

## Comprehensive Problem 5.2: Sanderson Farms

### Corporate Overview

Sanderson Farms is the nation's third largest poultry producer with Fiscal 2011 sales of \$1.96 billion. In Fiscal 2012, they plan to process over 2.86 billion pounds of meat in their ten poultry plants. The company employs over 10,000 people and has a network of more than 760 independent growers.

### Kinston Facility

The company's newest plant is located in Kinston, N.C. It is situated in an agricultural region that produces substantial crops of corn and soybeans—two of the primary ingredients in chicken feed. The Kinston plant is ideally located within a 24-hour drive of all markets in the eastern United States.

The Kinston facility consists of a hatchery, a feed mill, and a processing facility. The hatchery receives four shipments of 300,000 eggs per week. The eggs are placed in incubators and produce chicks in twenty-one days. Approximately 13% of the eggs do not yield chicks for a variety of reasons. Chicks are distributed to independent farms that grow the chicks until they are ready for processing. The farms receive both chicks and chicken feed from the company and are paid by the pound for their ready-to-process chickens.

The processing plant produces twenty-seven truckloads (40,000 lbs. each) of processed, packaged chicken per day. It is estimated that it takes four hours for a chicken to be processed from arrival at the facility until it can be loaded onto a truck for shipping.

The feed mill receives corn and soybeans by rail and truck and stores these grains in silos. Other feed ingredients are delivered by truck and stored in designated areas in the mill. The mill produces approximately 89 tons of pellets per day which are distributed to the contract chicken growers by company trucks. The feed mill employs twelve truck drivers. Chicken feed is the largest controllable cost for Sanderson Farms and the company's financial performance is strongly linked to the price of corn and soybeans. For example, in the second quarter of 2012, Sanderson Farms purchased 22.1 million bushels of corn. A \$0.10 increase in the price per bushel translates to \$2.21 million dollars of cash to the company and increases the cost of goods sold by \$0.003/lb. Similarly, during that same period, the company purchased 191,149 tons of soybeans. A \$10 increase in the price per ton translates to \$1.91 million of cash to the company and increases the cost of goods sold by \$0.0026.

### The Feed Mix Problem

In order to maintain their competitiveness in the industry, poultry producers must be able to respond rapidly to the fluctuating costs of chicken feed ingredients. This has become a critically important issue due to the severe drought conditions experienced over most of the United States this year. The complexity of the problem is due to the number of ingredients that can be mixed into feed, the extent to which each of these ingredients contributes to meeting each of

several nutritional requirements for chickens, and the fluctuating price of each of these ingredients.

**NOTE:** Up to here all information is factual. The data provided is not.

Suppose that a feed mill wants to prepare a 1,000 kg batch of chicken feed. It has the option to mill any of twelve ingredients in any amounts it desires as long as the finished mix meets the nutritional requirements established by the industry for broilers. These nutritional requirements as well as the cost per kg are given in the SANDERSON FARMS DATA file included in the link below.

Please advise the Feed Mill as to how much of each ingredient to blend in the feed mix so as to minimize the cost of the 1,000 kg batch of chicken feed.