

Evolution of Global Corn and Wheat Production

agri benchmark: 2016 Global Forum

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Outline of Presentation

World Production

Importance of Productivity

***agri benchmark* Results**

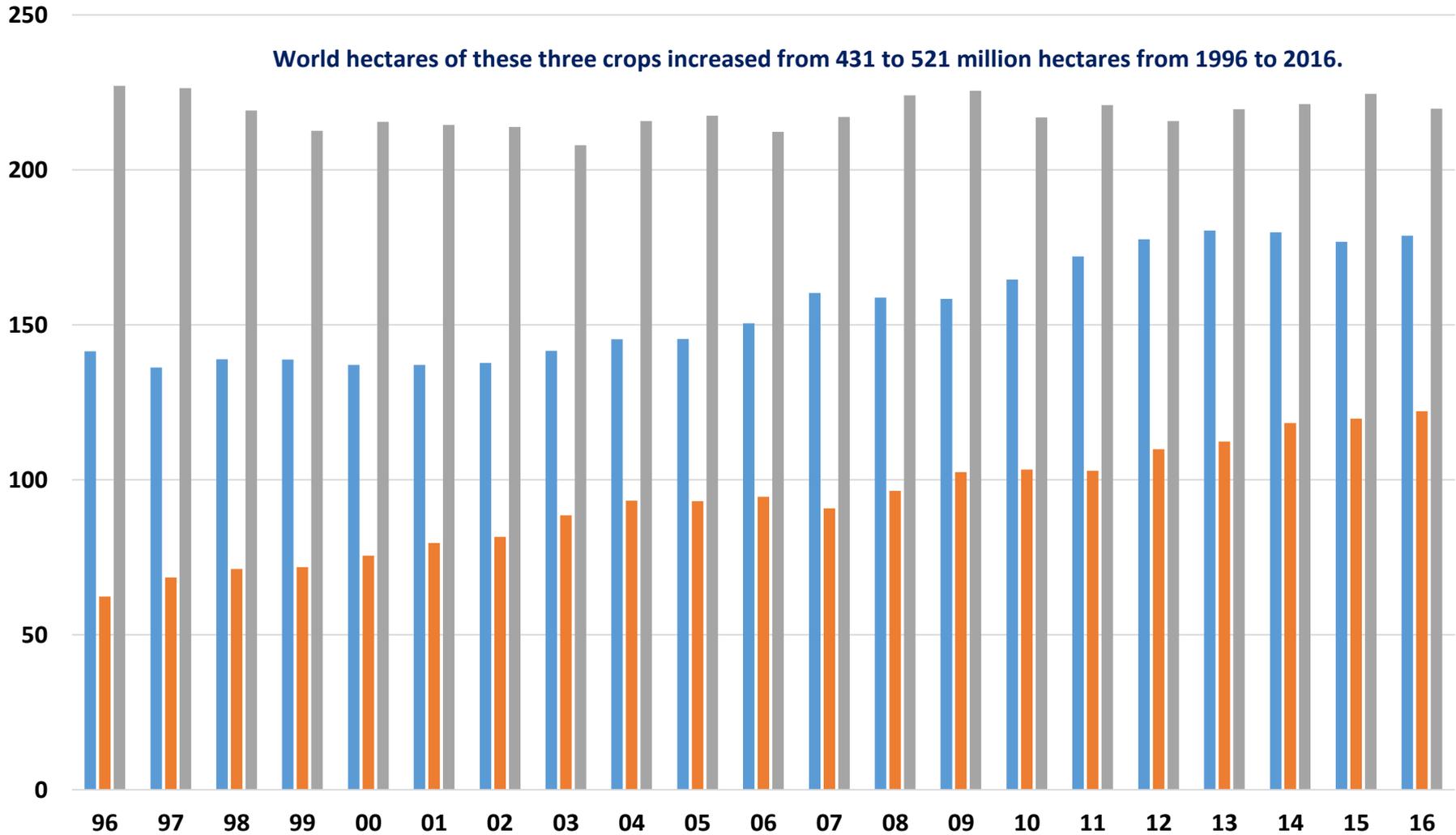
Corn

Wheat

World Production

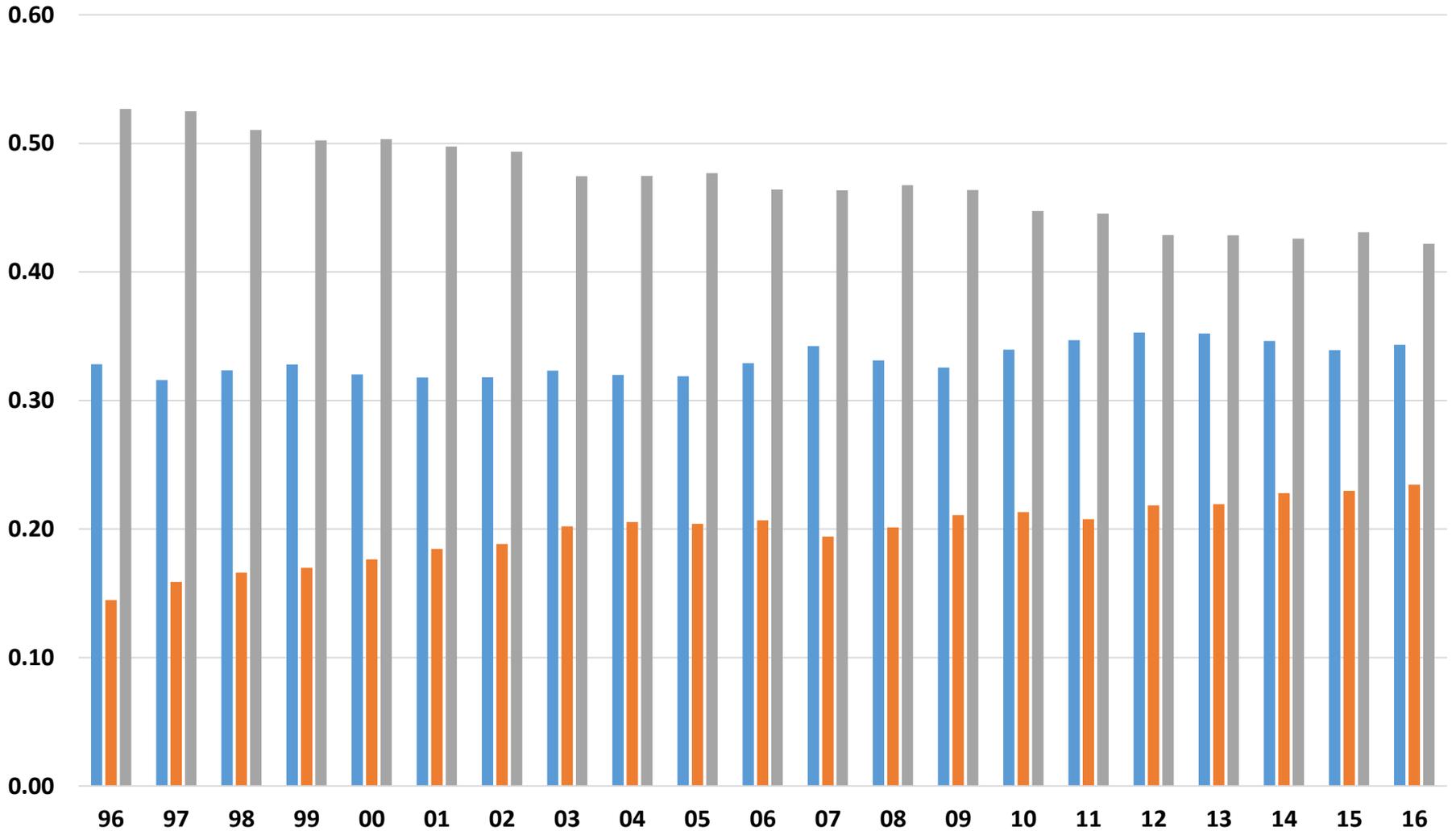
World Corn, Soybean, and Wheat Production (millions of hectares)

Corn Soybeans Wheat

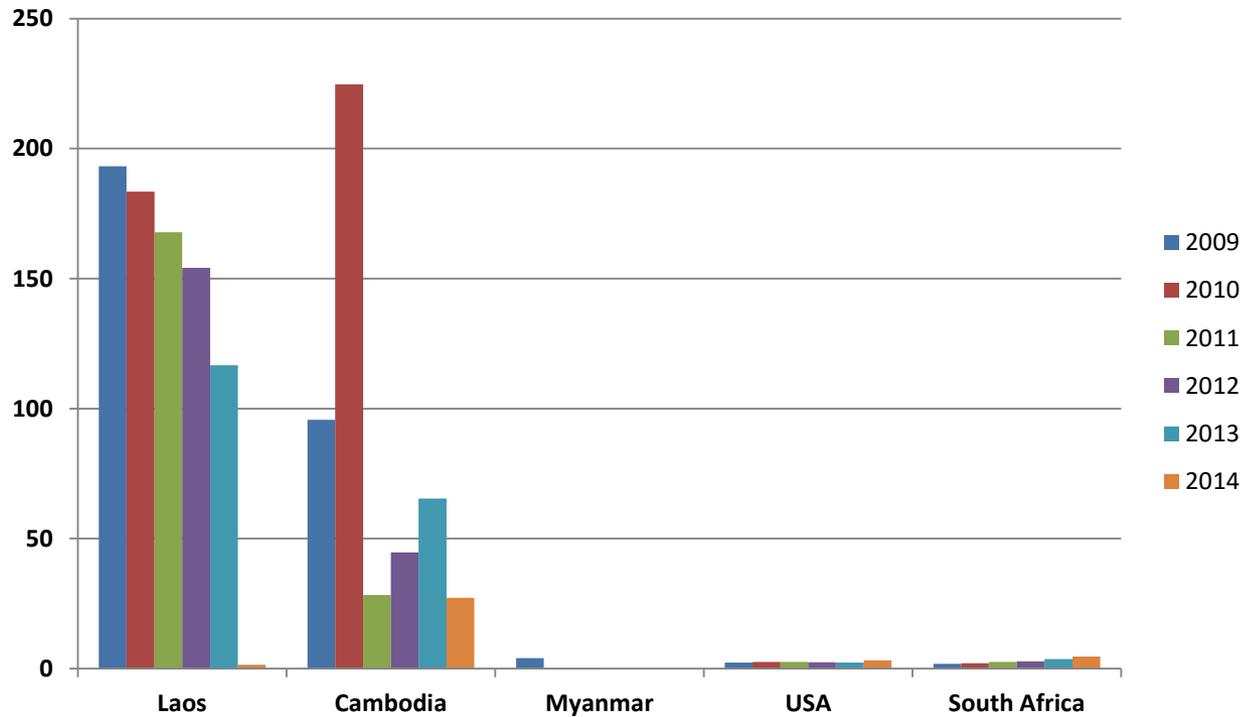


Share of World Hectares for Three Primary Crops

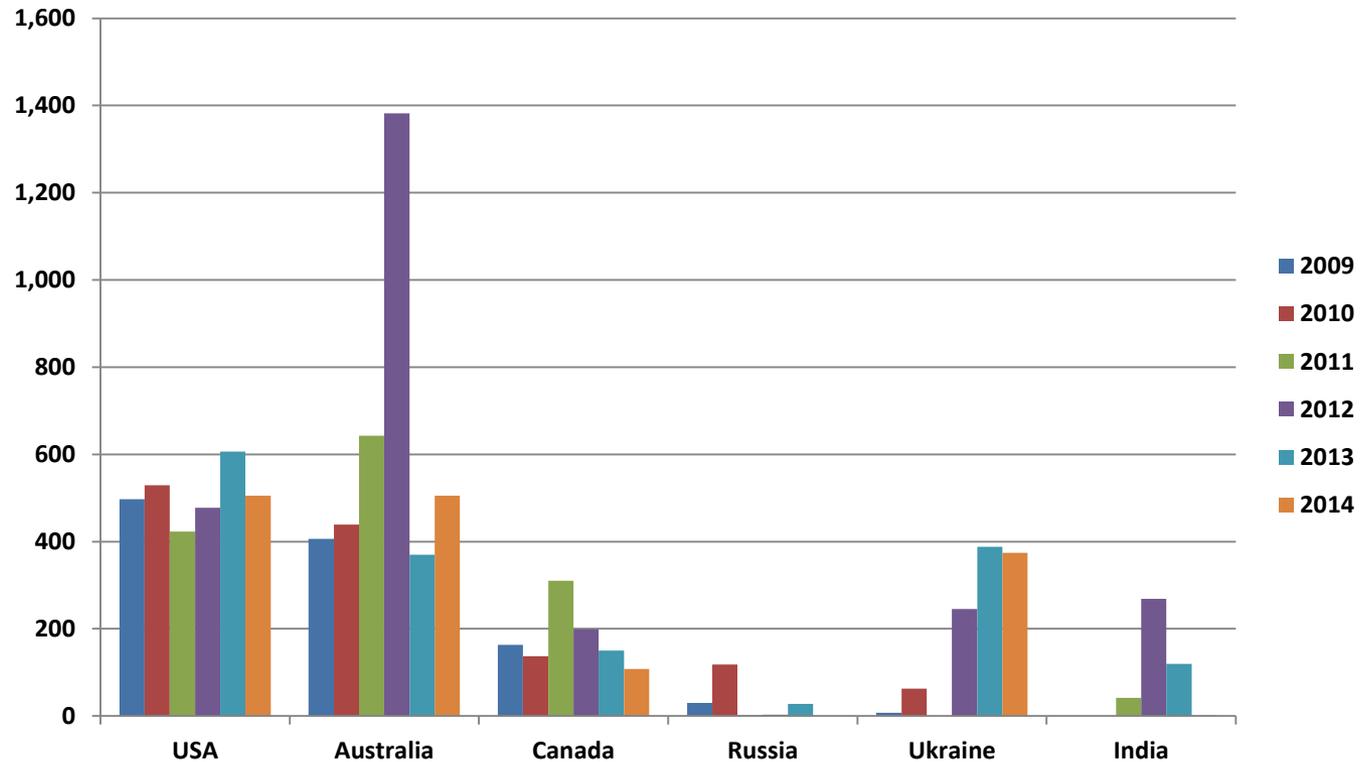
Corn Soybeans Wheat



Import Quantities for Maize (1,000 t): Thailand



Import Quantities for Wheat (1,000 t): Thailand



Yields (metric tons) Have Increased Substantially

1990 compared to 2016

Examples for Corn

East Asia:	4.5 to 6.0
North America:	6.4 to 9.4
South America	2.1 to 5.6

Examples for Wheat

Former Soviet Union:	2.1 to 2.4
North America:	2.6 to 3.2
South Asia:	2.0 to 2.8

Supply and Demand Fundamentals

Weak Supply Weak Demand	Moderate Supply Weak Demand	Strong Supply Weak Demand
Weak Supply Moderate Demand	Moderate Supply Moderate Demand	Strong Supply Moderate Demand
Weak Supply Strong Demand	Moderate Supply Strong Demand	Strong Supply Strong Demand

Importance of Productivity

How Do We Increase Output?

- To meet the rising population, reduce hunger, and respond to changing dietary demands; we will need to increase crop outputs.
- **Output Changes**
 - Input Changes
 - Efficiency Changes
 - Technology Adoption
- **Productivity (Output/Input)**
 - Is it possible to increase output without increasing input?

agri benchmark Results

Sample of Network Results for Corn and Wheat

- Results are shown below for selected typical farms with corn/or wheat.
- Results illustrate the importance of the data compiled and analyzed by the *agri benchmark* data.
- Data used for the results are averages for the 2013 to 2015 period.

Definitions of Key Cost Terms

- **GR = gross revenue**
- **DC = direct cost**
 - Includes seed, fertilizer, crop protection, crop insurance, and interest on these cost items.
- **OperC = operating cost**
 - Includes labor, machinery depreciation and interest, fuel, and repairs.

Definitions of Key Cost Terms (continued)

- **OvhC = overhead cost**
 - Includes building depreciation and interest, land, property taxes, insurance, and miscellaneous items
- **Profit = GR – TC**
 - All cash and opportunity costs are included.
 - Represents an economic profit.

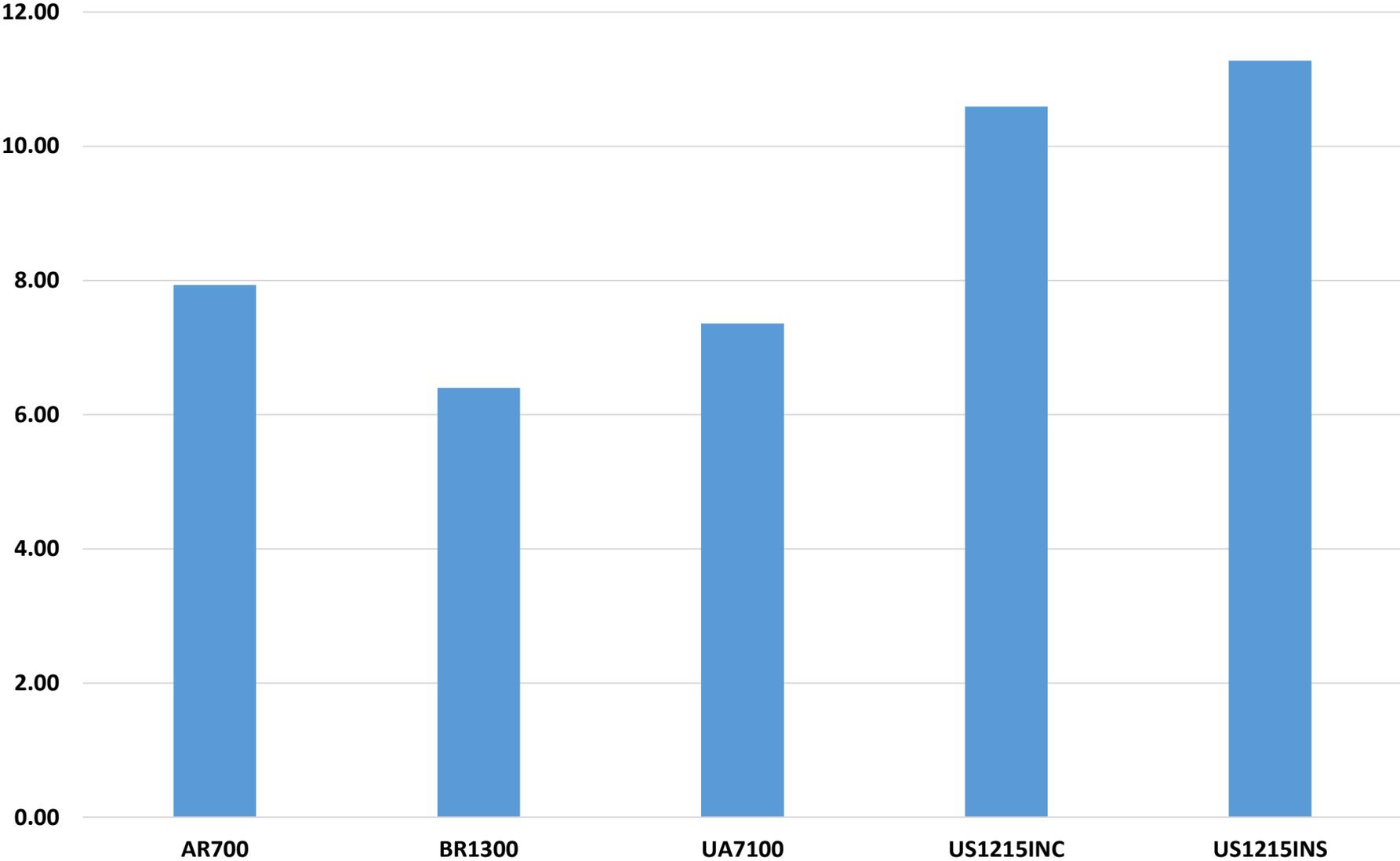
agri benchmark Results

Corn

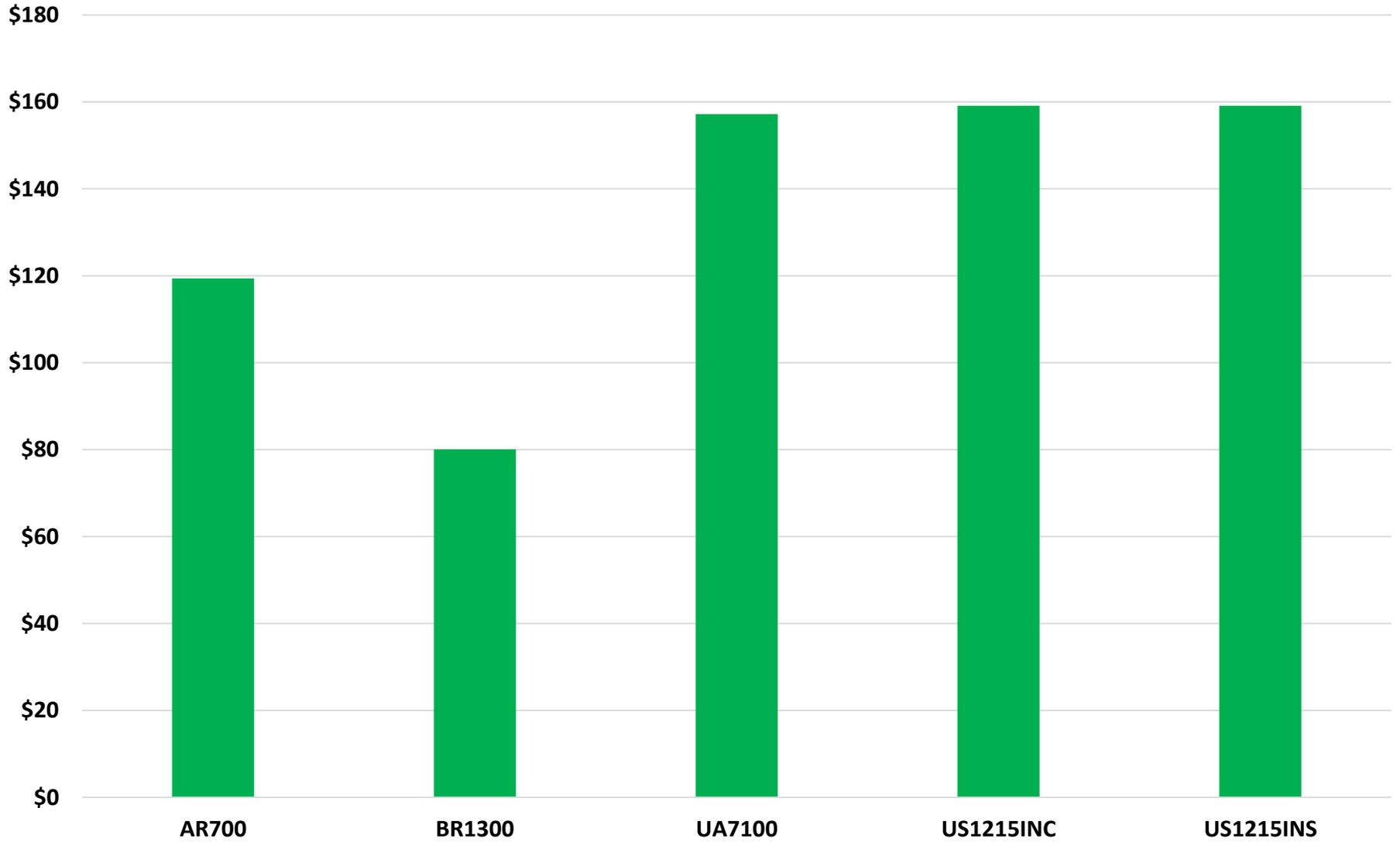
Abbreviations of Countries and Typical Farms: Corn

Farm	Country	Hectares
AR700	Argentina	700 (corn, soybeans, sunflower, and wheat)
BR1300	Brazil	1300 (corn and soybeans)
UA7100	Ukraine	7100 (corn, soybeans, sunflowers, and wheat)
US1215INC	United States (Central Indiana)	1215 (corn and soybeans)
US1215INS	United States (Southern Indiana)	1215 (corn, soybeans, and wheat)

Average Corn Yield (metric tons per hectare)

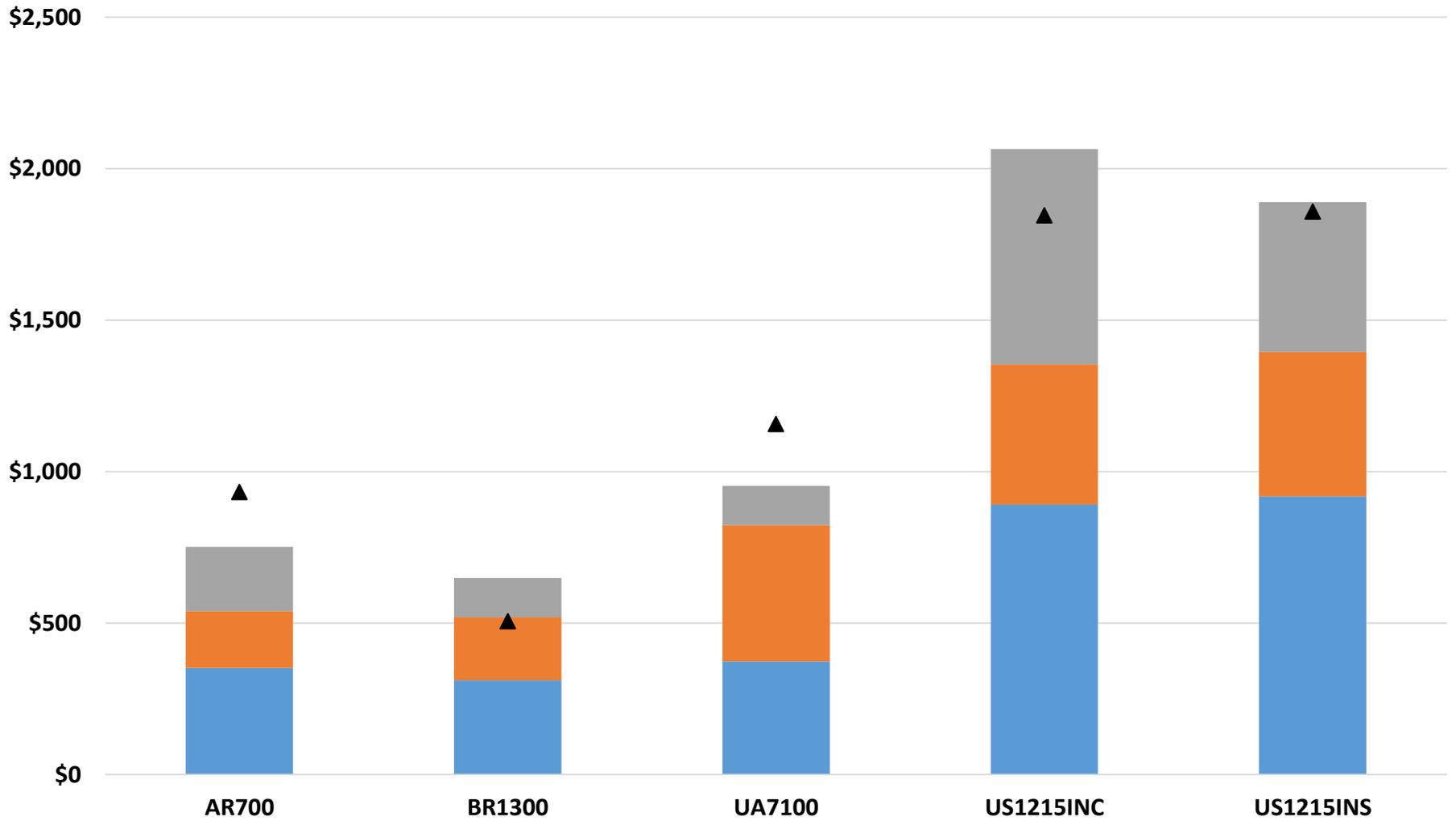


Average Corn Price (\$ per ton)



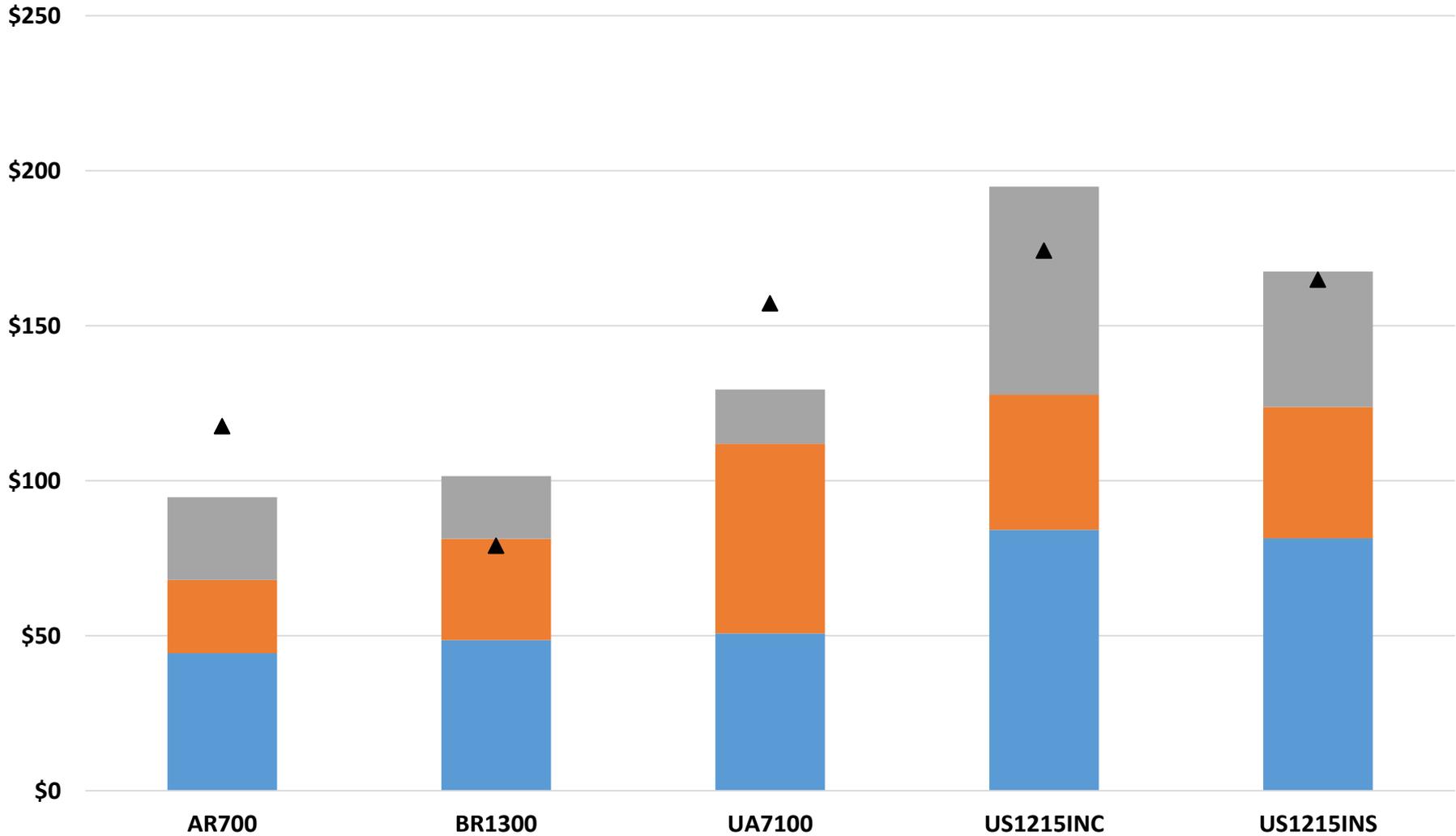
Average Gross Revenue and Cost for Corn (\$ per hectare)

■ Direct Costs ■ Operating Costs ■ Overhead Costs ▲ Gross Revenue



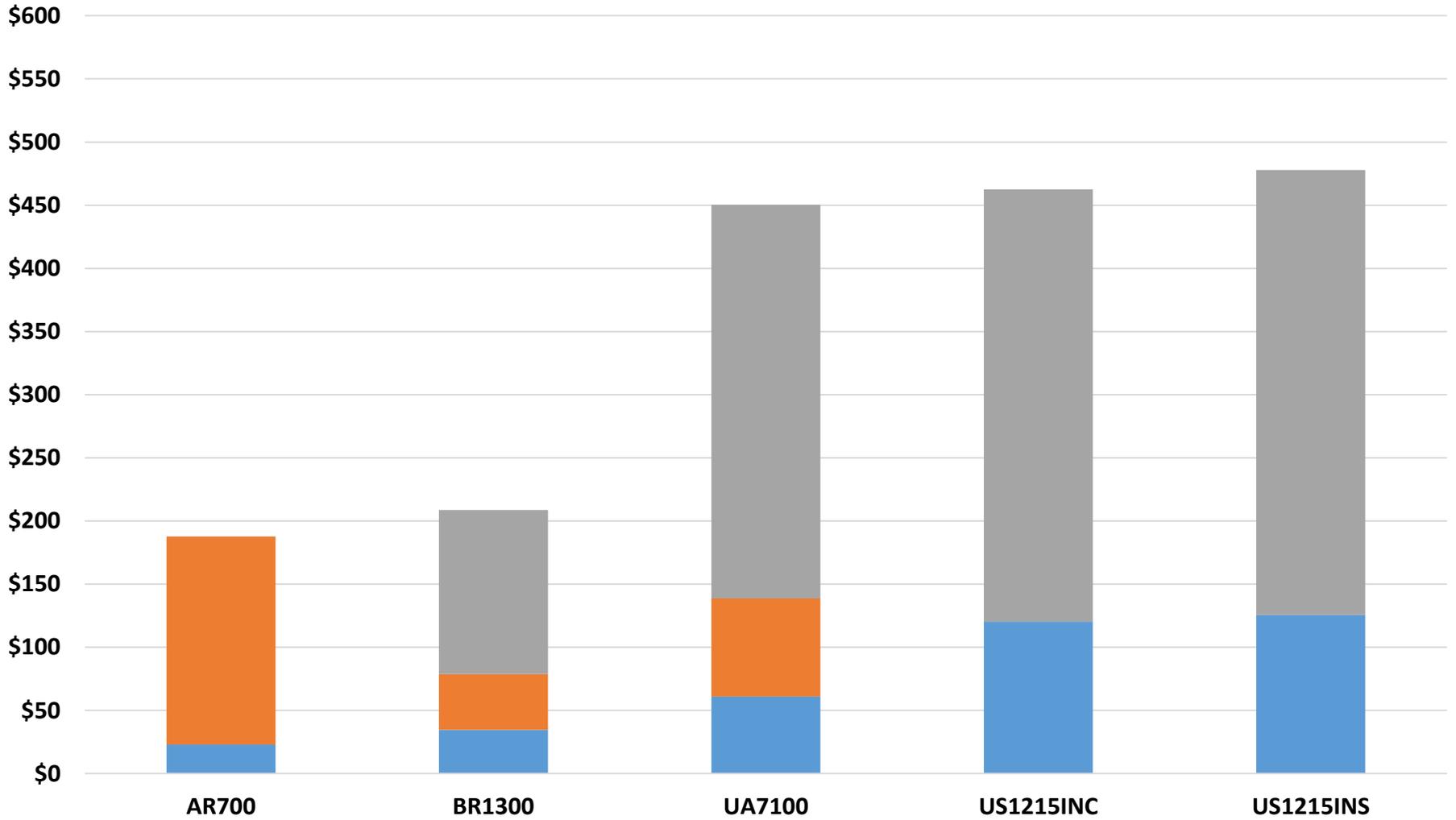
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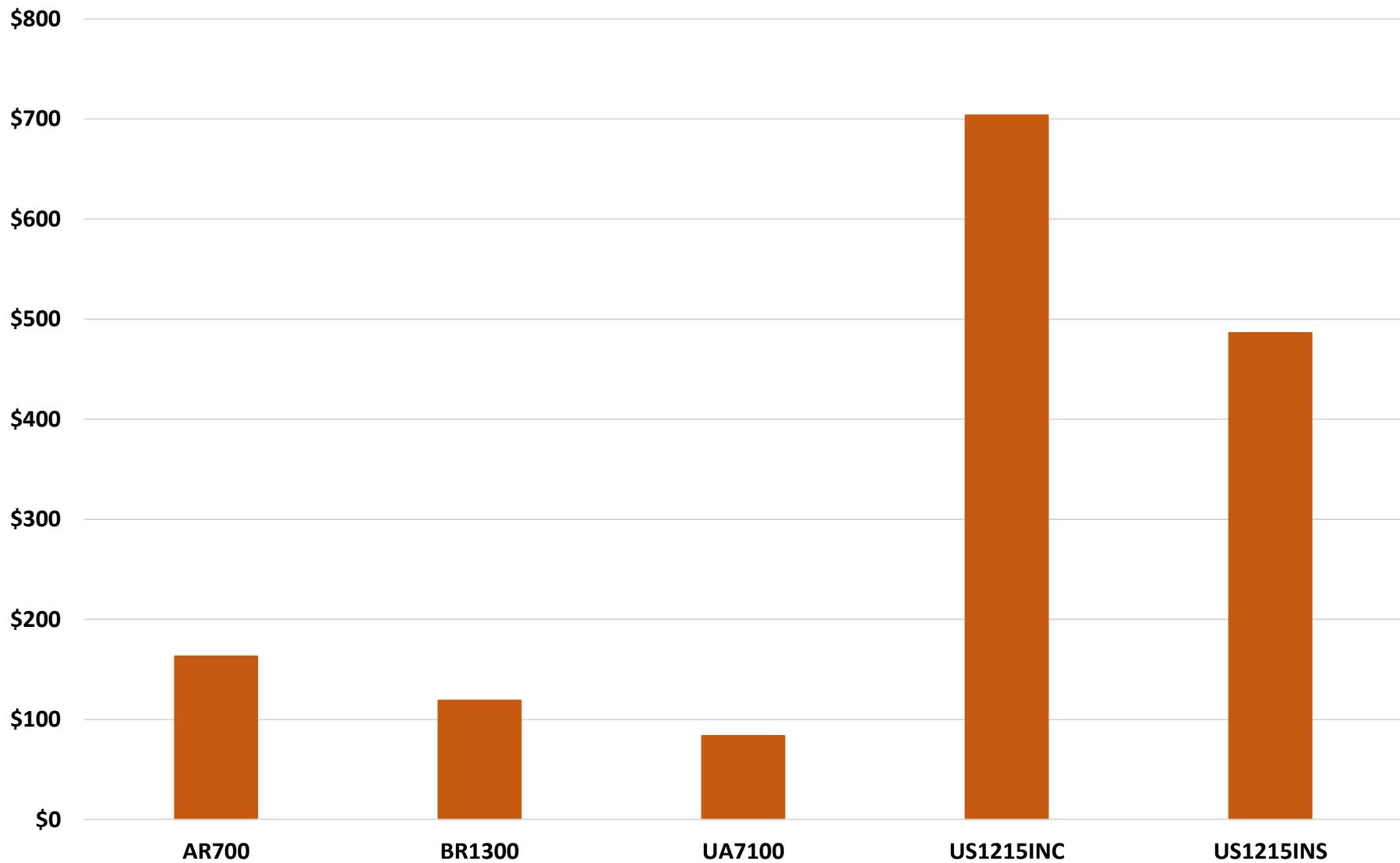


Average Operating Costs for Corn (\$ per hectare)

Labor Contracting Machinery



Average Land Cost for Corn (\$ per hectare)



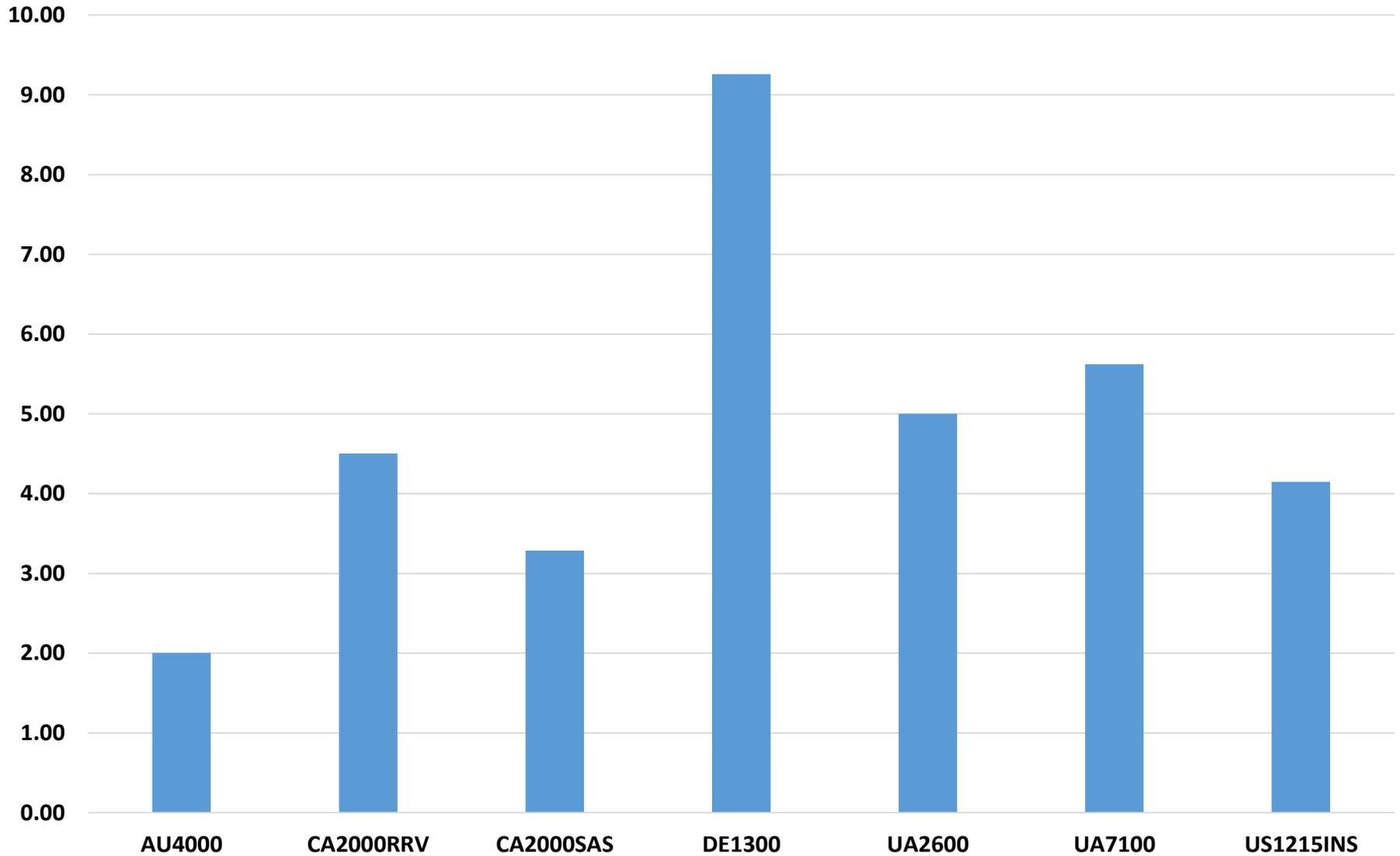
agri benchmark Results

Wheat

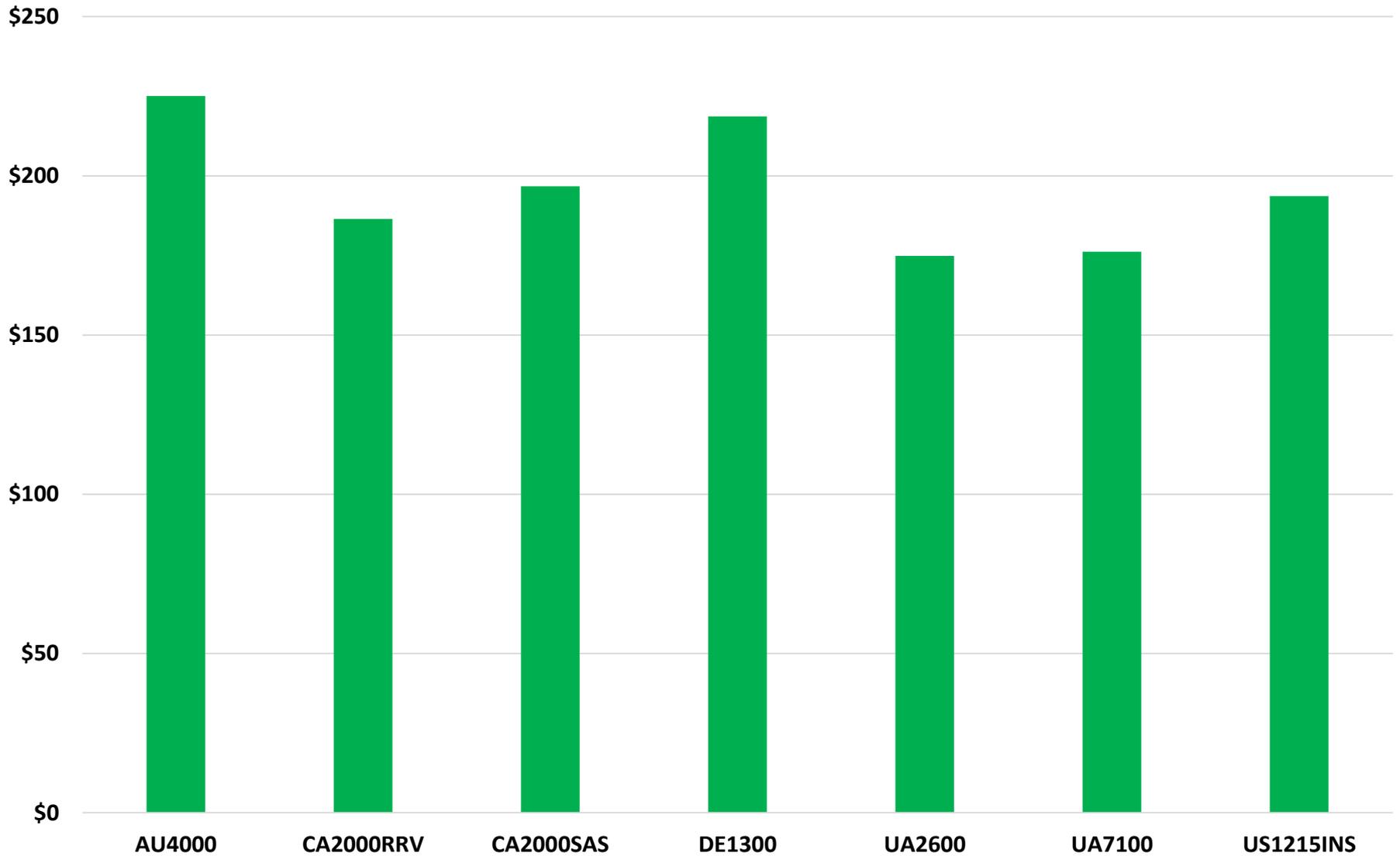
Abbreviations of Countries and Typical Farms: Wheat

Farm	Country	Hectares
AU4000	Australia	4000 (barley, rapeseed, pulse, and wheat)
CA2000RRV	Canada	2000 (rapeseed, soybeans, and wheat)
CA2000SAS	Canada	2000 (oats, rapeseed, pulse, and wheat)
DE1300	Germany	1300 (rapeseed, sugar beets, and wheat)
UA2600	Ukraine	2600 (corn, rapeseed, soybeans, and wheat)
UA7100	Ukraine	7100 (corn, soybeans, sunflowers, and wheat)
US1215INS	United States (Southern Indiana)	1215 (corn, soybeans, and wheat)

Average Wheat Yield (metric tons per hectare)

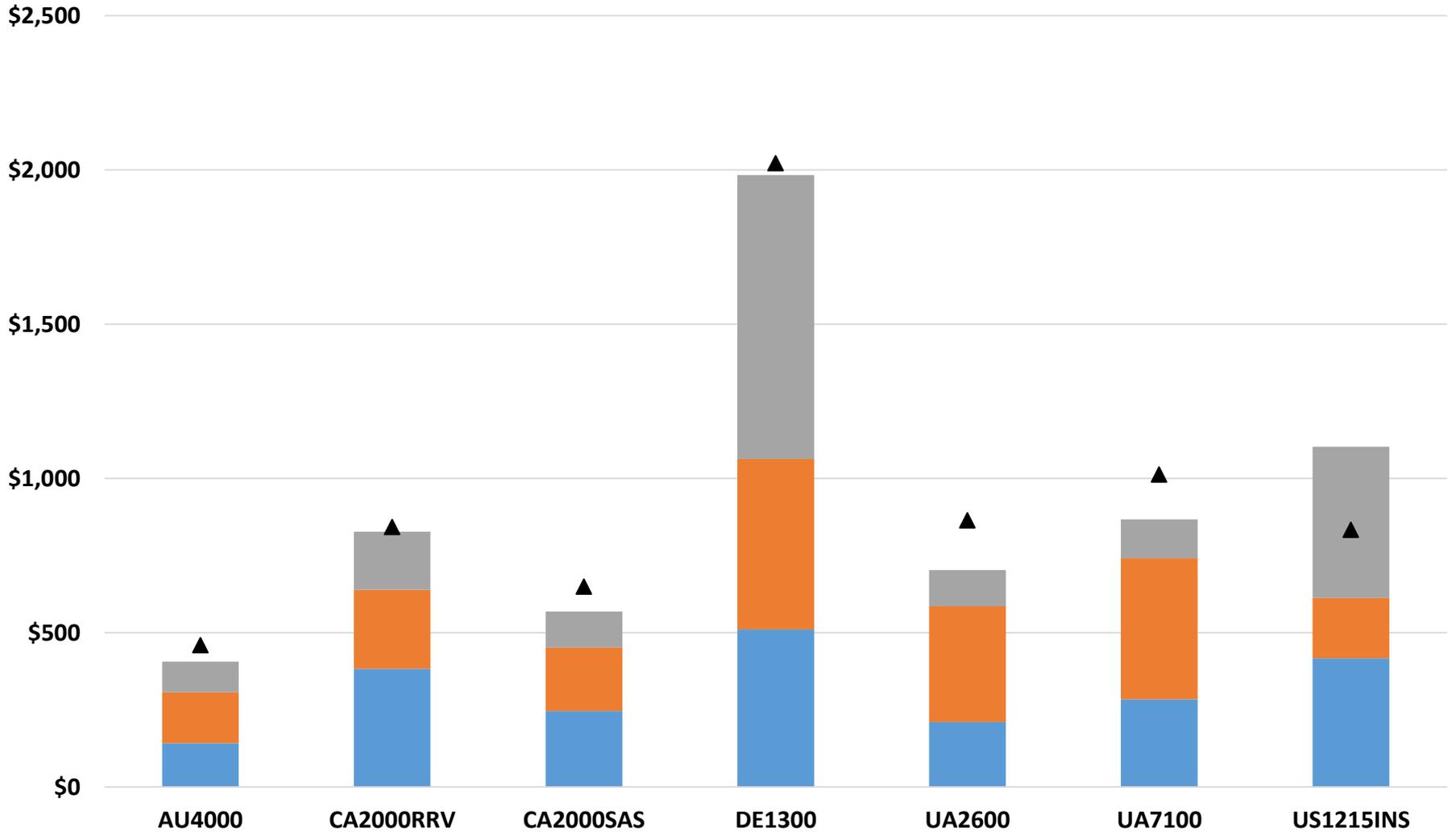


Average Wheat Price (\$ per ton)



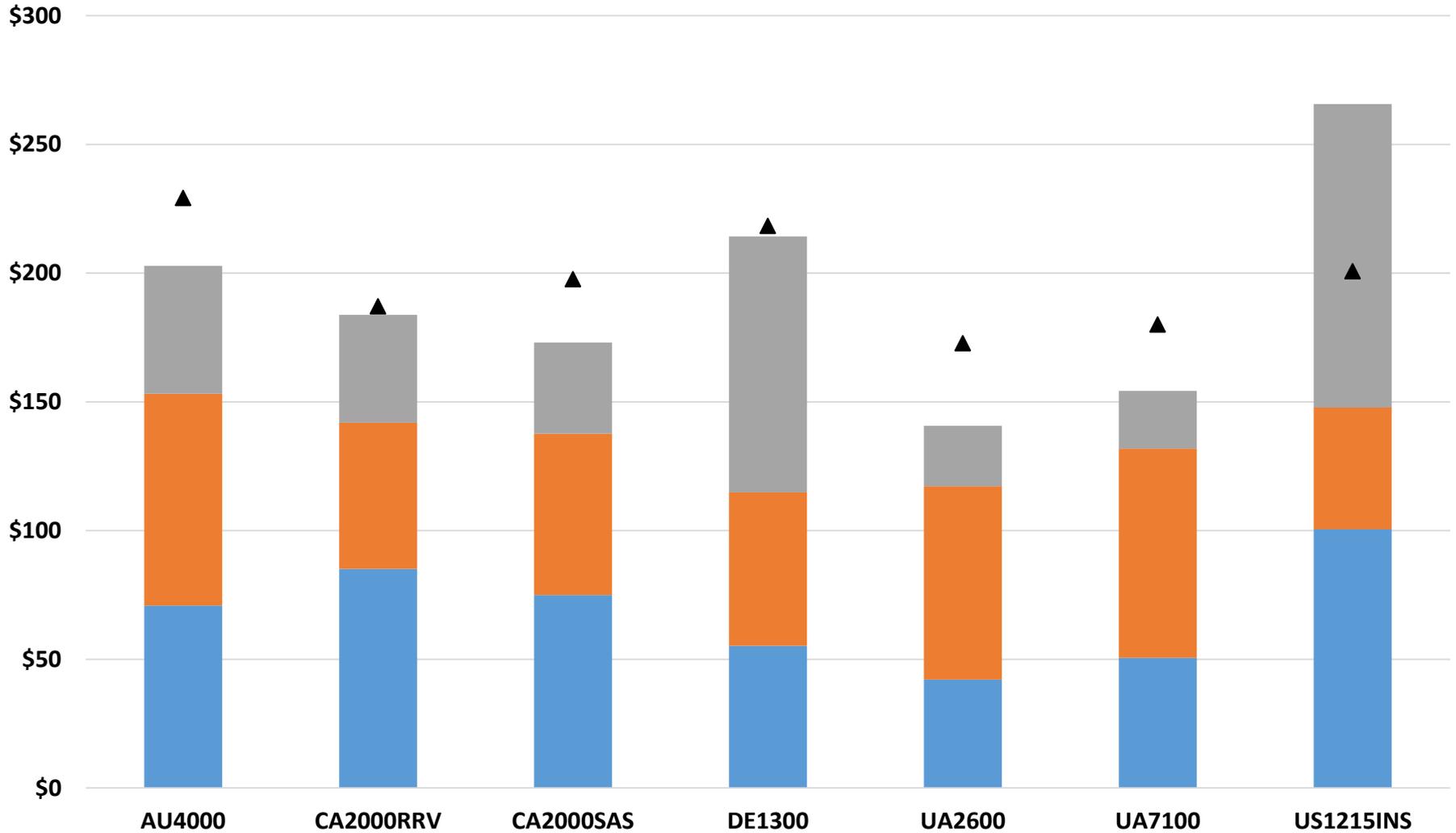
Average Gross Revenue and Cost for Wheat (\$ per hectare)

■ Direct Costs ■ Operating Costs ■ Overhead Costs ▲ Gross Revenue



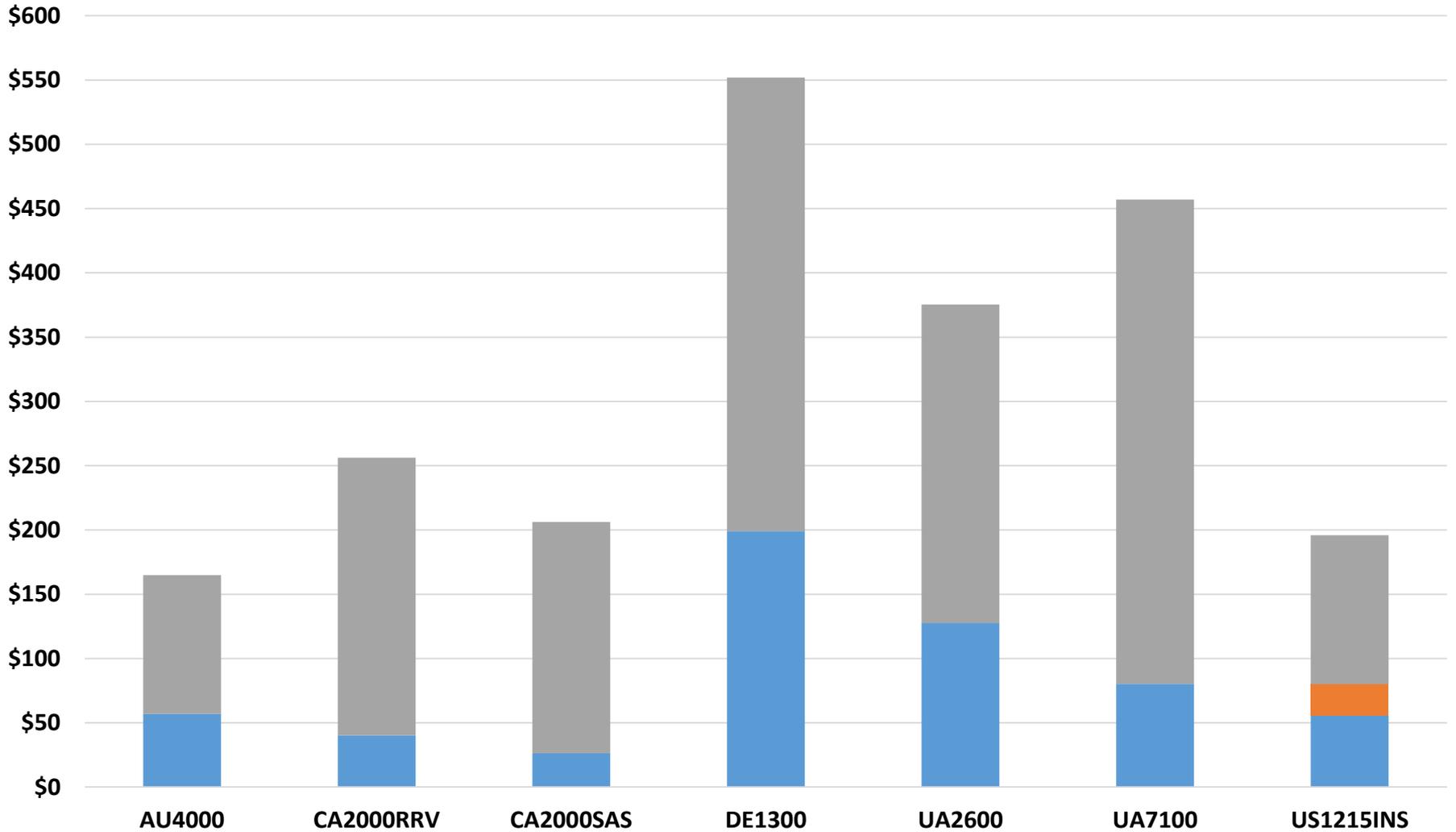
Average Gross Revenue and Cost for Wheat (\$ per ton)

■ Direct Costs ■ Operating Costs ■ Overhead Costs ▲ Gross Revenue

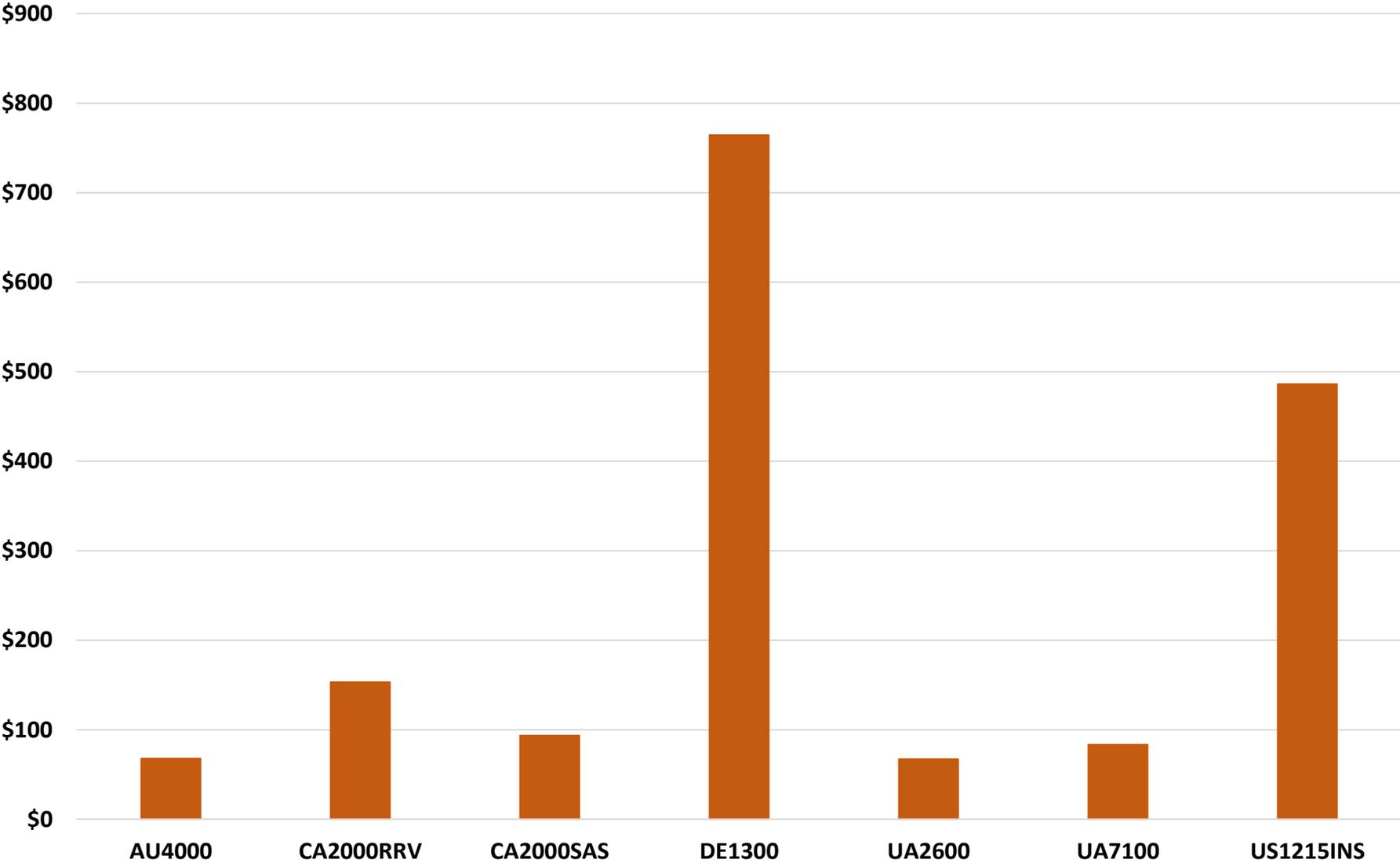


Average Operating Costs for Wheat (\$ per hectare)

Labor Contracting Machinery



Average Land Cost for Wheat (\$ per hectare)



Closing Comments

- **Yields have increased substantially**
- **Further increases in output will come from efficiency changes (catching up) and technology adoption**
- **Recent developments:**
 - **Emerging players (e.g., Ukraine; Russia)**
 - **Export tax reductions in Argentina**

Questions, Comments

