture. Concerns about the socio-economic relations between the *zamindar* and the tenant, and their detrimental impact on the adoption and application of science and technology, were rarely expressed any more.

Alongside the instrumentalist view of science as promoting national development, one strand of thought in the debate emphasised not a liberal (or what later came to be called a “Nehruvian”) vision of the future, but the recovery of an “ancient” and “glorious” past. Overall, however, the newly emerging elite appears to have been impressed by the material success that science and technology had the potential to bring to the process of agricultural production. Such success, however, was contingent upon appropriate socio-economic conditions to facilitate the application of modern agricultural science.

The writings portrayed rural society as comprising two sections, namely, *zamindars* and cultivators. It is ambiguous, though, whether the antagonism between these two classes was regarded as irresolvable within the system, or otherwise. There was little perception of any further stratification of society, not only in terms of class, but also in terms of caste. The discourse on agricultural modernisation in the Hindi journals and other sources that we have studied originated from those who represented the interests of a section of the cultivator class, and who recognised the conflict of interest with *zamindars* but were not ready for sustained opposition to them.

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