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Organizational Knowledge Transfer between Brazilian and U.S. Agriculture: A Comparative Review with Applications for Texas Agribusiness Consulting

Brazilian Cerrado ⇄ South-Central Texas

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Abstract- Purpose. ***To compare the organizational capabilities of Brazilian and U.S. commercial agriculture, identify management practices that can be transferred from Brazil to mid-size farms in Texas (and vice versa), and describe how specialized consulting can carry out that transfer.***

Design / methodology / approach. A comparative review combining the knowledge-transfer literature (tacit and explicit knowledge, "stickiness", absorptive capacity) with secondary sources on the two agricultural systems and with the author's professional experience in commercial farm management and agricultural inspection in Brazil and in agribusiness consulting in South-Central Texas. Practices are evaluated with a transferability matrix and a five-stage transfer pipeline.

Findings. The two systems have complementary strengths. Brazilian commercial agriculture, shaped by rapid expansion in the Cerrado under lean staffing, developed strong disciplines in written field monitoring, seasonal planning, multi-party coordination and record retrievability. Texas agriculture benefits from dense input and service networks, widespread precision technology, mature commercial documentation and robust risk-management instruments. Three Brazilian practices transfer readily — structured field-monitoring protocols, explicit role definition in multi-party arrangements, and a single maintained record repository — because they depend on organizational principles rather than on Brazilian technology or regulation.

Practical implications. Consulting that systematizes resources Texas farms already have can improve management consistency, reduce administrative friction and clarify export or partnership pathways without large capital outlays.

Originality / value. The review shifts the Brazil–U.S. comparison from commodities and competition to organizational knowledge, and it offers a practical method for cross-border transfer at the farm level.

Index Terms- absorptive capacity, agribusiness consulting, Brazil, Cerrado, cross-border agriculture, farm management, knowledge transfer, organizational practices, Texas, United States

I. INTRODUCTION

Brazil and the United States are the two largest agricultural exporters in the Americas and, for several commodities, the two largest in the world. Comparisons between them usually focus on competition: soybean and corn export volumes, cotton market share, beef prices, ethanol policy, and the logistics costs of moving grain from Mato Grosso or Iowa to Asian buyers. These comparisons are important, but they overlook a different and arguably more useful dimension. The two countries developed their commercial agriculture under very different conditions, and those conditions produced different **managerial traditions** — different ways of organizing work, information and relationships on the farm.

U.S. commercial agriculture grew over more than a century, supported by land-grant universities, the Cooperative Extension System, dense networks of input dealers and service providers, well-developed futures markets and, since the 1980s, a large federal crop-insurance program. Brazilian commercial agriculture, by contrast, expanded rapidly from the 1970s onward into the Cerrado — a vast savanna biome of acidic, low-fertility soils in the country's center — made productive by soil correction, tropical crop varieties developed by Embrapa (the Brazilian Agricultural Research Corporation, founded in 1973), biological nitrogen fixation in soybean and the widespread adoption of no-till systems. This expansion took place at great distances from ports and cities, often with limited public services, thin labor markets and a heavy reliance on contractors and partners.

These different trajectories left each system with distinctive strengths. This review asks three questions. **First**, what organizational capabilities distinguish Brazilian and U.S. commercial agriculture, particularly at the level of the individual farm? **Second**, which of these capabilities can be transferred, and under what conditions? **Third**, how can such transfer be delivered in practice to mid-size Texas farms through specialized consulting?

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Figure 1. Irrigated production in the Brazilian Cerrado. Organizational methods developed at this scale and under lean staffing are adaptable to Texas conditions. Source: Mongabay (2020).

II. CONCEPTUAL FRAMEWORK: HOW ORGANIZATIONAL KNOWLEDGE TRAVELS

A. Tacit and explicit knowledge

The knowledge-management literature distinguishes between **explicit knowledge**, which can be codified in documents, procedures and software, and **tacit knowledge**, which resides in people's skills, routines and judgment and is difficult to articulate (Nonaka & Takeuchi, 1995). Much of what makes a farm well managed is tacit: knowing when to scout a field again, how to sequence operations after rain, how to coordinate a custom harvester and a trucking contractor. Transfer of organizational practice therefore requires converting some tacit knowledge into explicit form — written protocols, templates, checklists — and then helping the recipient internalize it again through practice.

B. Stickiness

Szulanski (1996) showed that the transfer of best practices within firms is often impeded by "stickiness": the causal ambiguity of the practice (it is not clear *why* it works), the lack of absorptive capacity of the recipient, the absence of a strong relationship between source and recipient, and an unreceptive context. Cross-border transfer between agricultural systems adds further sources of stickiness: differences in climate, soils, crops, regulations, labor markets and language.

C. Absorptive capacity

Cohen and Levinthal (1990) define absorptive capacity as the ability of an organization to recognize the value of new external knowledge, assimilate it and apply it. On a mid-size farm, absorptive capacity is limited by the operator's time and by the absence of staff dedicated to management systems. This is a central reason why consulting matters: an external advisor can temporarily supply the absorptive capacity the farm lacks, by doing the work of adaptation and by training the farm team.

Implication for this review

Practices that rest on clear **principles** (low causal ambiguity), that can be **codified** in simple templates, and that require **little additional capacity** to operate are the best candidates for cross-border transfer. Practices that depend on specific technologies, regulations or scale are poor candidates, even when they work well in their system of origin.

III. TWO SYSTEMS IN CONTEXT

Table 1 summarizes the contextual differences that shaped the managerial traditions of commercial agriculture in the Brazilian Cerrado and in South-Central Texas. The comparison is necessarily simplified; both systems are internally diverse.

Table 1. Contextual comparison of commercial agriculture in the Brazilian Cerrado and South-Central Texas

Dimension	Brazilian Cerrado (commercial farms)	South-Central Texas (mid-size farms)
Typical scale	Often thousands of hectares per operation	Typically 200–1,500 acres (≈ 80–600 ha)
Climate and seasons	Tropical, distinct wet and dry seasons; double cropping (soybean then *safrinha* corn or cotton)	Semi-arid to sub-humid; erratic rainfall; high evaporative demand
Soils	Deep, highly weathered, acidic; productive after liming and fertilization	Highly variable: deep clays to shallow calcareous soils
Labor and management	Lean professional management teams; agronomists on staff or contracted	Owner-operator with few employees; family labor
Services	Fewer and more distant dealers; large farms internalize many services	Dense networks of dealers, custom applicators and harvesters
Information and records	Strong field-notebook culture; agronomic prescription required for pesticide purchase	Mature commercial documentation; field records often informal
Risk management	Rural credit programs; crop insurance with limited coverage; forward sales to traders	Federal crop insurance widely used; futures and options markets; marketing contracts
Research and extension	Embrapa, state research agencies, private consultancies, producer foundations	Land-grant universities (Texas A&M AgriLife), Cooperative Extension, private consultants

Two features of the Brazilian context deserve emphasis. First, **scale combined with lean staffing** forced managers to rely on written procedures and clear delegation; a manager responsible for several thousand hectares cannot personally observe every field every week. Second, Brazilian regulation of pesticide sales requires an **agronomic prescription**

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(*receituário agronômico*) signed by a qualified professional, a requirement in place since the federal pesticide law of 1989. This has contributed to a professional culture in which field diagnosis, recommendation and record are formally linked.

Two features of the Texas context are equally important. First, the **density of services** means that a mid-size farm can access precision application, custom harvest, agronomic testing and equipment support within a short distance — capabilities that a Brazilian farm of comparable size might not have. Second, **commercial and risk-management infrastructure** — crop insurance, futures markets, standardized contracts, USDA grading and certification — is deeply embedded in farm business practice.

IV. COMPARATIVE ANALYSIS OF ORGANIZATIONAL CAPABILITIES

Figure 2 presents a qualitative assessment of eight organizational capabilities in the two systems. The assessment is the author's, based on professional experience and on the literature reviewed; it is intended to highlight complementarity rather than to rank the systems.

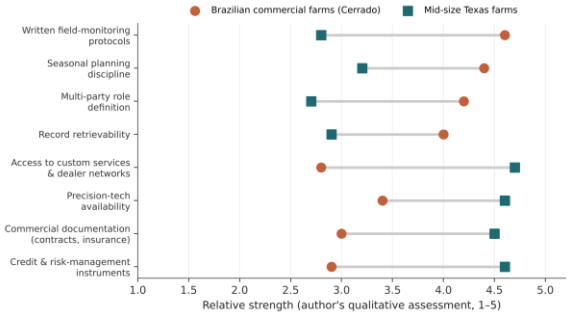


Figure 2. Relative strength of selected organizational capabilities in Brazilian commercial farms (Cerrado) and mid-size Texas farms. Author's qualitative assessment on a 1–5 scale.

A. Brazilian strengths

Written field-monitoring protocols. Commercial farms in the Cerrado typically operate with standardized scouting procedures — for example, beat-cloth sampling of soybean pests within an integrated pest management (*Manejo Integrado de Pragas*) program — with fixed sampling points, frequencies and thresholds recorded in field notebooks or digital apps. The protocol is designed so that different people can collect comparable data.

Seasonal planning discipline. Double cropping within a single rainy season leaves narrow windows for planting, spraying and harvest. Farms prepare detailed seasonal plans — area by crop and field, input purchases, machine and contractor schedules — and review them at fixed points.

Multi-party role definition. Large Brazilian operations frequently involve landowners, tenants, contractors, input suppliers acting as financiers (barter arrangements), trading companies and consultants. Clear written definition of who does what, who pays and who decides is a condition for functioning.

Record retrievability. Agricultural inspection and certification requirements reinforce the habit of keeping documents retrievable: prescriptions, invoices, application records and certificates must be presented on request.

B. Texas strengths

Access to custom services and dealer networks. Mid-size Texas farms can outsource many technical functions — precision application, harvest, soil sampling, equipment repair — to nearby providers.

Precision-technology availability. GPS guidance, section control, yield monitoring and variable-rate application are widely available and supported locally.

Commercial documentation. Contracts, insurance records, grading certificates and FSA reporting are part of normal business.

Risk-management instruments. Federal crop insurance, futures and options, and marketing contracts provide tools to manage price and yield risk that remain less developed for many Brazilian producers.

C. The resulting complementarity

The comparison reveals a striking pattern: **Brazilian strengths are mainly organizational; Texas strengths are mainly infrastructural.** A typical mid-size Texas farm has access to excellent services and tools but often lacks the capacity to select, sequence and document their use. A typical Brazilian commercial farm has strong internal organization but works with thinner service networks and fewer risk instruments. This complementarity is the foundation for transfer in both directions.

V. WHAT TRANSFERS — AND WHAT DOES NOT

Table 2 evaluates candidate practices using the criteria derived in Section 2: clarity of underlying principle, ease of codification, capacity required to operate, and dependence on context-specific technology or regulation.

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Table 2. Transferability matrix for Brazilian organizational practices applied to mid-size Texas farms

Practice	Underlying principle	Adaptation needed in Texas	Transferability
Structured field-monitoring protocol	Comparable observations at fixed points and frequencies; decisions linked to thresholds	Texas A&M thresholds; local pests; fewer fields per person; simpler forms	High
Field notebook / application log	Record at the event, by the person who did the work	Align with custom-applicator visits and Texas pesticide record rules	High
Single maintained record repository	One location; fixed naming; annual review	Include FSA, crop-insurance, lease and buyer documents	High
Explicit multi-party role definition	Written responsibilities among owner, tenant, contractors, buyers	Texas lease law and customary practices; simpler arrangements	High
Written seasonal plan with review dates	Plan by field; fixed checkpoints	Single-crop seasons and more variable rainfall; shorter plan	Medium–High
Agronomic prescription linked to record	Diagnosis → recommendation → record chain	No legal requirement in Texas; voluntary consultant practice	Medium
Barter-based input financing	Inputs exchanged for future crop delivery	Different credit system; limited relevance	Low
Large in-house management teams	Specialization at scale	Not viable at mid-size scale; replaced by consulting	Low

The high-transferability practices share three characteristics. Their principles are simple and visible; they can be written down on a single page; and they require no new technology, no specific regulation and very little additional labor. The low-transferability practices, by contrast, depend on Brazilian institutions (barter financing) or on scale (in-house teams). Importantly, **none of the high-transferability practices requires Brazilian technology or regulations**; each is adapted to Texas soils, crops, labor and markets.

VI. THE TRANSFER PROCESS

Transfer is not a matter of copying a form. Following the stickiness literature, the review proposes a five-stage pipeline that makes the adaptation explicit.

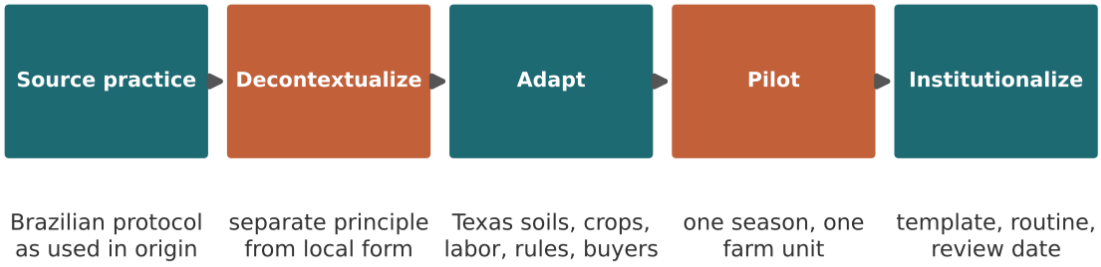


Figure 3. Five-stage pipeline for transferring an organizational practice from one agricultural system to another.

Table 3. Stages of the transfer pipeline, main risks and mitigation

Stage	Activity	Main risk (stickiness source)	Mitigation
1. Source practice	Document the practice as used in the origin system	Tacit elements omitted	Describe with examples from real operations
2. Decontextualize	Separate the principle from its local form	Causal ambiguity	State explicitly why the practice works
3. Adapt	Redesign for Texas soils, crops, labor, rules and buyers	Poor fit; unreceptive context	Co-design with the producer; use local references
4. Pilot	Use on one farm unit for one season	Limited absorptive capacity	Consultant support; short check-ins
5. Institutionalize	Turn into routine with template and review date	Abandonment after pilot	Annual review; link to external requests

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The **decontextualization** stage is the most frequently skipped and the most important. A Brazilian soybean scouting form, transferred literally, is useless on a Texas sorghum field. The principle behind it — comparable observations at fixed points, linked to written thresholds and to a recorded decision — is universally applicable.

VII. TRANSFER IN THE OTHER DIRECTION

Knowledge transfer between the two systems is not one-directional. Brazilian agriculture has learned, and continues to learn, from U.S. institutions and practices. Three examples are particularly relevant.

Table 4. Examples of transfer from the U.S. system to Brazil

U.S. capability	Relevance for Brazilian agriculture	Status / observation
Federal crop insurance model	Broader and more stable yield and revenue protection	Brazil subsidizes rural insurance premiums, but coverage remains limited relative to planted area
Futures markets and price-risk tools	Hedging for producers beyond forward sales to traders	B3 exchange contracts exist; producer use is growing but concentrated
Custom-service networks	Access to equipment and expertise without ownership	Expanding in established regions; thinner in frontier areas
Land-grant and extension model	Linking research, teaching and outreach	Embrapa and state agencies play related roles with different structures



Figure 4. Mechanized harvest in Brazil. Operational and logistics experience informs practical efficiency recommendations for Texas producers. Source: Reuters.

This two-way flow strengthens the case for professionals who understand both systems. Such professionals can help Texas producers adopt organizational practices from Brazil and help Brazilian partners understand U.S. commercial, regulatory and risk-management institutions — for example, when exploring export opportunities, joint ventures, genetics trade or technology partnerships.

VIII. DELIVERY THROUGH CONSULTING

The knowledge-transfer literature emphasizes the role of **boundary spanners** — individuals who understand both the source and recipient contexts and can translate between them. In agricultural transfer between Brazil and Texas, an effective boundary spanner needs three competencies: agronomic and management experience in both systems; an understanding of the regulatory and commercial environments of both countries; and the ability to work within the limited time and capacity of mid-size farms.

Walter's Agribusiness Consulting, LLC delivers this combination in the Bexar County region. Engagements follow a consistent structure:

1) **Diagnosis grounded in cross-border practice.** The farm's management is reviewed against the organizational disciplines described in Section 4, using the farm's own records.
2) **Limited, farm-specific recommendations.** Two or three practices are selected and adapted through the pipeline in Section 6.
3) **Simple protocols and templates.** Field logs, scouting forms, seasonal summaries and role-definition documents are co-designed with the producer.
4) **Documented follow-up.** A review after one production cycle compares results with the baseline and decides on the next step.
5) **Early clarification of cross-border issues.** When producers consider export or partnership opportunities with Brazil, the main regulatory and logistical differences are identified before investment.

IX. ILLUSTRATIVE APPLICATIONS

The following applications illustrate how transferred practices work on mid-size Texas farms. They are composite illustrations rather than reports on specific clients.

Table 5. Illustrative applications on mid-size Texas farms

Situation	Transferred practice	Result
Custom applicator sprays several fields; farm has no consistent record	One-page application log aligned with each applicator visit; seasonal summary	Complete application history available for buyers and regulators; fewer disputes over area treated
Insecticide applied by calendar in sorghum	Structured scouting protocol with fixed points and written thresholds	Fewer applications in normal years; documented justification for each application

Situation	Transferred practice	Result
Leased land with three landlords and two contractors	Written role-definition sheet for each tract (who decides, who pays, who records)	Fewer misunderstandings; faster lease renewals
Producer considering export of cattle genetics to Brazil	Short regulatory checklist and partner-profile analysis before investment	Clear view of sanitary requirements and partner options before committing funds
Documents scattered among email, paper and phones	Single compliance repository with fixed naming and annual review	Lender and insurer requests answered the same day

X. BROADER RELEVANCE

Gains in management consistency and commercial readiness on existing U.S. farms contribute to national productivity and resource-use objectives. Structured scouting reduces unnecessary pesticide applications; organized records support participation in conservation programs and in supply chains that reward documented practices; and clear role definition reduces the transaction costs that weigh on farms operating with multiple partners. Informed participation in international markets — whether through exports, genetics trade or technology partnerships — extends these benefits beyond the individual client. More generally, the review suggests that **organizational knowledge is an under-used channel of agricultural cooperation** between Brazil and the United States, complementary to the more familiar channels of commodity trade and scientific research.

XI. LIMITATIONS AND RESEARCH AGENDA

This review relies on secondary literature and professional experience rather than on systematic primary data. The capability assessment in Figure 2 is qualitative, and both systems are more heterogeneous than any summary can capture. Future research could (a) survey mid-size Texas farms on the organizational practices described here and relate them to economic performance; (b) document transfer pilots longitudinally, measuring adoption, persistence and results; and (c) examine transfer in the reverse direction, from U.S. institutions to Brazilian producers, at the farm level.

XII. CONCLUSION

Brazil and the United States developed commercial agriculture under different conditions, and those conditions produced complementary strengths: organizational discipline in Brazil, infrastructural depth in Texas. Organizational practices from Brazilian farm management and inspection — structured field monitoring, explicit role definition and a single maintained record repository — transfer readily because they rest on clear principles, can be codified simply and require little additional capacity. Through a deliberate transfer process and consulting that acts as a boundary spanner, these practices can be combined with U.S. commercial and technological resources to support more consistent management, lower administrative friction and clearer market pathways on mid-size Texas farms, benefiting both private profitability and broader agricultural performance.

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