

# Stardew Valley Economy Design Document

*By Simran Baria*

## Context

Stardew Valley is a farming simulation game in which the player is able to procure multiple different kinds of items to ship. This includes crops they've grown on their farm, fish they've caught, artisan goods and animal products they've produced, gems and minerals they've found, and numerous other things. Along with this, the player is able to buy certain items from shops as well, most often seeds to plant crops with.

## Design Goals

### Player Progression

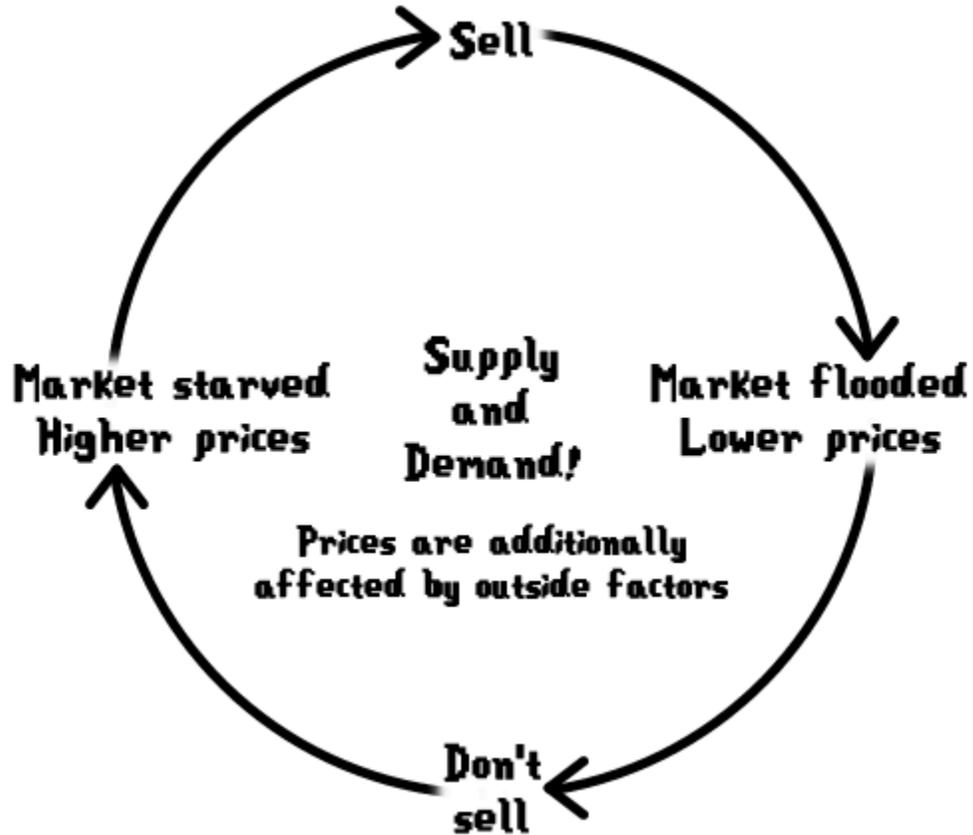
The main design goal of this system is to stagger player progression. The monetary progression players will often find themselves in is a very slow early game, followed by massive leaps in revenue by the end of their first year. By the late game, players will easily be able to make a hundred thousand gold a week, yet at the same time, they will often still find themselves struggling with the end-game grind for gold, as some of the end game items can cost up to ten million gold.

### Shipment Diversity

The second goal of this system is to encourage players to have a diverse selection of what they ship. In the early game, when the player is attempting to build up their revenue, they'll be using any source of income that they may find, like fishing and animal products. However, by the late game, the common tactic used is growing nothing but the most valuable crop in the game, as other forms of income aren't as valuable a time sink.

## Mechanics

### Overview



*Figure 1 - The general cycle of prices for items*

The system is a general overhaul to the sell values of the items players are able to ship in response to the player's actions. In general, when the player sells mass quantities of a single item and floods the market, the selling price of that item will drop significantly. Conversely, if the player has not sold a certain item for a while and starves the market, the price of that item will gradually rise.

## Price Shifters

### Market Volume

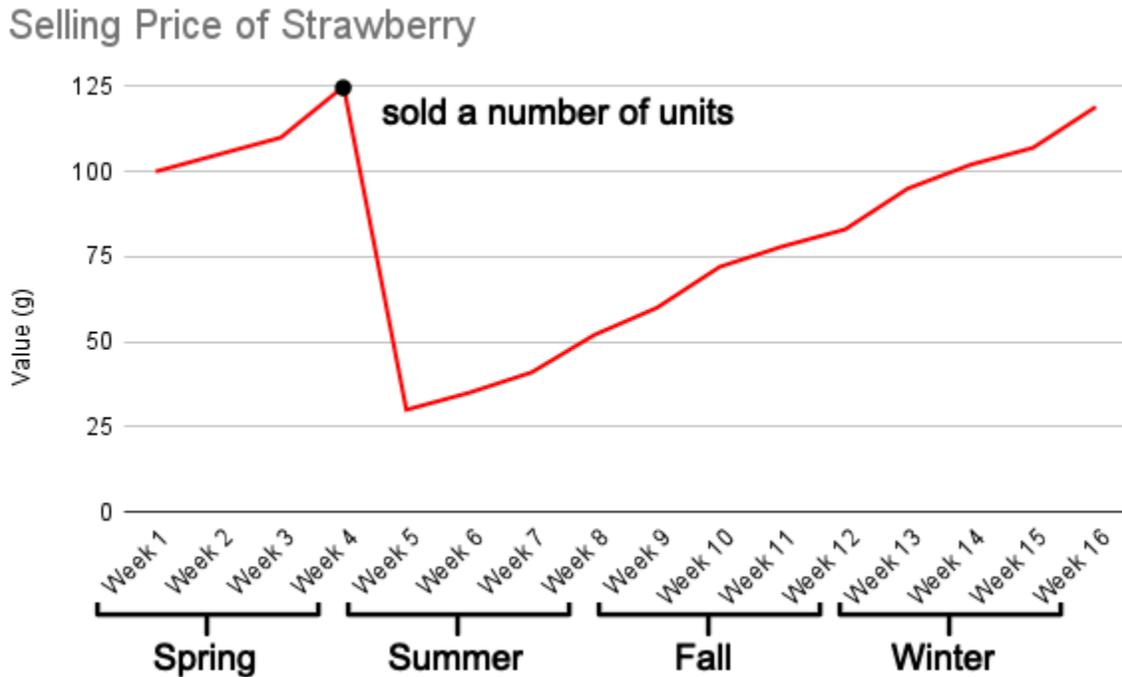


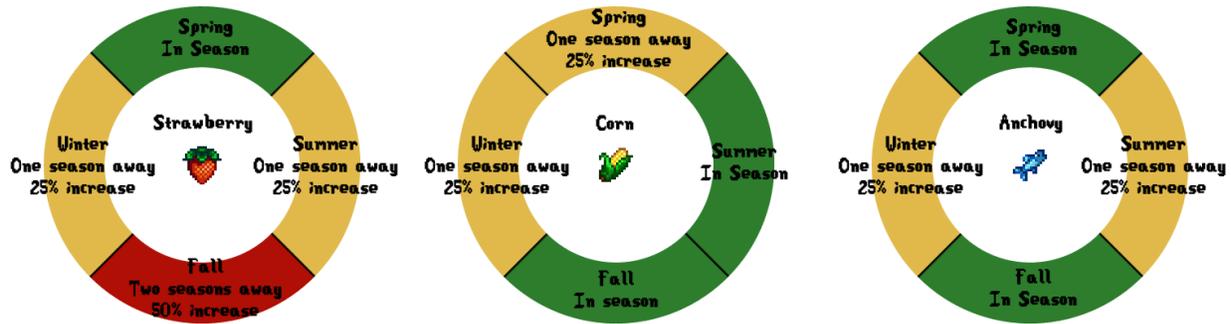
Figure 2 - A graph depicting the simulated price of Strawberries overtime

The main way the price of an item will shift is through market volume. Each in-game week, the market values of different items will be changed based on the market volume for that item. When the player sells an item, the number sold adds to the market volume. The higher the market volume, the lower the selling price of an item. Each item has a max volume that, once reached, will cause the selling price of an item to drop by 50%. Conversely, each week the market volume of an item is reduced by 25%, causing the price to increase gradually.

### **Design Decisions:**

- This system is heavily inspired by Slime Rancher's dynamic market system, but the price changes occur every week rather than every day. This is done due to the fact that, unlike Slime Rancher, players in Stardew Valley will not have new crops produced every day. Most crops take, on average, around a week to fully grow and harvest.

## Seasonal Changes



*Figures 3-5 - Examples of seasonal modifiers of different items*

Stardew Valley's years are made of four seasons, in order of spring, summer, fall, and winter. Similarly to real life, the market prices of items will change based on what items are currently in season. This is specific to items like fish that can only be caught in certain seasons, crops that can only be grown in certain seasons, and a few niche cases as well. For example, the only animal product that is season-exclusive is pig truffles, which pigs do not produce during the winter. Each item has its in-season value, sometimes being multiple seasons. The market prices for items will change based on the current season and the in-season value of an item. If an item is being sold in a season directly after or before the item is considered in season, the selling price will be 25% higher. If the current season is two seasons from the in-season value, then the selling price will be 50% higher.

### **Design Decisions:**

- The winter season is, in general, the season players will see the least amount of revenue during their first year. The season price shifts mean that players can stockpile items from previous seasons, especially items exclusive to the summer, and sell them for a large sum of money during the winter, allowing them to have some form of income and causing players to have to strategize whether they want to have money immediately or a larger sum of money in the future.

## Yearly Industry State



Figure 6 - Example of industry values during a year

At the end of the player's first year, the player will be notified that the prices of select shop items will be raised. While this is a simple gameplay feature to make it slightly more difficult for the player to obtain as many of these items as they want by simply buying them, we can take it further and turn it into a yearly industry state. Each year, the market value for different industries will shift, which will affect the selling price of their products. The industries match the in-game categories the player is already familiar with: farming, mining, foraging, fishing, and combat. Similar to the shift at the start of the player's second year, some shifts will be hard-coded. The player's first year will have a base economy state of 1 for all industries. Subsequently, the economic state will shift to 5 for foraging, matching the changes in the buying price for wood that the player is notified of, and the shift in the mining industry will be 1.6, matching the changes in the buying price for different ores from the blacksmith. By the third year, the industry states will be decided somewhat randomly, shifting a certain amount from the previous year. The industry states will have a maximum value of 5 and a minimum value of 0.1, ensuring that item prices don't increase to a drastic and game-breaking amount.

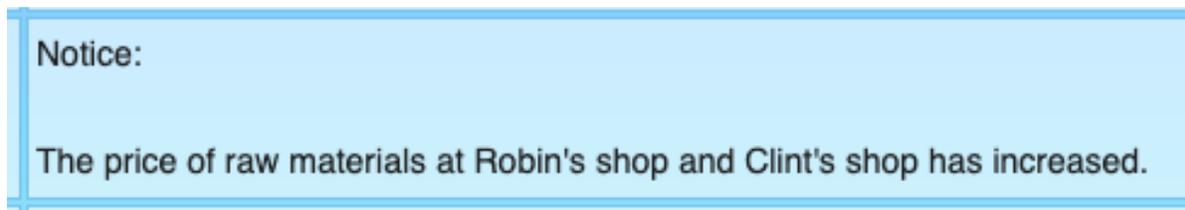
### **Examples:**

- If in year 2 the foraging industry value is 5 and in year 3 the value is 4, wood would sell for 50 gold in year 2 and 40 gold in year 3
- If in year 2 the mining industry value is 1.5 and in year 3 the value is 2.6, diamonds would sell for 1125 gold in year 2 and 1950 gold in year 3

### **Design Decisions:**

- This portion of the system is heavily inspired by My Time at Portia's market system, where a daily market value affects the prices of all items. During my research into this game, I found that having a market value that changes regardless of player input and affects all industries at once felt very shallow. For Stardew Valley, a game that contains many items within its different industries, separate industry values felt more appropriate and gave a more realistic feel.
- By notifying the player of the different industry changes before the start of the year, the player will be able to plan and diversify their sources of income. Having certain industries increase or decrease in value forces the player to have alternate methods of capital instead of only relying on farming.
- If the system allowed industry values to increase past 5, the prices of items would increase by extremely large amounts. This cap is to ensure the player can't sell, for example, diamonds for 7500 gold if the industry value for mining is 10.

### **Buying Price**



*Figure 7 - In-game example of shop price changes*

Similarly to how the selling price of different items will change based on the player's actions and the price shifters. The same price shifters that affect an item's sell value will also affect the value of items that shops will sell to the player. This already exists in-game on a small scale, as seeds sold out of season will have a marked-up price between 30-50%.

### **Design Decisions:**

- This portion of the system is mostly to make the market feel more realistic and alive. If the selling prices of the player's items were the only thing affected by the market, the player would see it as rather unfair towards them. Having the market prices of shop items lower and raise as well makes the player feel like the changes to the economy have

an effect on the world, and also gives them an easier time buying items without having to grind for large amounts of gold when the prices are low, balanced by items eventually becoming more expensive.

## Communicating market changes

In general, each item has three new values the player must watch for when they want to sell: the market value shifter, the seasonal shifter, and the yearly industry shifter. In order to keep track of this, the player will be communicated these changes in different ways.

### Computer

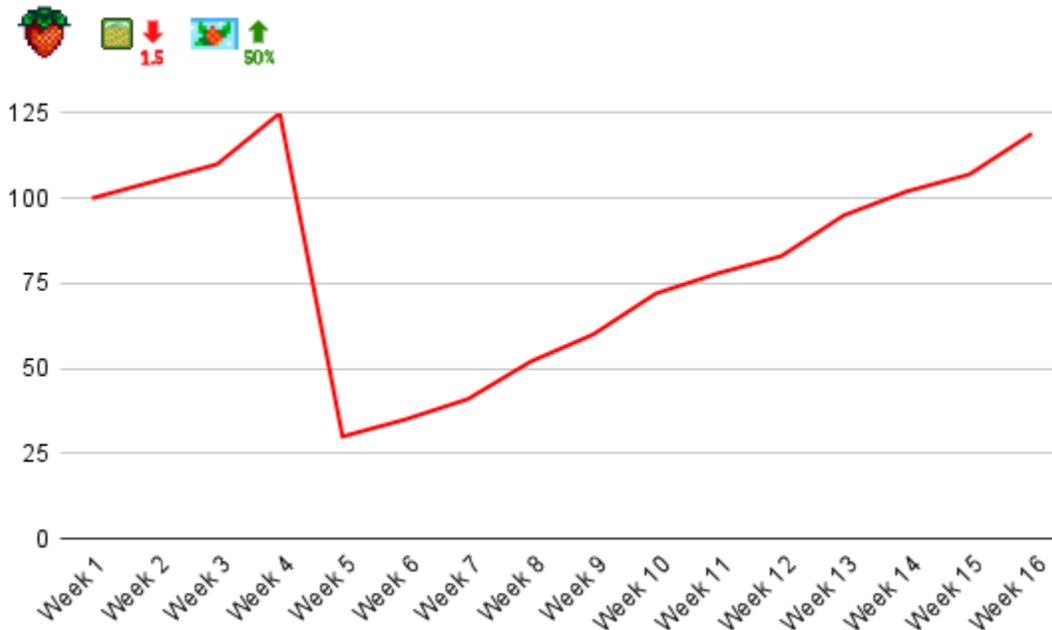
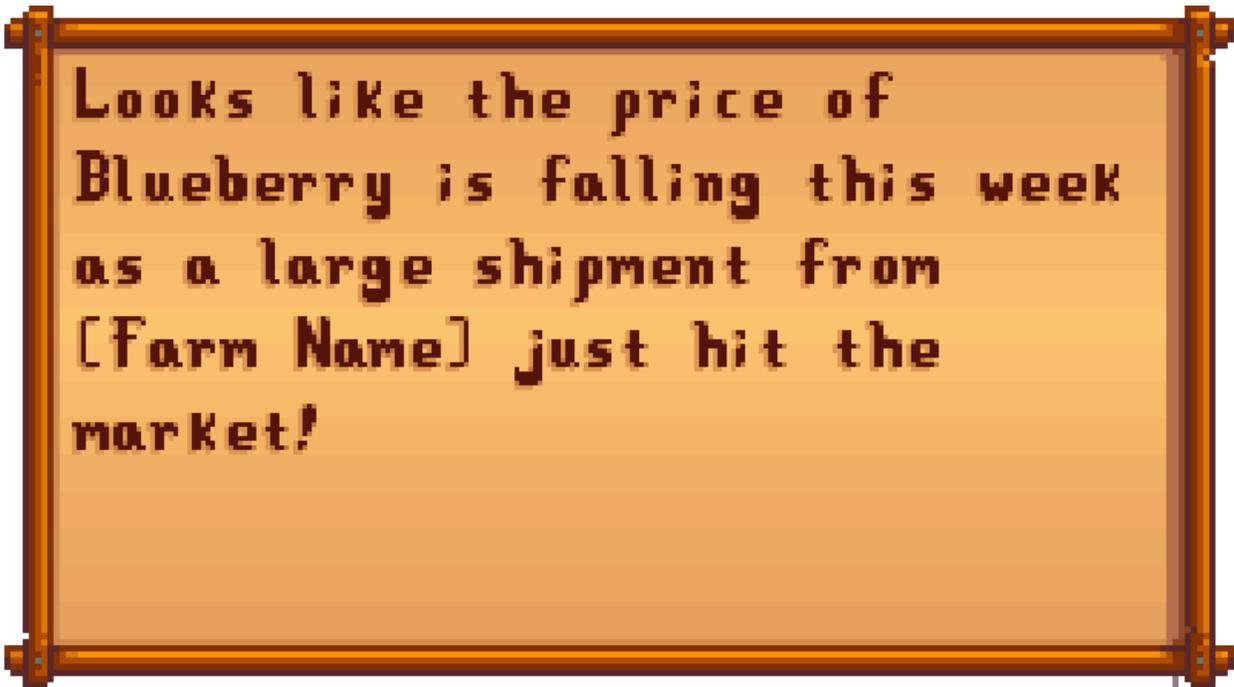


Figure 8 - Mockup of the Computer display for Strawberry

This is a new item that the player will be given access to. Once the player has shipped at least one of an item, they will be able to see that item's current market price on the computer. The item's price will be shown in a graph, the bottom axis being the 16-week timeline of the season. Additionally, the computer will show any other shifters to the market price, like the seasonal effect and the industry state.

## Zuzu Business Insider



*Figure 9 - Example line from Zuzu Business Insider about the prices of Blueberry dropping*

This is a new television show that the player will be able to watch. The player will have access to it once a week on Saturdays, similarly to how the player can watch the cooking channel, The Queen of Sauce, once a week on Sundays. The show will inform the player about which item this week will have the biggest price increase, and which item will have the biggest decrease. At the end of each year, the show will also inform the player about the different industry changes that will occur in the following year.

## Mail

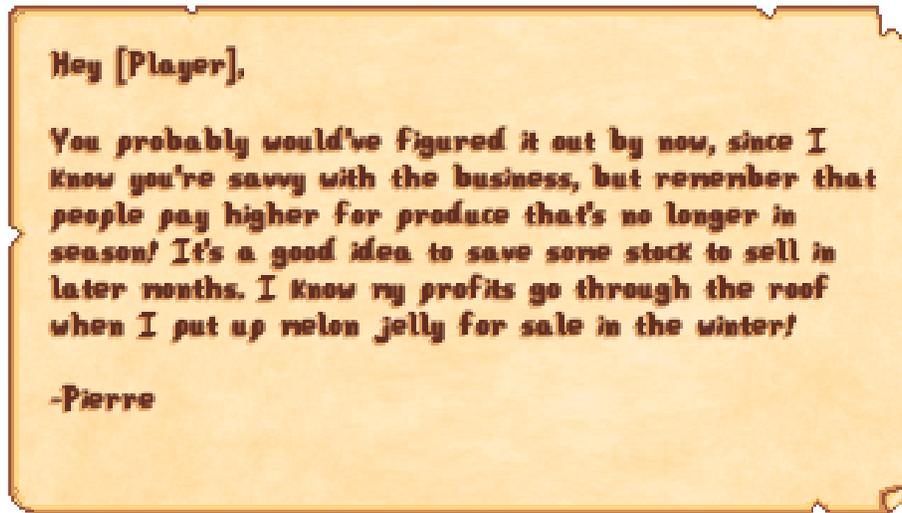


Figure 10 - Example letter informing the player about seasonal price changes

Similar to the letter the player receives telling them about the price change of wood and stones, the player will also receive a letter in the first season of the game telling them that the prices of items not currently in-season will be higher than those in-season. The player will also receive a newspaper in the mail at the end of each year, which will tell them what the industry states the year will look like. This newspaper will be available in their collections tab to look at any time.

## Evaluation

### Inspirations

#### Slime Rancher



Figure 11 - Slime Rancher's market system, the values of different items either increasing or decreasing

The biggest inspiration for this system is Slime Rancher’s dynamic market system. The game has items flood and starve the market, but the changes take place each in-game day, rather than over the course of a week. In my research, I found that Slime Rancher was very effective in forcing the player to diversify their sources of income, which is why I emulated it in the market system for Stardew Valley. The things I found that were done poorly in Slime Rancher were simply the player not having enough time to sell all their items on good market days, but this problem is already mitigated by the differences in Stardew Valley and Slime Rancher’s inventory systems. However, having the timeframe be a week for this system better accommodates it as well, given that crops and certain items take multiple days to be ready to sell.

My Time at Portia



Figure 12 - My Time at Portia’s global market price value affecting the price of an item

While not as heavily inspired by My Time at Portia, certain aspects of the system are influenced by it, especially the industry market values. My Time at Portia's dynamic market is a single market value that affects the buying and selling prices of items. My research into My Time at Portia found that the simplicity of the system was both a pro and a con. The system being a single number meant that it was incredibly simple for new players to understand and get used to, but it meant that it felt extremely shallow as well. It added no depth to the world as all industries and types of items—stone, bread, flowers—were affected the same way with no player input. It didn't matter how many stones a player sold, as the market price could increase the next day regardless. This was the main reason I separated a global market value into industry values instead, as I feel like it adds more depth to the world.

## **Design Goals**

### Player Progression

The main goal of this system was to stagger player progression, making it easier to gain money in the early game and lessen the amount in the late game. I feel like this system effectively does this, as at the start of the game, the player won't have many crops from the start, meaning they can stockpile them for better prices in the coming weeks.

### Shipment Diversity

This system forces players to have multiple different sources of income. If the player only focused on farming one specific crop, they would only be able to sell it for a profitable price at very far intervals. This system forces the player to use alternate sources of income, like animal products—a feature that largely gets neglected in favour of farming crops—to produce a consistent source of revenue.