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Agriculture as knowledge: delegitimising ‘informal’ knowledge through colonial pedagogy in Bihar, 1880–1930

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ABSTRACT
Agricultural improvement was a vital aspect of the ‘development scheme’ of the British Government in India as agriculture was the most revenue-generating industry in Bihar. From the first Famine Commission Report of 1880, there was a set agenda to improve agriculture through education. This was to be achieved through importing western science and technology by establishing premium institutes and a range of experiment stations. In this process, the British tried to juxtapose western lab-based knowledge over the time-tested local knowledge based on observation. This article attempts to locate agriculture as knowledge and how informal knowledge was proscribed by the British. It tries to unfurl the hitherto unquestioned links between agriculture, knowledge and the rural people. As knowledge encompasses power configurations, this article also aims to unravel the intellectual power and moral hegemony promoted by colonial pedagogy to subjugate the Indian people because they were employing a different knowledge system.

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Agricultural education; hegemony; indigenous knowledge; colonial pedagogy; Bihar

Introduction
Bihar is an eastern province of India lying in the fertile Gangetic belt,¹ and yet the farmers in Bihar were subsistence farmers. The tillers had inadequate landholdings, which meant inadequate income to take care of the various expenses like production, borrowing and exactions by landlords, moneylenders, government, local officials and intermediaries. However, agriculture was required to employ the unemployed, a problem increasingly felt due to high population density. As N. G. Mukerji (Professor of Agricultural Chemistry) rightly remarked: ‘It is only by dint of hard labour and frugality that the Indian cultivator makes agriculture to pay him’.² Agriculture was the most significant industry in Bihar, generating the maximum revenue for the state and also raw materials for other sectors.³ As the development of capitalist markets outside agriculture was

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¹‘Behar Village: Sights and Sounds’, Bengal Magazine 10, no. 112 (1881), 143.
²N. G. Mukerji, Handbook of Indian Agriculture (Calcutta: Hare Press, 1901), 5.
³Lord Cornwallis once said that in India, unlike other countries, agriculture and commerce promote each other. In India, for commerce to flourish, agriculture had to flourish first. For more information see Upendra Narayan Singh, ‘Some British Experiments of Agriculture in Bihar (1770 to 1883)’, Journal of Historical Research 22, no. 1 (1979): 13.
increasingly transforming and controlling agrarian production, the British Raj aimed at bringing change not only in agricultural practices but also in the epistemic value of agriculture commonly perceived by the locals.

A lot has been written about agricultural change during British rule, especially by the Indian intelligentsia and nationalists, such as Dadabhai Naoroji, R.C. Dutt, R. P. Dutt, Bankim Chandra Chattopadhyay, M. G. Ranade and M. K. Gandhi. A systematic academic contribution was made in post-independent India by a series of articles and books written by B. B. Chaudhuri, Suprakash Roy and Bipan Chandra. They mostly located agriculture in relation to commercialisation, demographic pressure and the rural credit system, or have situated it as a revenue-generating industry. Historians like Elizabeth Whitcombe brought in relatively new concepts for the 1960s such as technology, water and modernity in agriculture. Since the 1970s and 1980s, the canopy of agrarian historiography has broadened. ‘Agrarian’ referred to agriculture both as a sector of the economy and also as the broad social structure.4 In the 1970s, F. Tomason Jannuzzi wrote about agrarian reforms and the bhooldan movement in Bihar post-independence. In the 1980s the broad social structure was mainly focused, referring to land settlements, agrarian relations and the peasantry’s rights, their conditions, tenancy legislation and rent questions. Stephen Henningham too focused on these aspects with special attention on the Darbhanga Raj (north Bihar). The 1980s also summoned the tectonic shift in agrarian historiography when Ranajit Guha’s first volume on Subaltern Studies appeared in 1981. His Elementary Aspects of Peasant Insurgency in Colonial India arrived in 1983. It dismissed all the previous historical writings as elite historiography, which had little to offer in understanding the history of the people. It propelled research in this context by scholars like Mridula Mukherjee, Neeladri Bhattacharya in Punjab, S. Ambirajan and Shahid Amin, who worked on the subalterns of Uttar Pradesh. Crispin Bates and Prabhu P. Mohapatra have worked on Central India, Neil Charlesworth on the Bombay Presidency, David Hardiman on Gujarat and K. Saradamoni on the Pulayas in Kerala. Anand A. Yang, whose work The Limited Raj (1989) is primarily on north Bihar between 1793 and 1920, illustrates the pattern of agrarian relations and its changes in a local society over more than a century of colonial rule.

In general, the historical profession (not just confined to South Asia) turned away from politics and economics towards society and culture in the 1990s. Gyan Prakash’s Bonded Histories: Genealogies of Labour Servitude in Colonial India in the 1990s stands out. He studied the kamias of Bihar, highlighting the social roots of bondage and extreme poverty of the tilling class and how the dissolution of slavery by the British was an ineffective step as these bonded agrarian labourers had nowhere to go other than returning to their old masters, underlining the lack of job opportunities. In 1997, C. V. Hill’s River of Sorrow demonstrated the intensification of agriculture and revenue disputes in Kosi diara where the revenue had been fixed but the agrarian boundaries kept on changing. Three years later (2000), Jacques Pouchehadass’s Land, Power and Market signalled that agrarian history was not outdated altogether. Although this book deals with just one district of Bihar, Champaran, its nuanced accounts bring to the fore a series of complex socio-political relations and exchanges within the rural economy of Champaran.

At the turn of the millennium many scholars tried to locate and analyse the application of western science in the field of agriculture. Prakash Kumar’s *Indigo Plantations and Science in Colonial India* makes ‘decline’ a serious topic for the history of science through indigo as a cash crop. Like Kumar, Kathinka Sinha-Kerkhoff lends more weight to one specific cash crop, i.e. tobacco in the Tirhut region of North Bihar. However, she also draws comparisons with other cash crops such as opium, indigo and sugarcane.

None of these notable works has located agriculture as knowledge and its subjugation by the British, thereby eroding a healthy tradition of informal education. Primarily, the works on Bihar focused on the colonial state, the agrarian cycle and revenue collection. Even works on the history of education focused on themes like education given by missionaries and the state, vernacular education, women’s education and technical education. But no work on the Indian context in general and Bihar, in particular, has been done or located agriculture as knowledge and focused exclusively on agrarian pedagogy as a site of contestation. The state tried to seek hegemony among the Indian subjects through importing western scientific principles and technology, which became even more systematised after the First Famine Commission Report of 1880. This article will locate agriculture as knowledge and traces the trajectory of the British Raj’s efforts to discredit the time-tested techniques followed by Biharis and how lab-based ‘modern’ techniques began replacing them. Hence the tussle between two knowledge systems from two different world systems began where the state-sponsored formal education system tried to delegitimise the informal, aiming to make it obsolete.

**Informal knowledge**

The local agriculturists in Bihar were mostly subsistence-based farmers with an average of five hectares of land marred by high population density. The farmers were mostly unlettered, commonly called ‘anghuta-chaap’. This is not to give a false impression that modern agricultural technology found easy acceptance on Bihari soil. On the contrary, new agronomic practices and the associated knowledge had to compete with existing ones entrenched in the local soil. In that sense, peasant choices were embedded in their own experience and customs. Long-term agronomic practices were reflected in cultural beliefs. Historian Peter Robb understands that the peasants ‘operated, as revealed in a contemporary linguistic record, within a rich tapestry of distinctions, which imply standards of behaviour as well as ecological norms’. The *Edinburgh Review* remarked that the customs which appeared to strangers the result of negligence and in need of ‘refinement’ had their origin in local conditions, and could be traced back to a series of profound and continued practical observations.

Agriculture as an art was transferred from generation to generation in the form of informal education. For many previous centuries, an immense amount of agricultural lore was stored up in art, proverbs and traditions. Villages could be seen as local networks...
of knowledge production fostering the next generation of users. Knowledge existed in multiple forms, information circulating among practitioners through a decentralised network with a non-designated source of knowledge production (unlike the western-notified systems of laboratories and universities). According to Arun Agrawal, this knowledge system was subjective – deeply rooted in the local environment. Informal repertoire dealt with vivid themes including the awareness of environmental conditions, the epistemic component of techniques of manufacturing tools, and the knowledge attached to the practice of agriculture, amongst many others. The movement of knowledge was both vertical and horizontal – people were learning from each other and their ancestors rather than laboratory-based scientists. The movement of knowledge across the generations should also be considered as a social accomplishment.

_Mirgira tabay Rohini labay Ardara jay budbuday,_  
_Kahe Dak sunu Bhillary, kutta bhat na khaye_  
(If Mrigsara [in June] is hot, Rohini [about the beginning of June] rains and Ardara [middle of June] gives a few drops, Saith Dak, hear, O Bhillari, [rice will be so plentiful that] even dogs will turn up their noses at it.)

An apt proverb never went amiss – it mirrored their lives and was a guide to their character and their actions. It is almost impossible to date or say anything about the authors as these practices left negligible written records because the majority of the population was unlettered. Their way to document knowledge was based on _smruti_ (memory) tradition, where much emphasis was placed on memory to pass down knowledge. However, some of these proverbs were documented from time to time by dignitaries such as John Christian and G. A. Grierson. C. E. A. W. Oldham, a British civil servant, while suggesting the significance of the proverbs to the commoners, wrote: ‘A special feature of these proverbs, perhaps, is the preference for concrete images rather than abstract terms.’ In a host of customs and rhymes, the cultivator in Bihar was reminded of the expected character of the season; he was provided with a timetable according to which he could anticipate heat or rainfall and should carry out particular tasks like sowing and reaping – both crucial for farming. The farmers’ year was cyclic, not linear, and their lives revolved around the agrarian seasons. Their festivities were drafted during the lean seasons or once the harvest was over, making their existence agricultural, social and religious at once. In an interview published in the Royal Commission Report (1928), Mr Devaki Prasad Sinha, (MLC, Patna) said:

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9Sir Bryce C. Burt, ‘Science in the Service of Indian Agriculture’, _Science and Culture_ (1936): 531; See George A. Grierson, _Bihar Peasant Life Being a Discursive Catalogue of the Surroundings of the Province_ (Calcutta: Bengal Secretariat Press, 1885).


12C. E. A. W. Oldham, ‘The Proverbs of the People in a District (Shāhābād) of Northern India’, _Folklore_ 41, no. 4 (1930): 326.


These indigenous theories and traditional methods have worked successfully for hundreds of years and their utility cannot generally be challenged. Even to-day in our Province some of the most fundamental rules for the guidance of the agriculturists are contained in couplets composed by a poet, called Ghagh, who flourished hundreds of years ago.

Srabani Sen elaborates on the above statement that though the Indian farmers were aware of the nature of the soil and its relation to the production of specific crops of economic importance, the exact chemical composition of different kinds of soils was not known to them. They did not have the means to dissect nature’s doing; instead, they believed nature was a holistic entity that needed to be revered rather than questioned. It was an economy based on vernacular knowledge in a vernacular setting. Historian Srabani Sen submits that

Formerly it was enough to know empirically that certain practices were good, that certain kinds of soil were suited to particular crops, that certain foods were useful for the cattle, but no one could say more than that these things were so, and not why they were so.

The proverbial sayings and agricultural maxims prevalent among the people told of the favourable and unfavourable climatic influences that could bring prosperity or the reverse.

_Eko pani jo barse swati kurmin pahire sona pati._
(If [there is] a single shower in Swati, it enriches people so much that even Kurmi women get golden earrings to wear.)

These proverbs were meant to offer the impression of predictability and, hence, the ability to respond to the environment amidst variable seasons. In an anonymous letter to the editor of _Indian Engineering_, the writer argued that the agriculture practised by Indian _ryots_ (peasants) could appear defective to the Europeans. Nevertheless, the Indian way of agriculture could be the seed for further development as these agricultural practices were the outcome of centuries of experience, and there might be science behind them. However, it has to be acknowledged that as informal knowledge was local, shaped by the given geo-economic situations, its tenacity could not have extended beyond a specific geographical boundary. This also raises serious doubts about the claim of ‘competent scientific observers’ that western science’s improvements in Europe and America in the nineteenth and twentieth centuries could be blindly imposed in Bihar.

**Delegitimising local knowledge**

Thus, their implements are of the rudest construction, and adapted only for family or domestic use; and, with their methods of agriculture and manufacture, have reference to a time in the far past, when India had not yet been obliged to enter the lists of competition with other countries, and with more advanced and versatile peoples.

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17 Ibid., 237.
19 Robb, ‘Peasants’ Choices?’, 115.
20 _Indian Engineering_ 21 (May 15, 1897): 381.
The above statement was made by James Mylne, a European zamindar (landlord) of Jugdespore in Bihar. His statement indicates how the agricultural methods of India in general and Bihar in particular were labelled inefficient, and both the rulers and the ruled must make room for European techniques.\(^\text{22}\) Science and technology gave intellectual power to the Europeans over the locals, practiseing their vocation as superiors. Further, it also gave them moral power – ideas about what the Europeans did or could do and what the Biharis did not do or understand as the Europeans did. The subjugation of Indians was justified in part by their lack of ‘scientific’ knowledge in agronomy. The positivist approach of western science repeatedly questioned the practices of farmers who deviated from the prescribed scientific method.\(^\text{23}\) Indians, in general, were described as ‘superstitious’, ‘unscientific’ and ‘barbaric’, Indian technology as backward and primitive. Even the sympathisers with Indian culture and heritage considered Asians as ‘mere children’ in scientific pursuits vis-à-vis the West.\(^\text{24}\) By the nineteenth century, the Raj ‘realised’ that the locals could be taught the experiences of other nations. Consequently, the dire need for formal education in the field of agriculture came into play. Multiple battles on different fronts were waged between the two different knowledge systems, i.e. on the one hand, there was a knowledge system based on experience and observation and on the other, there was knowledge based on experimentation. Experiment-based education was gradually succeeding in delegitimising knowledge based on experience. Now, this informal knowledge needed approval from scientific laboratories. This native knowledge was made hierarchically inferior, which needed to be revamped by western science practitioners. It depleted the social currency of informal knowledge. It seemed that science, technology and domination marched together.\(^\text{25}\)

The officials recurrently attacked the geo-specific agrarian practices undertaken by the locals in Bihar. The repertoire that found currency in official circles concerning the local people emphasised the need for a ‘boost’ in crop production, implying that the local agriculture was deficient in this respect. Science demonstrated the errors of local ways and offered ‘correctives’ through regimented disciplines like economic botany, unlike the informal education system’s holistic approach.\(^\text{26}\) For instance, the British endorsed deep ploughing, unlike the shallow ploughing done by the Bihari peasants.\(^\text{27}\) Further, their time-tested tools, including the Indian-made wooden ploughs, were criticised for being inefficient as they were thought to be merely ‘scratching the surface’.\(^\text{28}\) They recommended ploughs like the Punjab plough, the Meston plough or the Hindustan plough,

\(^{22}\)Indian Engineering, 21 (May 15, 1897): 381.


\(^{27}\)N. S. McGowan, Professor of Agriculture at Sabour Agricultural College, maintained that there were experiments which were done in two consecutive years, i.e. 1912–1913 and 1913–1914, at Sabour Farm which showed that deep cultivation gave a larger outturn than could be obtained by using the ordinary country plough. For more information see Bihar State Archives (hereafter BSA), Edu. Dept. Agrl. Br., July 1925, B. A. Collins to the Secretary to the Government of India, Department of Education, Health and Lands, on ‘Abolition of the Post of Professor of Agriculture in the Cadre of the Indian Agricultural Service in Bihar and Orissa and Retirement of Mr. N.S. McGowan’, 1925.

which were heavy, expensive and could not be carried by the weak cattle of Bihar. Moreover, unlike temperate countries such as Britain, Bihar had a tropical climate, which meant high temperatures in summer, and deep ploughing was highly unsuitable as it could bake the soil, depriving it of moisture and dehydrating the roots of the plants.\(^{29}\)

The British criticism did not limit itself to the ploughs. It spilt over onto traditional irrigation techniques, among other criticisms. Under the British, the age-old system of _ahar-pyne_ was undergoing a decline.\(^{30}\) This traditional irrigation system had been constructed by villagers for the retention of water for local use. Neither the technical excellence nor the ecological significance of traditional tank irrigation was appreciated by the British. They made a strong case for canal irrigation systems – which implied a move from ‘backwardness’ to ‘development’. James Mylne opined the following in praise of an irrigation canal made on the Sone River of Bihar:

The opening of the Sone Canals (navigable, branch, and distributary) opened a new era of hope and prosperity to the ryots over the extensive areas irrigable by flow or easy lift from the canals. … It is likely the canal system west and north, and east and north, will gradually be extended, as [in] the management and means of the field distribution the water becomes better understood and perfected. This is necessarily a work of time and experience.\(^{31}\)

Canal irrigation was promoted, keeping the motive of revenue generation and foreign markets in mind.\(^{32}\) Not only were the peasants paying revenue while selling crops, but they were supposed to pay rent for the acres of land being irrigated by canals. For instance, the canal water rates in the Sahabadd district, as pointed out by L. S. S. O’Malley, an Indian civil servant, in 1921–1922 were as follows: there were five different rates charged for the water supplied, namely (1) _rabi_ season leases from 26 October to 25 March at Rs 3 and 8 annas an acre; (2) hot-weather leases from 26 March to 24 June at Rs 7 and 8 annas an acre; (3) leases during the same period at Rs 2 and 8 annas for each watering; (4) _kharif_ season leases between 25 June and 25 October at Rs 5 an acre; (5) 10-years leases for block areas for any crop between 25 June and 25 March in the next year at Rs 4 and 8 annas an acre.\(^{33}\) Furthermore, the rates were charged according to the area being irrigated and not the litres of water consumed. Therefore, the peasants had no incentive to use water judiciously, which raised problems like salinisation of soil, algae problems and dengue.\(^{34}\)

All these problems, including many not discussed, proving how faulty the Government’s determination to impose western scientific principles was, did not deter the Raj from imposing the colonial agenda of formal education primarily drawn from the


\(^{32}\) Europe was dependent on India for the crops it needed. For instance, though only 10% of the Indian population were wheat eaters, since 1870s the percentage of wheat produced was growing. For more information see ‘India as a Wheat Competitor’, _Indian Agriculturist_ 8, no. 11 (1883): 415.


West. The forwarding of such an agenda was not spontaneous. On the contrary, there was a spasmodic yet gradual intervention made even before 1880. The British established botanical gardens at Calcutta (1786), Saharanpur (1817) and Dapooree (1828). These gardens provided opportunities to cultivate prized plants from different parts of the world that were thought to improve revenue.35 The Agricultural Society of India was created in 1820, and by 1830 it started importing new varieties of maize, cotton and sugarcane for growing in India. In 1840 the Agricultural and Horticultural Society prepared a blueprint for improved cultivation in India, and agricultural exhibitions were organised in the 1860s.36 The Honorary Secretary of the British Indian Association (1868), which primarily had the zamindars as members, wrote that the committee deemed it highly desirable that some arrangements should be made for rendering instruction in agriculture as part of the general scheme of education in India. They considered that teaching agriculture in vernacular village schools would serve the purpose. Hence, they thought that it would be premature to establish an agricultural college at that time.37

The question of model agricultural farms was discussed in the 1870s. The First Famine Commission of 1880 recommended the creation of agricultural directorships in all provinces. The Famine Commission proposed theoretical training of probationers to be tested by examination, then practical training for a few of these at an agricultural college at Government expense. However, they mainly remained haphazard and none of them could gain much acceptance. At the invitation of the Government, Dr J. A. Voelcker, the agricultural chemist to the Royal Agricultural Society of England, visited India in 1889, which marked the first endeavour to organise agricultural research in India. The Agriculture Conference of October 1893 resolved that the universities should recognise the science of agriculture and that scientific agriculture should be included among the subjects for the examination for entry into such departments. The recommendations of the Agricultural Conference were warmly received both by the Government and private associations. These placed a greater emphasis on agricultural education and research.38

This is not, however, to overlook the significance of the Agriculture College in Behar, which was opened in 1876, before the recommendations of the Agricultural Conference of 1893, as an adjunct of Patna College. It was established, as H. Woodrow (the then Bengal DPI) submits, with two objectives. The first was to engratify a general course of education such as theoretical and practical instruction in agriculture and its allied arts. Second, to establish an industrial school on a half-time principle in which instruction would be given in various handicrafts, without neglecting reading, writing and arithmetic. Woodrow admitted that he had no Indian precedents to guide him, so he had to look to European models.39 He preferred the Belgian example, which could be partially

38 Agricultural Sciences and the British Government in India, 1890–1905.
39 H. Woodrow to the Secretary to Government of Bengal General Department, BSA, Revenue Dept Agri. Branch, No. 17–19, Pt. A, March 8, 1876.
imitated because he had no hope ‘of seeing any sufficient imitation of the beautiful laboratory of the spacious economic museum, and of the scientific equipment which the little kingdom of Belgium thinks it right, “regardless of cost”, to give to its colleges’.  

A range of laboratories were established in Bihar: Muzaffarpur (1898), Mosheri (1899), Dalsingserai (1899), Piprah (1902) and Sirsiah (1904). Some of the best experts in chemistry, botany and agronomy, trained in England and Germany, arrived in Bihar to work at these stations. In July 1899, the Indigo Improvements Syndicate (IIS) established a research laboratory at Dalsingserai near Darbhanga. William P. Bloxam, a chemist, tried out innovations in indigo from 1903 to 1905 at the Dalsingserai station. Resources were pooled, by both the British and the planters and sometimes by the state alone, to fund these experiments. Nevertheless, there was a decline in indigo export post-1907, followed by a decline in interest among government officials for indigo experiments. At the same time, they marched ahead with their project to start colonial India’s first agricultural research institute at Pusa in Bihar.

**Formal education**

As discussed in the previous section, science was being systematised, especially from the second half of the nineteenth century. Western science and technology were imagined to create a sense of awe towards the colonial master. Science was to aid the Raj as and when the Raj needed it, but it would be too much to say that the state was ever ruled by it. There was no alliance between the state and science; instead, science was subordinated to the empire. Western science tried to centralise and materialise the desires of the state. Scientific education was thought to assist in alternating the crops, renovation of the soil, and to aid materially to develop the country’s available resources. As Peter Robb in *Agrarian Development* argues, an emphasis on science and experiment was thought by the Raj to aid in diagnosing the agrarian problem and provide a cure. However, it never worked successfully because the data collected were either inadequate or faulty.

The actual ‘breakthrough’ in education came with Lord Curzon when in 1905 the Government of India decided to set apart annually Rs 2 million to assist the development of agricultural research, demonstration and education. Subsequently, two prestigious agricultural institutes were opened in Bihar – the Imperial Agricultural Research Institute and Sabour Agricultural College. The Imperial Agricultural Research Institute (1905) was opened at Pusa in the Tirhut district of north Bihar. In his opening speech, Lord Curzon expressed his hope that Pusa would become the nucleus of agricultural research activities and education that would benefit the whole country and attract the best talents from abroad and from India itself. Pusa was to formulate solutions to agrarian problems that

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40 Ibid.
42 Ibid., 551–6.
44 Kumar, ‘Science Society in Colonial India’, 38.
would enhance British imperial power on the subcontinent. Pusa’s position in relation to the provincial agricultural colleges was that of a higher teaching institution. Its main objective was to enable students to qualify for appointments in the specialised branches of agricultural science in India and neighbouring colonies through postgraduate courses of the highest possible standard. Facilities similar to those available to European students were to be made available to Indians who wished to enter the Indian Agricultural Service.\(^{48}\) It was the only institution in India where facilities for higher education in all branches of agricultural science were available.\(^{49}\)

At Pusa, steps were taken to develop agricultural research, experiment, demonstration and education.\(^{50}\) The line of research followed a top-down diffusionist model and it was even reflected in the profile of its students. Since there were no scholarships offered, the students were sons of absentee landlords or middle-class city dwellers or local government nominees rather than farmers. The recipients of agricultural education mistook agricultural education for any other education where no physical engagement in the field was necessary.\(^{51}\) These agricultural colleges were out of reach for peasants’ sons, as negligible financial help was given and the medium of instruction was English, not vernacular.\(^{52}\) English was made the lingua franca, reflecting the currency of Lord Macaulay’s Minute of 1835 and also facilitating the unequal flow of knowledge. It was believed that the Indian languages were not capable of supplying the desired words or phrases needed to teach the methods of the West.\(^{53}\) In short, the language of science was English. It also marked a shift from informal education, which tried to educate the peasants in the local language and through local figures of speech that were easily comprehensible. Poor students could not bear the financial burden, and English added to the institute’s discriminatory role, keeping peasants’ sons at a distance from education. Further, it tried to curb the possibility of dialogue between the recipients of two different knowledge systems:

Research workers will necessarily know English unless there is to be a large staff of translators constantly employed in rendering scientific books and periodicals into a variety of vernaculars and as these translators would need an adequate knowledge of science, the difficulty is only thrown one step further back; while for teachers and officials English is an absolute necessity under existing rules.\(^{54}\)

Pusa was never challenged for choosing English as the medium of instruction and research when the desired goal was to ‘modernise and transform’ the local peasants communicating in vernacular language. The British were clear about their trajectory of diffusion of knowledge that put English-educated rich people closer to accessibility to western knowledge.

\(^{48}\)Voelcker was of the opinion that instead of the natives being sent to foreign countries, they should be trained, rather, in their local agricultural colleges. For more information see Voelcker, *Report on the Improvement of Indian Agriculture*.


\(^{52}\)Henry S. Lawrence, ‘Indian Agriculture’, *Journal of the Royal Society of Arts* 56, no. 2880 (1908): 251.


\(^{54}\)Moreland, ‘Note on Agricultural Education’, 5.
Agricultural education and research at the provincial level were also started in Bihar with the opening of an agricultural college at Sabour (at the outskirts of Bhagalpura). The Government had approved Sabour Agricultural College with a grant of Rs 3.5 lakhs in the year 1904–1905. The college was founded on 17 August 1908 by Sir Andrew Henderson Leith Fraser, Lt-Governor of Bengal. J. Byrne, a civil servant, put forward that the main purpose of the college was ‘in the first place to provide a suitably trained agency for carrying out the propaganda of the lately constituted Department of Agriculture, and next to provide a research station for solving problems presented by the agricultural conditions of this Province’. At Sabour Agricultural College, classes were opened in November 1910, under E. J. Woodhouse, its first principal. The college imparted teaching in subjects of practical interest to agriculture and practical farm work, comprising the actual cultivation of crops. The college offered a three-year diploma course in agriculture, with a vision of preparing students for employment in the Agricultural Department. It also gave training in livestock and rural economy, physics, chemistry, botany, entomology, veterinary science, agricultural engineering and land records. The Government of Bengal decided that the course at Sabour College must stand on its own merit. The college kept revising the course structure. For instance, a revised two-year course began in June 1916. The Sabour College farm (started as a central farm) was a later addition to the college.

Though it was an agriculture college at the provincial level, Bihar and Orissa’s locals did not join the Sabour College in any considerable numbers. When Bihar was carved out from Bengal and the Bengal Agricultural Department cadre had been filled, not even reducing the course to two years attracted students. This system did not produce good quality recruits, and the results were altogether incommensurate with the cost of keeping up the college. The committee that submitted its report in 1921 for the department’s reorganisation also recommended closing Sabour Agricultural College. Based on the committee’s unanimous recommendation, the then Government of Bihar and Orissa decided to abolish the College and subsequently the College was closed in March 1923:

since the abolition of this post is due primarily to the decision that Sabour, as an educational institution, should be closed, as soon as it can conveniently be arranged, and this decision was reached unanimously by the committee over which the Agricultural Adviser to the Government of India himself presided.

The phase of active teaching at the college was short. After the college closed, the building was used to house the office of the Director of Agriculture, which was shifted from Patna. According to J. A. Richey, the Educational Commissioner with

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55] J. Byrne, Bengal District Gazettes, Bhagalpur (Calcutta: Bengal Secretariat Book Depot, 1911), 76.
57] ibid.
58] National Archives of India (hereafter NAI), Edu Dept. Health and Land Br./1930/7–8/A, The Establishment of Sub-Station to Remedy the Deficiencies of Pusa in Relation to the Problems of Tropical India, August 1930.
59] Hundred Years of Bihar Agricultural College.
the Government of India, Sabour College closed down because it was not affiliated to the university. Further, the Bihar Legislative Council considered the agricultural college to be an unnecessary luxury.\textsuperscript{61} It functioned as an agricultural college for the two provinces from 1910 to 1923. However, this did not mean that the agricultural college became dysfunctional after 1923. It was converted into an agricultural research institute with two main research sections, i.e. Agricultural Botany and Agricultural Chemistry.\textsuperscript{62} Since 1923 it had been used as an experimental farm for south-east Bihar, especially for training probationers. The Sabour College hostel accommodated the Sabour Primary School, with a view to bringing the agricultural department in touch with rural schools ‘so that the teaching may be observed, and any apparently simple defects in the system of, or material equipment for, teaching elementary physical facts and relations may be brought to light’.\textsuperscript{63}

Although the active phase of teaching at Sabour College was short-lived, it had a huge impact in shaping scientific and unscientific practice in agriculture, when compared with Pusa. In this process, many untenable suggestions were made, such as promoting synthetic fertilisers (ammonium sulphate, ammonium phosphate), pesticides (Bordeaux mixture, lead chromate), hybrid seeds (the Coimbatore Canes Nos 210 and 213, Pusa 12 wheat) expensive and labour-saving devices (tractors, iron pressing mills), which were difficult to keep in good shape in the dilapidated huts of peasants. These institutes’ overt recommendations underlined not only the top-down attitude of the Raj but also how distant it was from the myriad concerns borne by the average peasant. However, from time to time, people like Albert Howard, H. Maxwell-Lefroy and E. J. Woodhouse bore in mind the financial viability of techniques and suggested labour-intensive (Bihar being densely populated) yet cheap techniques to keep the soil healthy. For instance, E. J. Woodhouse, the Economic Botanist to the Government of Bihar and Orissa, advised farmers that ‘whenever a pest appears hand-picking is often the best means of dealing with it’.\textsuperscript{64}

Though the Raj wanted to challenge the informal knowledge system to the extent that it would become redundant, it seems that the gap between locals and western-educated scientists was never bridged. A huge divide remained between lab-based innovations and their adaptability in the local circumstances. S. Kesava Iyengar, Professor of Economics, assessing where the Raj went wrong in meeting the needs of the peasants, wrote:

To sum up, the satisfactory progress of Indian agriculture requires not so much agricultural research and experimentation on Rothampstead lines (neither large scale nor intensive farming in the American or the British sense of the terms is possible here, nor are they necessary or desirable) as close examination by agricultural engineers and chemists and industrialists of actual rural conditions and problems with a view to apply Science at convenient points for rural reconstruction.\textsuperscript{65}

\textsuperscript{61}The Establishment of Sub-Stations to Remedy the Deficiencies of Pusa, 6.
\textsuperscript{62}Hundred Years of Bihar Agricultural College.
\textsuperscript{64}E. J. Woodhouse, Crop Pest Handbook for Behar and Orissa, 2nd ed. (Calcutta: Thacker, Spink & Co., 1920), viii.
Agricultural education at the school level

the school garden is not an entirely new idea. For more than a hundred years, energetic school masters have been trying to carry out the system, but simple as it is, they have not got beyond theory, having stuck fast in their search for a model which should be of universal application.66

In European countries the development of the school garden was a critical advance in modern education. This was among the core elements of modern agricultural education in East-Central Europe at the end of the nineteenth century, which could also be seen in agricultural publications.67 Between 1870 and 1910, dozens of descriptions and editions of exemplary agriculture or model farms were published in Polish. In 1890 public funds became available for the first time for agricultural education in England and Wales. By the early years of the twentieth century, 30 of the 60 county authorities in England and Wales involved themselves in agricultural education and advisory work.68

After the First World War, model farms continued to be regarded as an essential means of concrete education and renewal in agriculture. In the newly founded states in East-Central and Southeast Europe, the government support for existing model farms usually continued. Agricultural education at the school level was quite common in rural schools in Prussia and Ireland. According to F. G. Sly, Inspector-General of Agriculture in India, a school garden delighted children as a site for observation; they may forget what they rote-learned but not what they saw.69 For practical involvement, the synchronisation of eyes and hands with the instruction of the mind was indispensable. J. J. Cronin submitted that 'The school garden teaches the children to become interested in plant life, to use their hands while realising that it is not undignified to work, and to take a new interest in their surroundings'.70 Lord Curzon also emphasised that agricultural education, particularly in villages, should begin in school. Dr D. Clouston, Agricultural Adviser to the Government of India, suggested that the rural schools should be supplied with suitable school readers written in an interesting manner for readers who could use them in rural life.71 The school gardens should, to some extent, become the means of bringing young minds in touch with nature and of arousing their interest in plant growth. The practical measures to be adopted were to teach agriculture in regular schools with elementary class books in village schools. However, geographical conditions like rainfall and soil factors were so diverse that no single textbook on agriculture would suffice for the different village schools across the length and breadth of Bihar.

67One such example is the Lehrbuch der Landwirtschaft (Textbook of Agriculture) by a Bohemian teacher named Anton Rudolf Schneider. The book was first published in 1880 in Bohemia and was reprinted several times in Vienna from 1886 until the 1950s. By 1887, the second edition of the book was translated into Polish and published in Warsaw, where the publisher changed the title to Rolnik wzorowy. Podręcznik racjonalny gospodarstw wiejskiego (The Model Farmer: Rational Textbook of Agriculture). See Heiner Grunert, ‘Role Models for the Village: Patterns and Ideals of “Modern” Rural Development in Polish and South-Slav Regions 1900–1940’, in Knowing How to Farm: Renegotiating Global Knowledge in Rural Societies in the 20th Century (draft paper), 2.
If the school-going son of a cultivator can be of help to his father in his own difficulties, the father and the son both begin to find out that education and farming are not necessarily antagonistic to each other.  

Rural education should be designed to teach the principles of agricultural economics to cultivators and to give them a sense of pride in rural life. In Bihar, school gardens were generally attached to middle schools. Many people looked upon school gardening as teaching the cultivation of a few vegetables and flowers. Cronin opined that, ‘It also enables them to add fresh and often new vegetables to the home supply or to obtain a little money from their sale, a welcome addition to the family income, as a result of their healthy outdoor work in the garden’. Agricultural education was designed so that the agriculturists became capable of adopting and assimilating various improved techniques. Officials believed that it would be valuable in teaching boys and girls to be neat, methodical, useful and resourceful. Agricultural education had immense scope, which the British could not explore, maybe due to its top-down diffusionist model. The report of the Agricultural Department for Bihar and Orissa for 1928–1929 indicated the dearth of adequately trained teachers. A similar view was echoed by the Annual Report on Experimental Stations in Bihar and Orissa, 1928–1929:

From the reports received it is clear that if any results are to be expected definite arguments must be made for training the teachers, both in the management of the garden and in the use of the material for illustrating lessons which the gardens provide.

Village schoolmasters would explain to their young scholars the meaning of lessons in agriculture and elementary science. It could have given possible encouragement to the students to take on agriculture as a profession. However, the education system was unable to create and maintain interest in cultivating the land, something that was expected in an agrarian state like Bihar. In dealing with agricultural pupils of the cultivator class, a great deal of sympathy and patience was needed. ‘But when once a headway has been made among them, agricultural progress will come directly through their agency.’ It could have been of great importance to induce, by offering suitable scholarships or otherwise, sons of bona fide cultivators who had passed the Middle Vernacular and Regular School Examinations to come for specialised agricultural training to a central institution and then go back to their respective villages. The spread of education could have proved to be an essential element in the improvement of agriculture. It could have aided in removing the prejudices attached to caste and custom, which prevented progress in agricultural methods and could have given rise to a better-informed farming class. If they had received systematic training in agriculture, they would have been in a position to influence their fellow agriculturists.

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72Mukerji, Handbook of Indian Agriculture, 872.
76Mukerji, Handbook of Indian Agriculture, 12.
77Sly, ‘Education in Indian Rural Schools’, 119–21.
Exhibitions as pedagogy

Local exhibitions in India originated in the 1840s as part of the pedagogy but acquired a momentum of their own in subsequent decades. Historian Gyan Prakash further adds, ‘Organised with a great deal of pomp and show, exhibitions encapsulated the colonial staging of science as technology, as knowledge and techniques for improvement’.

Exhibitions satisfied two aims of colonial pedagogy, namely, to instruct peasants by exhibiting their products and knowledge organised and authorised by the principles of western science, and to give them first-hand experience of these principles and how they worked, so that they could be applied to improve production. Exhibitions caught the eye of both the lettered and non-lettered; they disseminated agricultural improvement through western science and technology, such as new varieties of crops, seeds, fertilisers and imported technologies. The exhibitions were a project of colonial pedagogy that targeted the ‘unlearned’ Indian whose education could be accomplished ‘only’ by repeated visual confrontations with scientific knowledge embodied in objects.

Initially, its objective was to secure specimens of various products for the department of economic botany in the Imperial Museum. Later it led to comparative study and utilisation for productive requirements. For this purpose, local cooperation was sought by the central and provincial committees of exhibitions.

Exhibition as a category of knowledge grew rapidly in importance after making its appearance in the mid-nineteenth century. Explaining the difference between museums and exhibitions, Prakash writes: ‘Unlike exhibits in museums, living exhibits, suitably framed in classified stalls, could talk to visitors; they could be observed in motion, as functioning objects’. It stimulated interest among cultivators and the zamindars alike and began to enrich their worldview.

Fourteen Exhibitions, including the Bihar and Orissa Industrial Exhibition at Bankipore, were held during the year. They received Government grants aggregating Rs 13,900 of which Rs 10,000 was spent on the Provincial exhibitions.

According to the Report of the Agricultural Department for Bihar and Orissa, 1928–1929, the list of grants shows that the Government funded various exhibitions and agricultural melas (fairs). For instance, a grant of Rs 250 was given to the Industrial and Agricultural Exhibition and Poultry Show at Muzaffarpur and a financial grant of Rs 100 was given to the Bettiah Dasahra Mela. Further, Gulabbagh Mela, Purnea was aided by Rs 100 and Hijla Mela Committee, Dumka by Rs 250. From time to time, festive melas were also tapped for agricultural exhibitions. Walter Hauser explained that the mela was chosen in Bihar because it attracted peasants from all parts of the region. A convenient forum was provided for venting agricultural problems. Sonepur mela was one such,
where the underlying religious reasons were sidelined and what emerged was the reputation of mela as Asia’s biggest animal fair. However, over time, the reports had shown that the agricultural exhibitions had ‘very little agricultural value’. The report of the Agricultural Department for Bihar and Orissa in 1923 showed a decline in the number of exhibitions. Only 11 exhibitions were held in the province (Bihar and Orissa), to which grants totalling Rs 3900 were made by the Department against 14 held in 1920 with total grants of Rs 13,900. The number of exhibitions was drastically reduced in the year that followed. Six exhibitions were held in the province (Bihar and Orissa) during 1924, to which grants amounting to Rs 1550 were made by the department. The Report of the Agricultural Department, Bihar and Orissa tried to present the rationale in the following statement:

The total lack of interest taken by the raiyat, the practical absence of cattle, the fewness or absence of exhibits of improvements such as cane, groundnut, etc., all point to the fact that considerable propaganda is necessary before the exhibitions are justified, and that it would be better first to spend the available money on educational and propaganda work, and to reintroduce the exhibitions ten years hence to test the results.\(^{84}\)

### Other venues for imparting formal education

Apart from exhibitions, another institution for developing and disseminating agricultural knowledge via models was agricultural experimental stations. In Northern and Western Europe and North America, such experimental stations were established from the 1880s onwards, often the initiative of private individuals.\(^{85}\) In many cases, these were taken over by governments and some were developed into agricultural schools. In contrast to model farms, the experimental stations carried out applied research on livestock breeds and plant varieties and developed new methods of keeping livestock and growing plants.\(^{86}\) Experimental stations assumed supervisory functions in agriculture. Below is Clouston’s statement that underlined the supremacy accorded to western science among official circles and condensed the dismissive attitude towards local agrarian knowledge.

> If you visit an Experimental Farm you will appreciate what is being done by Government and its experts in science to improve agriculture in this country. The experiments carried out on these farms are adding every year to our knowledge of Indian Agriculture; for the science of Agriculture in this country is still in its infancy.\(^{87}\)

Apart from the formal research institutes, the Government paid a great deal of attention to other venues, which were not as conspicuous as the institutes: the co-operative societies, and the demonstration farms. In accordance with the recommendations made by the Bihar and Orissa Agricultural Committee (1921), each region should have had at least one sub-divisional farm established.\(^{88}\) These small farms included land typical of the area and suitable for its staple crops. The land had been selected to extend

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\(^{84}\) A. P. Cliff, Report of the Agricultural Department, Bihar and Orissa from July 1, 1923 to March 31, 1924 (Patna: Government Printing, 1924), 49

\(^{85}\) Grunert, 'Role Models for the Village', 4.

\(^{86}\) ibid., 4.

\(^{87}\) Clouston, Lessons on Indian Agriculture, 6.

\(^{88}\) A. C. Dobbs to The Secretary to the Government of Bihar and Orissa, Establishment of Small Farm at Siwan, BSA, Letter No. 9223, November 24, 1924.
the department’s work to acquire local experience, growing seeds of improved varieties of crops for local distribution and creating local centres for propaganda of all kinds. In fact, the Government farms that were established earlier studied the effects of various fertilisers on different soils and crops in the 1890s. A. C. Dobbs, while writing to the Secretary of Bihar and Orissa, explained the significance of experimental farms and stations in carrying out practical demonstrations:

After learning to be a scientist he must devote the whole of his attention to scientific farming with the object of finding out precisely what changes in the existing practice in the tract for which he is responsible will pay. And, as a rule, these changes, as already explained, can only be found out by experiments made on the spot.  

The co-operative societies and banks formed another channel where no change of agricultural technique was required. They proved to be a means for disseminating knowledge of agricultural improvements. The co-operative banks also appreciated the importance of agricultural improvements for the economic advancement of the people. ’Babu Manindra Bhaduri said that Central Banks did a lot of seed distribution and at Khunti they had done what they could with their limited staff both as regards seed distribution and introduction of new crops and erection of Bandhs. They sold the ’improved’ variety of seeds or distributed them free of charge among the raiyats and zamindars. However, private efforts were also undertaken for demonstration purposes and the Manager of Dumaraon Raj. Jai Prakash Lal, wanted to induce the raiyats to grow wheat through monetary and seed advances. Further, he intended to purchase machinery like he had seen at the Calcutta Exhibition for cleaning the grain, but fiscal unviability made this idea redundant. Their staff, i.e. kamdars, used to do the demonstration work so that the buyers might know what they were buying. However, if a cultivator visited any demonstration farm or station he concluded that the crops were better because more capital had been invested, an investment which was beyond his means. It was expected that these scientific amendments should reach the fields of farmers. It was foolish to expect the raiyats to discard their seeds, which had stood the test of time for generations, in favour of other seeds, solely on the word of an official.

Apart from various experimental farms, the distribution of seeds, demonstrations and lantern shows were also held from time to time. For instance, a discourse on cattle-breeding and cattle improvement, illustrated by lantern slides, was held in December 1919 by the Agricultural Inspector Babu Monindra Mohan Mustafi in the Purnea City Mela. The percentage of the total expenditure on education spent on these different forms of agricultural education, ranging from school education to lantern shows, was probably a fraction of 1% of the fund allotted. Out of this meagre amount, the share of Bihar and Orissa to be spent on agricultural education was proportionate to

90Proceedings of the Meeting of the Divisional Development Board of Chota Nagpur Division Held at Ranchi on December 16, 1923 (Ranchi, 1924), 4.
91Abha, ’Impact and Use of Science and Technology’, 1996.
94Report of the Agricultural Department, 1920, 18.
the income these provinces generated, which was far less than any other province in India. The damage it did was enormous, more unintended than intended, and it engulfed the indigenous education system.\footnote{Poromesh Acharya, ‘Indigenous Vernacular Education in Pre-British Era: Traditions and Problems’, Economic and Political Weekly 13, no. 48 (1978): 1088.}

**Conclusion**

Agriculture in Bihar was the means of economic support and part of people’s culture, politics and, most importantly, knowledge system. There was no dearth of agrarian knowledge to start with, but soon it seemed inadequate, paving the way for the British takeover. Between 1880 and 1930, agrarian Bihar assumed its ‘modern intellectual appearance’ acquired through imported science and technology. Agriculture for the colonial state became a matter of economic botany, strategically crucial for resources. Most of the large-scale experiments in scientific and technological institution building in British India were based on the assumptions that pre-colonial India was almost devoid of any meaningful scientific and technological tradition.\footnote{Zaheer Babar, The Science of Empire: Scientific Knowledge, Civilisation, and Colonial Rule in India (New York: State University of New York Press, 1996).} The repression of indigenous knowledge was therefore not merely a consequence of ignorance caused by scientific faith and colonial bias; instead it was a calculated decision to seek the affirmation of the state, its institutions and its agents (whether European or Indian) by the deskilling of the Bihari farmers. It was believed that a more centralised direction of scientific exploration and research could better capitalise on this government approach. It primarily targeted subsistence-based farmers and led to doubting their time-tested knowledge based on the power of observation. It brought a culture of certificates and medals, which became prized possessions, as recipients of these had more employment opportunities.\footnote{On March 28, 1897, the Government of India passed a resolution that agricultural degrees and diplomas should be put on an equal footing with other literary or science degrees for government appointments and particularly those connected with land revenue administration. For more information see Progress of Education in Bengal, 1902–03 to 1906–07: Third Quinquennial Review (Calcutta: Bengal Secretariat Press, 1907).} Farmers’ time-tested knowledge was considered invalid until proven otherwise by colonial laboratories. Informal agrarian education formed part of subjugated knowledge pushed to the margins and unqualified for respect under prevailing hegemonic discourses.\footnote{José Medina, ‘Toward a Foucauldian Epistemology of Resistance: Counter-Memory, Epistemic Friction, and Guerrilla Pluralism’, Foucault Studies, no. 12 (2011): 9-35.} Colonial pedagogy, therefore, subjugated local knowledge and practices of the peasantry in Bihar.

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