

### *USDA's Sugar Program Response in FY 2005 to Weather Disasters*<sup>1</sup>

USDA increased the marketable supply of sugar in the U.S. at the end of FY 2005 in response to a poor early sugar beet harvest in the Red River Valley and the disabling of cane refineries near New Orleans by hurricane Katrina. These weather disasters occurred as the refined sugar prices were already increasing; and by the end of FY 2005 prices had increased further. The Farm Service Agency examined data collected monthly from sugarcane processors, sugar beet processors, and cane refiners, to estimate the quantity of sugar that entered the market in response to USDA's increased market access. Although the disasters affected the FY 2006 domestic sugar market, this analysis only addresses USDA's program actions in supplying the FY 2005 sugar market, which ended on September 30, 2005.

Beet processors in the Red River Valley notified their customers in early August 2005 that shipments would be rationed as growers saw field sugar beet losses due to excessive soil moisture. September 2005 refined beet sugar production was reduced an estimated 110,000 tons due to the poor crop.

Then, hurricane Katrina made landfall in Louisiana on August 29th, causing the levee system protecting New Orleans to fail and shutting down operations at both cane sugar refiners in Louisiana. The Gramercy refinery was down only a week, while the Chalmette refinery did not resume refining sugar until mid-December 2005. The refinery closings reduced the September 2005 refined sugar supply by an estimated 50,000 – 100,000 tons.

#### *USDA's Response*

USDA responded to these disasters by increasing the domestic sugar marketing allotments (see Table 1) and sugar imports under the tariff-rate quotas (TRQ) (see Table 2).

The marketing allotment increase immediately made refined beet sugar available for sale, as beet sugar sales had been restrained by the allotment program. On August 12, 2005, after the recognition of the Red River valley crop damage, USDA increased the FY 2005 OAQ by 250,000 STRV. On August 30th, USDA reacted to Katrina by increasing the OAQ again, by 225,000 STRV. Finally, on September 9th, the OAQ was increased in response to the extended damage by hurricane Katrina. The OAQ was increased 105,000 STRV, to release all deliverable refined beet sugar stocks into the market. These three FY 2005 OAQ increases resulted in a total beet allocation increase of 315,230 STRV.

USDA actions to increase refined cane sugar availability was a more complicated story. USDA anticipated that cane refiners would increase production in response to the poor early beet harvest. However, domestic raw cane sugar sales could not be affected by the allotment increase because the cane processors did not have enough raw sugar supply to meet the previous raw sugar allotment. USDA reassigned the surplus allotment to imports, as required by the allotment law. In mid-August 2005, USDA increased the FY 2005 raw sugar TRQ by 84,500 STRV

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and the US Trade Representative reallocated the estimated raw sugar TRQ shortfall (58,873 STRV).

Then the Louisiana refineries were debilitated by Katrina. Two days after the hurricane hit, USDA announced that the previously announced FY 2006 refined cane sugar TRQ, 24,251 tons, would be permitted to be entered early. After the extensive refinery damage was realized on September 9th, USDA increased the FY 2006 refined TRQ by 75,000 STRV and again, permitted early entry. These announcements increased total access by 244,824 tons in FY 2005.

### ***Methodology to Determine Supply Increases***

The increased cane sugar availability to the US marketplace as the result of the TRQ increases is relatively easy to estimate. The Foreign Agriculture Service monitored TRQ sugar entries. However, the increased beet sugar availability resulting from the impacts of OAQ increases are much more difficult to measure. To determine how much additional sugar was delivered to the market, we compared each sugar beet processors' actual ending of FY 2005 sugar deliveries to an estimate of company deliveries if the OAQ were not increased. These estimates were made using confidential company data submitted monthly to USDA on beginning stocks, sugar production, sales, deliveries, and ending stocks.

Beet processor's deliveries are modeled as their marketing allocation, minus pre-sales, minus any unused allocation. Pre-sales are the quantity of sugar sold subject to the current year's allotment, but will not be delivered until the following fiscal year. Thus, the change in sugar delivered to the market is the change in the company's beet allocation, less its change in pre-sales, less its change in unused allotment.

$$\Delta\text{Deliveries}_b = \Delta\text{OAQ}_b - \Delta\text{Pre-sales} - \Delta\text{Unused OAQ}$$

The change in beet sugar allocation is simply the end of FY 2005 beet sugar allocation minus the beginning FY 2005 beet sugar allocation, which was known for each company.

The change in pre-sales is the reported pre-sales at the end of FY 2005, minus an estimate of pre-sales had the OAQ not been increased. The estimate of pre-sales without an OAQ increase is based on a model of beet processor decision making behavior. We assume that beet processors will presell inventory they need to deliver at the start of the following fiscal year, if they have more allotment than sugar to deliver in the current fiscal year.

Beet processors have two objectives at the end of the fiscal year -- have sufficient inventory to cover October deliveries (pipeline), and fully utilize their allotment. A beet processor, in determining when to pre-sell sugar, will first take the difference between their available supply and their pipeline. This difference is the quantity the processor can deliver in August and September, while still preserving their pipeline. If the processor still has allotment remaining, they can choose to either let the allotment go unused, or pre-sell part of the pipeline. By pre-selling a portion of their pipeline, the processor can meet both objectives.

$$E(\text{Pre-sales}_{t-1}) = \text{Remaining OAQ}_b - (\text{Supply}_{\text{Aug-Sep}} - E(\text{Pipeline}))$$

A processor's available supply is July ending stocks plus August and September production. The pipeline is estimated as the lower of 1) actual September ending stocks or 2) actual October deliveries, using September 2004 and October 2005 data for each processor.

The change in unused beet OAQ is the reported sum of FY 2005 unused company allocations, less our estimate of the sum of unused beet company allocations, if the OAQ had not been increased. We assumed, given the tight market conditions before the OAQ increase, that each company would market all their allotment except a small portion left unsold to cover bookkeeping errors or miscalculations throughout the fiscal year – a buffer. For each company, we estimated the buffer as the lowest quantity of unused allocation at the end of a FY 2003 – FY 2005 marketing year.

### ***Results***

USDA actions permitted 560,054 STRV of additional sugar into the market in FY 2005, with 384,725 STRV actually entered. TRQ shortfalls, rail car/truck availability, and other logistical problems contributed to the 31 percent of the increase in market access that was not utilized (Tables 1 and 2).

Beet processors delivered 210,025 tons of the 315,230 ton allocation increase in FY 2005. For the sugar that was not delivered, processors either had no way to deliver their sugar, due to their overtaxed distribution systems, or they were down to their “pipeline” stocks, such as their bin bottoms or stocks needed by customers in early October. In many cases, processors sold the title to these stocks in September 2005, and those became part of the “pre-sales” in figure 1.

TRQ increases and early entries allowed 244,824 tons of additional access, with 71 percent, 174,700 tons, entering the US market. TRQ shortfalls resulted in 70,124 tons of unused access (Table 2).

Refined sugar losses of between 160,000 and 210,000 tons resulted from the FY 2005 disasters. In response, OAQ and TRQ actions brought an estimated 300,225 tons of refined sugar into the US market. Our estimate of refined sugar entering the market may be conservative because this analysis assumes the raw sugar entry of 84,500 tons was not refined until FY 2006. Historically high refined sugar prices from fourth quarter FY 2005 continued into FY 2006, indicating the market need for the increased supplies.

Table 1--OAQ (Beet) Actions and Results

FY 2005	Causes for allotment increase	Beet allotment increase (STRV)	Delivered 1/
12-Aug.	Red River Valley crop failure	135,875	90,528
30-Aug.	Hurricane Katrina	122,288	81,475
9-Sep.	Extended effects from Katrina	57,068	38,022
Total		315,230	210,025

1/ Pro-rated.

Source: FSA, USDA.

Table 2--TRQ Actions

FY 2005	Actions	Access	Entered
23-Aug.	Raw TRQ increase and shortfall reallocation	143,373	84,500
12-Aug.	Refined TRQ increase	2,200	2,200
30-Aug.	2006 Refined TRQ early entry	24,251	13,000
9-Sep.	2006 Refined TRQ increase, early entry	75,000	75,000
Total		244,824	174,700

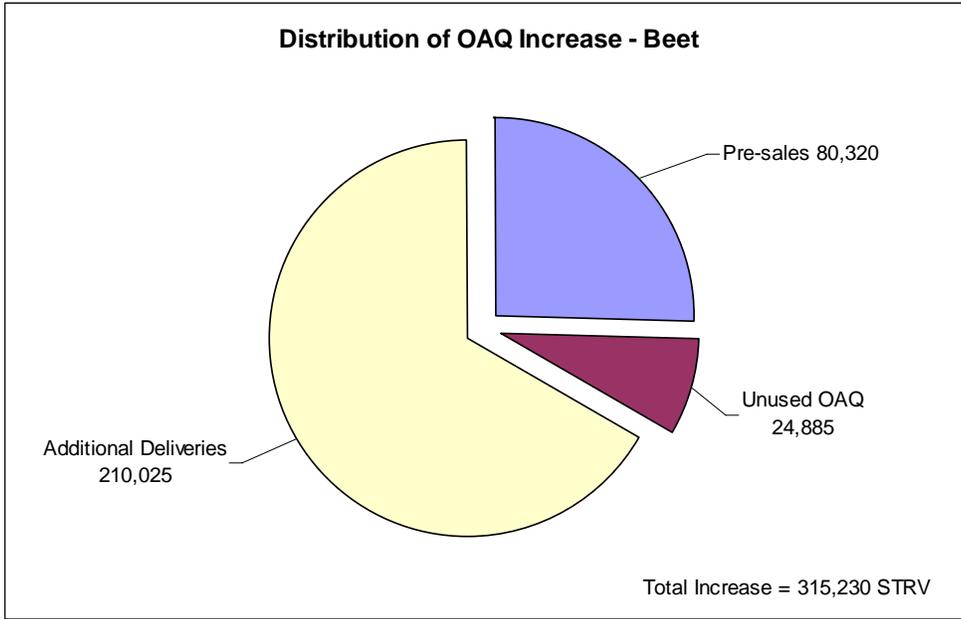
Source: FAS, USDA.

Table 3--FY 2005 Estimated refined sugar loss

	(STRV)
	Refined production loss
Beet	110,000
Cane refiners	50,000-100,000
Total	160,000-210,000

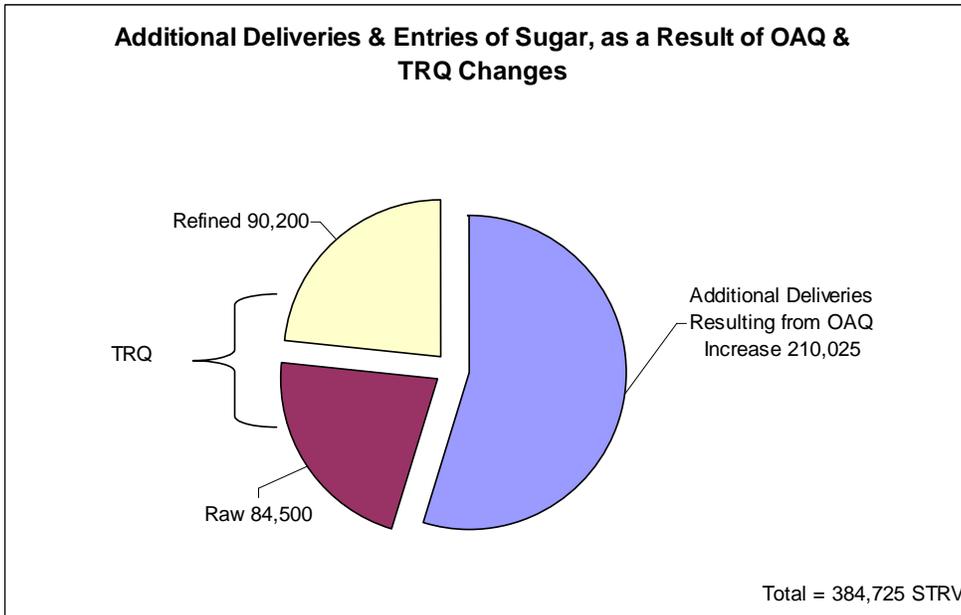
Source: FSA, USDA.

Figure 1.



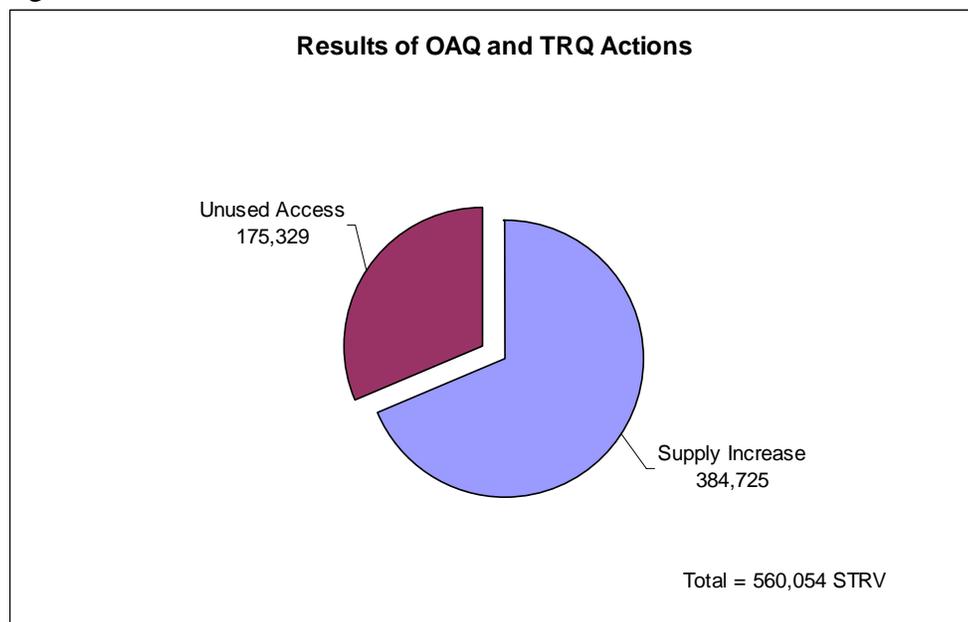
Source: FSA, USDA.

Figure 2.



Source: FSA, USDA.

Figure 3.



Source: FSA, USDA.