



# Analysis & Comments

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## The 2007 Mexican Census of Agriculture: An Overview of the Mexican Cattle Industry and Summary of Mexican Crop and Livestock Production

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### Background

The Mexican national institute for statistics and geography (Instituto Nacional de Estadística y Geografía) released in early 2009 a census of the agricultural sector in Mexico based on a survey made in 2007. The census has been long awaited because the previous census was conducted in 1991. Much like the U.S. Census of Agriculture, the Mexican census is the most comprehensive picture of agricultural production, land use for agriculture and production practices. This summary includes a brief overview of crop and livestock production with additional detail on the cattle industry in Mexico. The census and the census questionnaire can be obtained at: [www.inegi.org.mx](http://www.inegi.org.mx). Look under “censos y conteos”: “censo agropecuario 2007”.

### Land Use

The total agricultural land area reported in the census is 112.7 million hectares, which is 57.3 percent of the 196.7 million hectares of total land area in the country<sup>1</sup>. The remaining area is made up of common use lands along with government lands, and water surface area. Major use categories of those 112.7 million hectares are shown in Table 1. The census reports that 68.8 million hectares of total agricultural lands were used for crop, livestock or forest production while 43.9 million hectares had no agricultural or forest activity. This presumably includes much of the lands in Table 1 designated as wild along with land with no vegetation.

The “worked” land category includes 30.2 million hectares of land used for crop production, 96 percent of the land in this category. Of that total, 5.56 million hectares are irrigated. In 2007, 24.8 percent of crop land was not planted for a variety of reasons including lack of funds, lack of labor to work the land, fallow and unsuitability due to pests, diseases or other reasons. Most cropland, 94.8 percent, is reported as owner operated.

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<sup>1</sup> One hectare equals 2.47 acres. 100 hectares equals one square kilometer or 0.386 square miles.

Land tenancy in Mexico includes privately owned land along with several categories of communal or social ownership. A total of 70.0 million hectares or 62 percent of total agricultural land is privately owned. The remaining 38 percent are owned in a variety of social land tenure systems, the most important of which are ejidos<sup>2</sup>, which control 37.1 million hectares (33 percent) of agricultural lands. As alluded to above, the census does not include another 65 million hectares of common use lands controlled mostly by the ejidos. Though not included in the census, these common lands are used for some agricultural production, mostly livestock grazing and forestry.

### **Farm Production Units**

The census reports 5.5 million production units (agricultural entities, i.e. farms and ranches) with 4.1 million involved in agricultural production. Of those, 3.7 million are involved in crop production. Of the production units involved in farming:

- 75 percent indicated that some production was for family consumption;
- 59 percent of farmers indicate that some production is for domestic market sales; and
- 7.7 percent of production units involving crop production report that livestock production was the principal activity of the unit.

### **Crop Production Summary**

Table 2 shows the planted area of major crops in Mexico. The table shows the production of major food crops as well as pasture and other forage crops and feed grains. The total planted area is 22.7 million hectares while the sum of planted area of all individual crops is 24.6 million hectares. This implies that roughly 1.9 million hectares (8.2 percent of cropped area) are double cropped. The sum of all fall-winter crops is 2.2 million hectares, with the implication that roughly 311,000 hectares are used only for fall-winter crops after accounting for the double cropped area.

Mexico has long faced serious limitations of arable land for crops that produce food and feed. In recent years, growth in animal production has resulted in new feed demands that have heightened this dilemma. Of particular importance is the growing amount of land used for yellow corn production, now the third largest annual crop. Yellow corn is grown primarily for animal feed and has increased dramatically in recent years, replacing mostly white corn and sorghum plantings.

Among crop producers, 33 percent report that all farming is done by hand and 17 percent with animal power, meaning that 50 percent of farms use hand labor or animal power and 50 percent use mechanized power or a combination of animal and mechanized power. The national average farm size is 8.1 hectares. While state average farm sizes vary from about 2 hectares to almost 67 hectares. The top five states in number of crop farms are Veracruz, Chiapas, Puebla, Oaxaca, and Mexico accounting for 48 percent of all crop farms. The average farm size for these five states is 4.6 hectares and 61 percent of the farms in these states report using only human or animal power for farming. The states of Guerrero and Hidalgo also are states with large farm numbers and similar characteristics.

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<sup>2</sup> Ejidos were established as part of agrarian reform after the Mexican Revolution. Large land holdings were redistributed to peasants and villages with title held by the government. Producers had use rights to specific lands that were parceled (divided) and to use common lands held jointly by a local village. After a 1992 constitutional change, some ejido members were given full title to lands which can thus be legally sold, rented or mortgaged.

At the other extreme are states with well developed, technologically advanced crop production characteristics. The state of Sinaloa is a good example with an average crop farm size of 19.8 hectares with 69 percent using mechanized power. In Sinaloa, 45 percent of all crop land receives fertilizer and 41 percent is planted with improved seed. This compares with a national average of fertilizer and improved seed use on 27 and 14 percent of crop land. In Oaxaca, one of the most traditional farming states, 14 percent of crop land receives fertilizer and 2 percent is planted with improved seed. Sinaloa is the leading white corn production state with an average yield of 10.60 metric tons/hectare (169 bushels/acre) while the average yield in Oaxaca is 1.61 metric tons/hectare (26 bushels/acre). The almost seven-fold higher corn yield in Sinaloa is a function of different industry structure and management, further, that state also has favorable soils and climate as well as the availability of irrigation.

### **The Cattle Industry**

An overview of the inventory of livestock by specie in 2007 is available in Table 3. The census reports 23.3 million head of cattle in Mexico on some 1.13 million production units resulting in an overall average herd size of 21 head. Roughly one third of production units have less than 5 head of cattle (3.2 head on average) and no additional information was collected on those units<sup>3</sup>. The remaining two-thirds of the production units have a total inventory of 22.1 million head and an average herd size of 29 head.

“Backyard” production units (less than five head) represent 1.2 million head of cattle or 5.2 percent of the total cattle inventory. Although little information is available on these cattle, it is useful to consider the type of animals included in this group and their role. Most likely, the majority of these cattle are kept either for milk production or possibly as draft animals. A substantial proportion of those animals are likely to be females and it is expected that their calves are sold at rather light weights. States with the highest proportion of animals excluded from the census as backyard production include some states with relatively few animals, such as Tlaxcala, along with the Federal District (Mexico City). However, several large cattle states have significant numbers of these back yard cattle with the most in the states of Mexico, Oaxaca and Veracruz.

Table 4 provides more detail about the very diverse Mexican cattle industry. Mexico has a total cowherd of 8.7 million head made up of 37 percent beef cows, 34 percent dairy cows and 28 percent dual-purpose beef and dairy cows. The top ten states for total cattle inventory and cow herd are shown in Table 5. Although the top ten lists in Table 5 are pretty consistent, there are some important regional differences in cattle production in Mexico. The dual-purpose cows are located primarily in the south and central regions plus coastal areas of the northwest. For dual-purpose cows, the top states include Veracruz, Jalisco, Chiapas, Sinaloa, Guerrero and Sonora. Beef cows are mostly located in the north including the states of Chihuahua, Sonora, Tamaulipas, Nuevo Leon, and Coahuila. Jalisco is the only major beef cow state in the central region. Dairy cows are found in all regions with major dairy cow states including Jalisco, Veracruz, Chiapas, Chihuahua, Michoacan and Durango.

General quality or breed characteristics of animals in the census are reported in three categories: corriente, crossbred and purebred. Within purebred there is also a designation of registered purebred animals. Corriente in this case means regular or common and refers to

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<sup>3</sup> Production of this type is referred to as *traspatio*, which means “backyard”.

animals of mixed breeding with unimproved genetics. The rodeo cattle popularly known in the U.S. as Corriente are a specific type of animal of original Spanish genetics that are produced in specific regions in Mexico. Corriente cattle vary by region in Mexico and may include Spanish genetics but usually consist of various nondescript beef, dairy and/or Zebu influences. Corriente cattle would include mostly cattle designated as dual-purpose, but may include some beef cattle as well. Data in Table 5 suggests that roughly 16 percent of Mexican cattle are classed as corriente. However, it is likely that the majority of the 5.2 percent of (backyard) cattle not included in the classification would be corriente as well, making the overall total 20 percent or higher. Crossbred animals include most of the dual-purpose cattle as well as some beef cattle and will vary regionally as well. In the northern states crossbred will often include crossbred British and Continental breeds, often with some Zebu influence, while in the central and tropical areas, the majority are dual-purpose cattle that are crossbred dairy and Zebu animals. A variety of Zebu breeds are used in the tropics one of which is the Brahman cattle familiar in the U.S. Crossbred cattle make up 52 percent of all cattle in Mexico. The purebred category includes the majority of the dairy animals plus some of the beef animals. Purebred dairy animals are mostly Holstein. Purebred beef animals include at least some representation of most all beef breeds. Purebred animals represent 27 percent of the total cattle inventory, with registered purebred animals representing 18 percent of purebred animals and five percent of the total cattle inventory.

A general breakdown of production systems encompasses four categories including open range, controlled grazing, confined and semi-confined production. Nationally, 55 percent of all cattle are produced in open range or open grazing systems, while controlled grazing was reported at 19 percent. Open grazing tends to be more important in the northern states and is associated with beef cattle production. Confinement includes much of the dairy production plus feedlots and accounts for 13 percent of cattle production. Semi-confinement is used for some dairy and dual-purpose production and accounts for 7 percent of cattle production.

The age breakdown of the cattle inventory includes 6.7 million head of cattle less than 12 months of age. Using this as an estimate of the calf crop and dividing by the 8.7 million cows suggests an average calf crop of 78 percent. However, there are several reasons why this estimate likely overstates the actual calf crop percentage. It is possible that the calf inventory includes some calves from heifers not included in the cow inventory. More importantly, the discussion of backyard cattle above suggests that the inventory of calves likely includes calves from cows that are not included in the cow inventory. Adjusting the calf crop estimate to include some proportion of the backyard cattle in the cow inventory reduces the estimated calf crop percentage to a range of 70 to 73 percent using proportions of backyard cattle ranging from 50 to 80 percent. Additionally, it is reasonable to assume a significantly higher calf crop percentage for the dairy cattle and a further adjustment using an assumed dairy calf crop percentage provides an estimate of the non-dairy (beef plus dual-purpose) calf crop percentage. For example, using an assumed 90 percent calf crop for dairy cattle (with the backyard cattle adjustment) results in an estimated non-dairy calf crop percentage of 61 percent. The true non-dairy calf crop percentage is likely somewhere between 60 and 67 percent.

The census also provides some information about production practices and technology used in cattle production. In some cases information is reported by cattle numbers, in some cases by production unit and, in other cases for both. For example, 90 percent of all cattle (on 92 percent of production units) receive vaccinations. Other cattle production practices of note include:

- 82 percent of cattle (and 82 percent of production units) use parasite control, mostly dipping vats (79 percent of cattle);
- 28 percent of all cattle on 25 percent of the production units use a balanced ration;
- 4.6 percent of the cattle on 4.3 percent of the production units use artificial insemination; and
- 0.35 percent of all cattle on 0.6 percent of all production units use embryo transfer.

For production units only the following information is provided:

- 60 percent use salt/minerals;
- 16 percent use a controlled breeding season;
- 32 percent use pasture rotation;
- 3.9 percent use technical assistance; and
- 1.8 percent participated in the genetic improvement program.

### Summary

The Mexican cattle industry is very diverse in almost every respect. Cattle production occurs in a wide range of climates from tropical to high-altitude temperate to deserts. Cattle production ranges from beef cattle to specialized dairy production to dual-purpose beef and dairy operations. Management systems range from low-input, low productivity subsistence production to highly productive well-developed systems, using the latest technology.

Although considerable traditional cattle production still occurs in Mexico, the industry has changed much in recent years and changes will continue. The influence of international markets, changes in consumer meat preferences, changes in food marketing systems and continued challenges in meeting growing food demand in Mexico will continue to have a profound influence on cattle production in Mexico.

Table 1. Agricultural land use in Mexico, 2007

Category	Hectares
"Worked" Lands	31,512,323
Range Lands	30,781,275
"Wild" Lands	44,406,337
Forest Lands	3,919,416
No Vegetation	2,123,897
Total	112,743,248

Table 2. Major Annual and Perennial Crops in Mexico, Planted Hectares, 2007

<b>Crop</b>	<b>Spring/Summer</b>	<b>Fall/Winter</b>	<b>Total</b>
<b>Annual</b>			
Corn, White	6,573,818	618,652	7,192,570
Beans	1,686,680	246,366	1,933,046
Corn, Yellow	1,426,806	56,619	1,483,425
Sorghum	1,149,768	237,886	1,387,654
Oat Forage	667,919	224,266	892,185
Sorghum Forage	647,451	41,606	689,057
Wheat	283,128	363,612	646,740
Barley	202,927	62,484	265,411
Corn Forage	179,076		179,076
Chile, green	155,657		155,657
Cotton	120,643		120,643
Other	725,947	322,622	1,048,569
<b>Perennials</b>			
Pasture			4,989,299
Coffee			718,126
Sugarcane			664,338
Alfalfa			417,307
Oranges			359,142
Mango			223,162
Limes			148,782
Avocado			121,045
Coconut			99,018
Cocoa			93,911
Other			976,330

Table 3. Livestock Inventory by Specie and Type, Mexico, 2007.

<b>Specie/Type</b>	<b>Total (Head)</b>	<b>Subtotal (Head)</b>
Cattle	23,316,942	
Swine	9,021,192	
Sows		1,070,716
Sheep	7,305,578	
Ewes		1,886,856
Sheep for Wool		2,724,157
Goats	4,124,201	
Does		1,140,297
Milking Goats		323,034
Equine	2,143,934	
Horses		1,328,524
Mules		234,009
Donkeys		581,401
Total Poultry	356,824,337	
Hen Chickens		118,019,090
Broilers		159,946,197

Table 4. Cattle Inventory by Class, Age, Breeding, and Management System, Mexico, 2007.

Category	Total (Head)	Subtotal (Head)
Total	23,316,942	
<5 Head/Production Unit*		1,207,313
<b>Class</b>		
Bulls	616,820	
Cows	8,671,516	
Dairy		2,966,117
Beef		3,238,922
Dual-Purpose		2,466,477
Feeders/On-Feed/Replacements	12,571,993	
Work (Traccion)	249,300	
<b>Age</b>		
<12 months	6,732,250	
1-2 years	4,296,529	
2-3 years	3,897,912	
>3 years	7,182,938	
<b>Breeding</b>		
Mixed, Unimproved	3,712,561	
Cross-bred	12,210,003	
Purebred	6,187,065	
Registered		1,121,336
<b>Management System</b>		
Free Range	12,885,647	
Controlled Grazing	4,437,930	
Confined	3,083,930	
Semi-confined	1,702,534	

\*Production units reporting <5 head of cattle were not questioned on any information by class, age, breeding or management system. This represents 5.2 percent of the total cattle inventory. Information in the remainder of the table is based on a total cattle inventory of 22,109,629 head.

Table 5. Top Ten Total Cattle and Total Cow States, Mexico, 2007.

Total Cattle		Total Cows	
State	Head	State	Head
Veracruz	2,454,171	Veracruz	1,040,769
Jalisco	1,931,546	Jalisco	949,252
Chihuahua	1,708,887	Chihuahua	625,987
Chiapas	1,406,419	Sonora	507,795
Sonora	1,351,642	Chiapas	489,321
Durango	1,232,525	Durango	459,491
Tamaulipas	1,054,831	Sinaloa	400,235
Michoacan	1,004,538	Coahuila	389,312
Sinaloa	964,712	Michoacan	345,208
Tabasco	957,761	Guerrero	341,934