

# Crop Design

*Note: Most of my work is proprietary and property of the companies for whom I have worked. This sample was originally part of a design evaluation for another group, and it was well received. Since it is not owned by any company like most of my design work, I'm repurposing here as sample.*

For the purpose of this exercise, I worked with a theoretical farm-style game that works under the premise that the creatures that inhabit the "farm" eat gems and crystals. I have included the excel spreadsheet that contains my raw data, but I will also be pasting much of it here within the document so I can provide my explanations.

## Number of Farms and Level Unlocks

In this example, I worked with a 50-level spread. Below are the levels in which a particular farm (or grotto, as I refer to them below) is unlocked.

- Level 1 – Small Crystal Grotto, 1 Grotto
- Level 2 – 2 Grottos
- Level 4 – 3 Grottos
- Level 7 – 4 Grottos
- Level 10 – 5 Grottos
- Level 14 – 6 Grottos
- Level 18 – 7 Grottos
- Level 20 – Large Crystal Grotto (upgrade)
- Level 23 – 8 Grottos
- Level 28 – 9 Grottos
- Level 33 – 10 Grottos
- Level 38 – 11 Grottos
- Level 40 – Massive Crystal Grotto (upgrade)
- Level 44 – 12 Grottos
- Level 49 – 13 Grottos

The two different grotto upgrade unlocks come at 20-level intervals, the first one 40% of the way to the end and the second 80% of the way to the end.

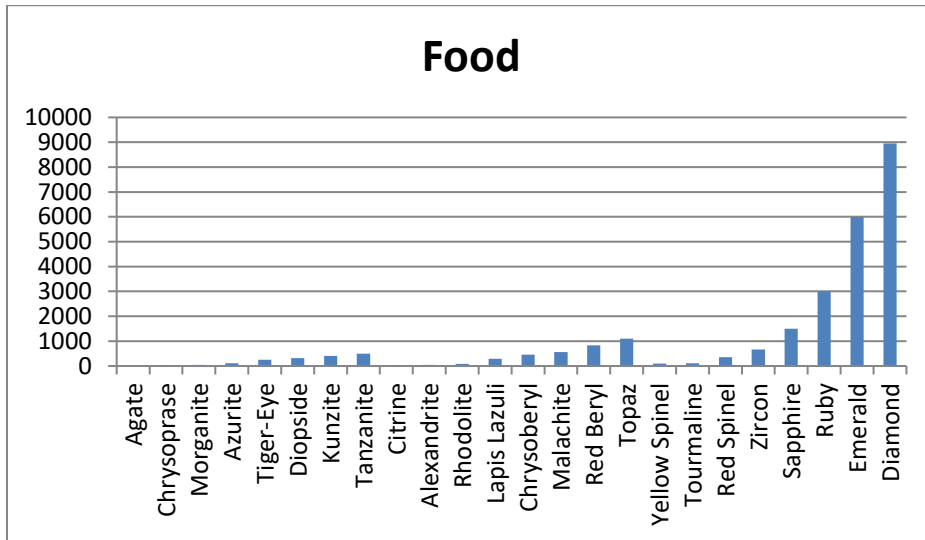
The number of grottos starts off growing fairly steadily. The first two grottos come at levels 1 and 2, respectively. Then it skips a level before the next one shows up. The next two skip two levels, the following two skip three levels, then four levels, etc., up until the 13<sup>th</sup> grotto. This is using the traditional leveling progression design in which the rewards are spaced farther and farther out. There would likely be other types of rewards, such as animal unlocks, at other levels so that the player is already rewarded with something. This approach spreads out the rewards and makes the more advanced levels more significant.

## Table of Statistics

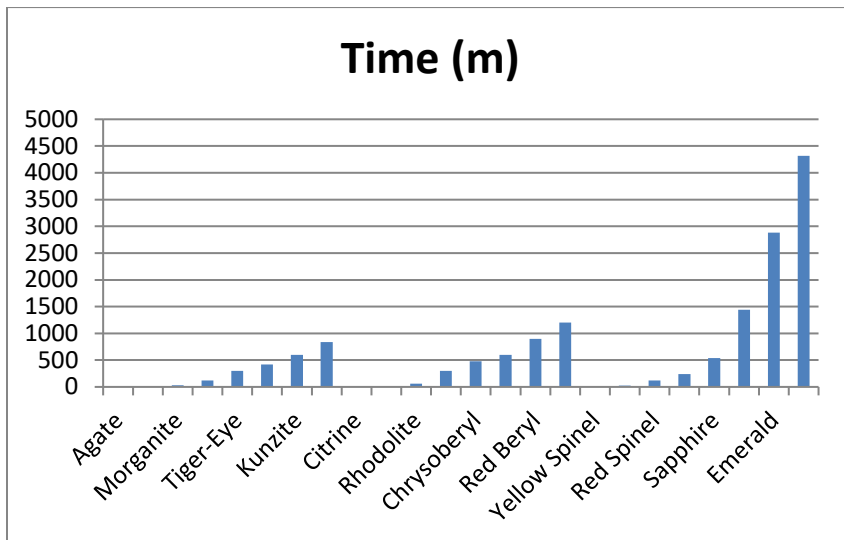
The table of statistics includes the name of the food source, the amount of food it provides, the time (in minutes) before it is ready to harvest, the cost of the crop (in undetermined units), and the experience gained from harvesting the crop. In addition to those statistics, the table also reveals the food per hour, cost per food, cost per hour, and cost per experience, as well as the grotto-level required for that crop type.

	Type	Food	Time (m)	Cost	XP Gained	Food per hour	Cost per food	Cost per hour	Cost per XP	Pre-req
1	Agate	10	0.5	10	5	1200.00	1.00	1200.00	2.00	Small Crystal Grotto
2	Chrysoprase	15	1.5	40	40	600.00	2.67	1600.00	1.00	Small Crystal Grotto
3	Morganite	40	30	65	50	80.00	1.62	129.77	1.30	Small Crystal Grotto
4	Azurite	110	120	115	75	55.00	1.05	57.50	1.53	Small Crystal Grotto
5	Tiger-Eye	250	300	165	95	50.00	0.66	33.00	1.74	Small Crystal Grotto
6	Diopside	310	420	200	110	44.29	0.65	28.57	1.82	Small Crystal Grotto
7	Kunzite	405	600	260	140	40.50	0.64	26.00	1.86	Small Crystal Grotto
8	Tanzanite	495	840	310	165	35.36	0.63	22.14	1.88	Small Crystal Grotto
9	Citrine	25	2	30	20	750.00	1.20	900.00	1.50	Large Crystal Grotto
10	Alexandrite	45	5	90	210	540.00	2.00	1080.00	0.43	Large Crystal Grotto
11	Rhodolite	90	60	110	245	90.00	1.22	110.00	0.45	Large Crystal Grotto
12	Lapis Lazuli	290	300	250	280	58.00	0.86	50.00	0.89	Large Crystal Grotto
13	Chrysoberyl	460	480	390	320	57.50	0.85	48.75	1.22	Large Crystal Grotto
14	Malachite	560	600	470	370	56.00	0.84	47.00	1.27	Large Crystal Grotto
15	Red Beryl	830	900	680	425	55.33	0.82	45.33	1.60	Large Crystal Grotto
16	Topaz	1105	1200	895	490	55.25	0.81	44.75	1.83	Large Crystal Grotto
17	Yellow Spinel	95	15	100	100	380.00	1.05	400.00	1.00	Massive Crystal Grotto
18	Tourmaline	110	25	200	400	264.00	1.82	480.00	0.50	Massive Crystal Grotto
19	Red Spinel	350	120	410	560	175.00	1.17	205.00	0.73	Massive Crystal Grotto
20	Zircon	670	240	695	783	167.50	1.04	173.75	0.89	Massive Crystal Grotto
21	Sapphire	1500	540	1340	1095	166.67	0.89	148.89	1.22	Massive Crystal Grotto
22	Ruby	3010	1440	2590	1533	125.42	0.86	107.92	1.69	Massive Crystal Grotto
23	Emerald	5990	2880	4500	2350	124.79	0.75	93.75	1.91	Massive Crystal Grotto
24	Diamond	8950	4320	6000	2915	124.31	0.67	83.33	2.06	Massive Crystal Grotto

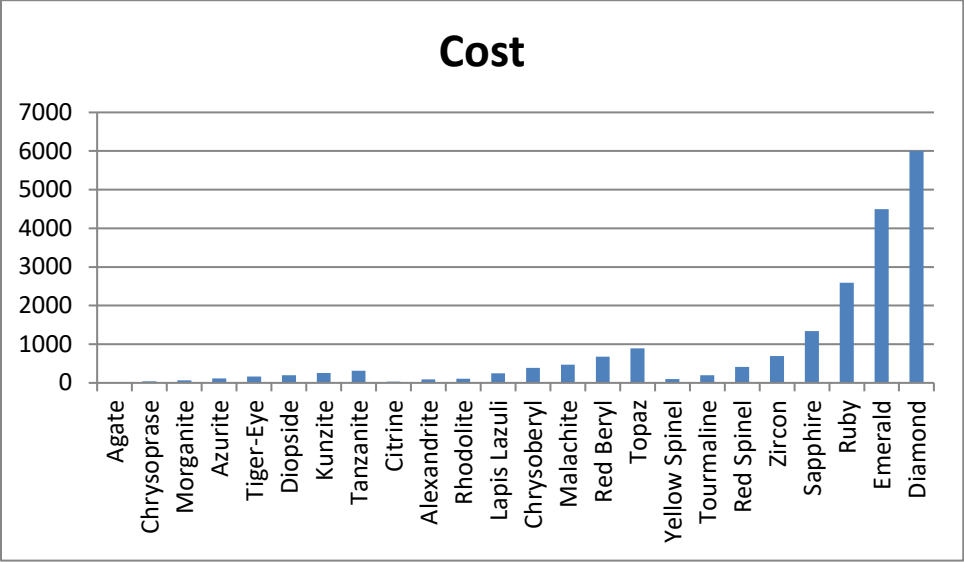
The values in this table were determined by using a starting point, then a trending growth series (using excel), and a comparison of how I wanted charts for these items to look. The colors of the crystal type is to help me keep track of the gems associated with a particular type of grotto (so that when I sorted them in excel, I could easily see where they went).



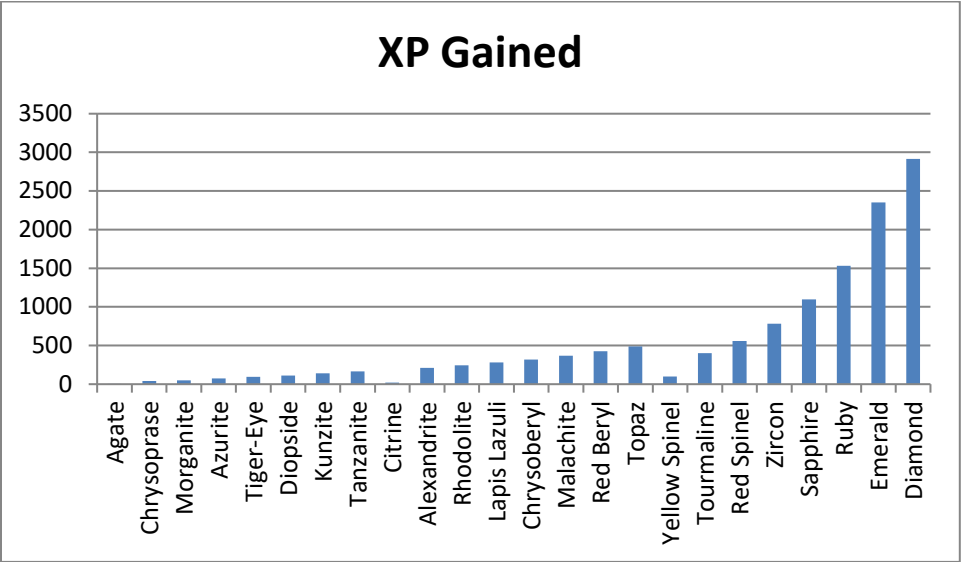
Note 1: Trends upward. As the player progresses, more food is produced. The small grotto, overall, produces the least amount of food, but with each grotto size, there is some overlap. So the lowest end gem in the Large Crystal Grotto produces a bit less than the best gem in the Small Crystal Grotto. The player is encouraged to upgrade to keep up with feeding demands.



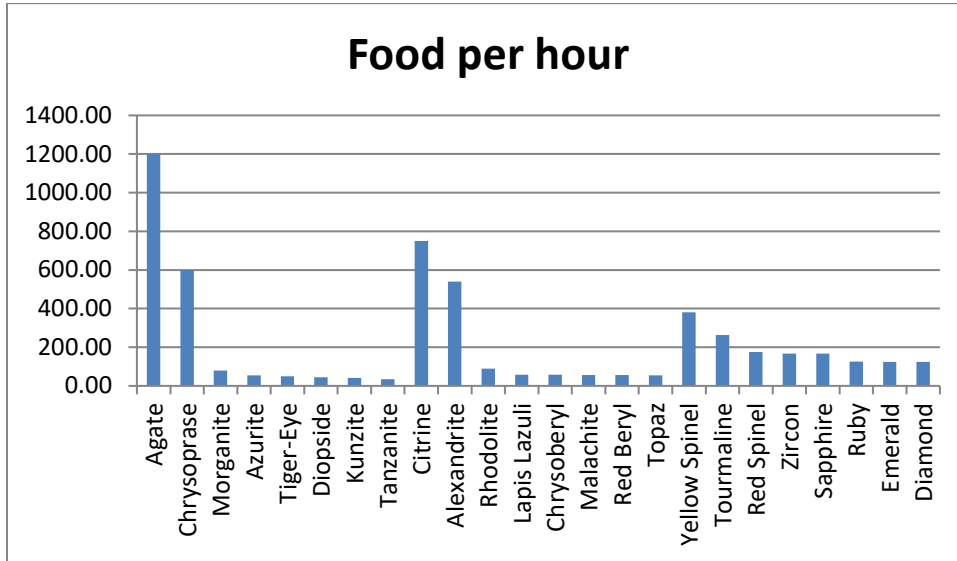
Note 2: Like food, the time required to harvest more advanced gems trends upward. Similarly, there is an overlap between the highest type of item within a particular grotto and the lowest item in the upgraded grotto.



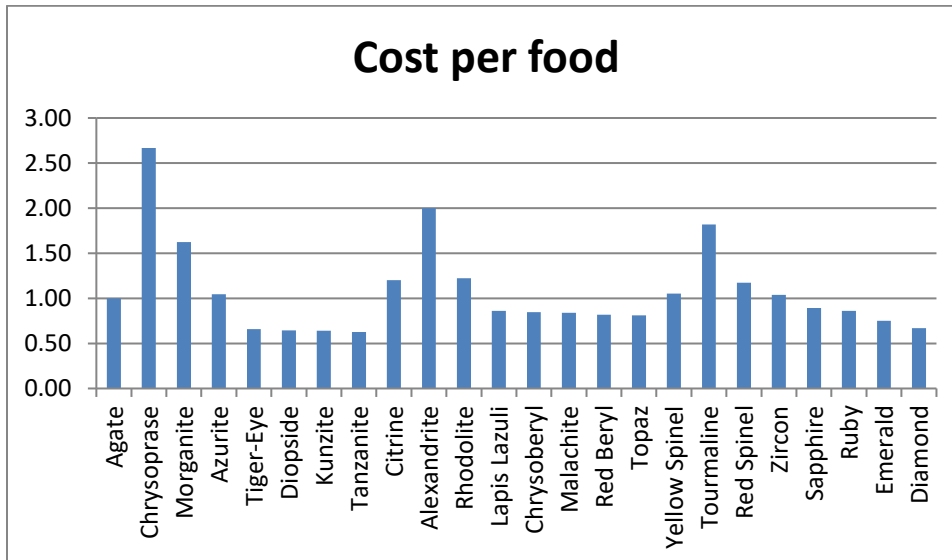
Note 3: The cost to purchase gems starts relatively low. Though it trends upwards, the trend is very gradual for most of the way and then climbs rapidly when the player gets to the precious gems.



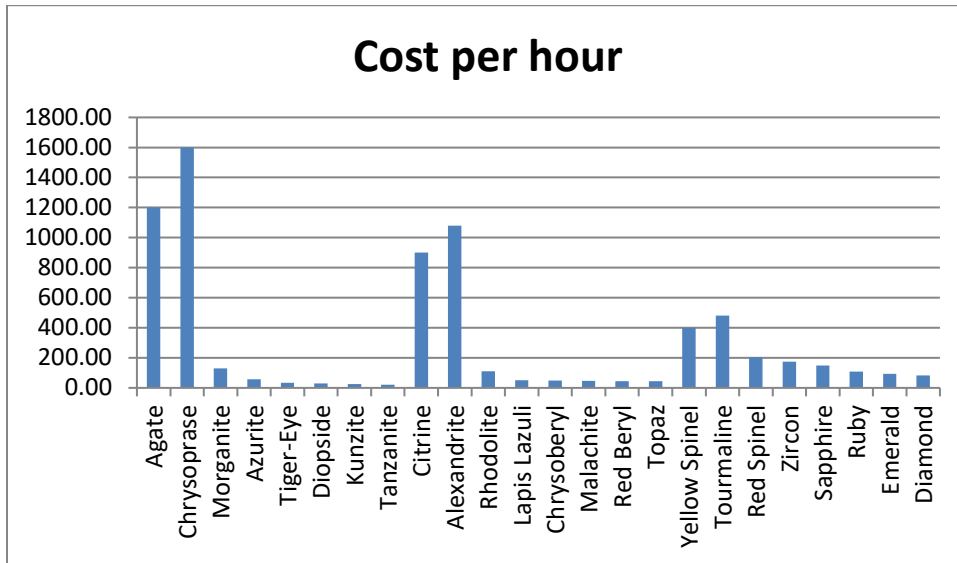
Note 4: Like the other statistics, experience gained from harvesting gems trends upward along with the time and cost invested in them.



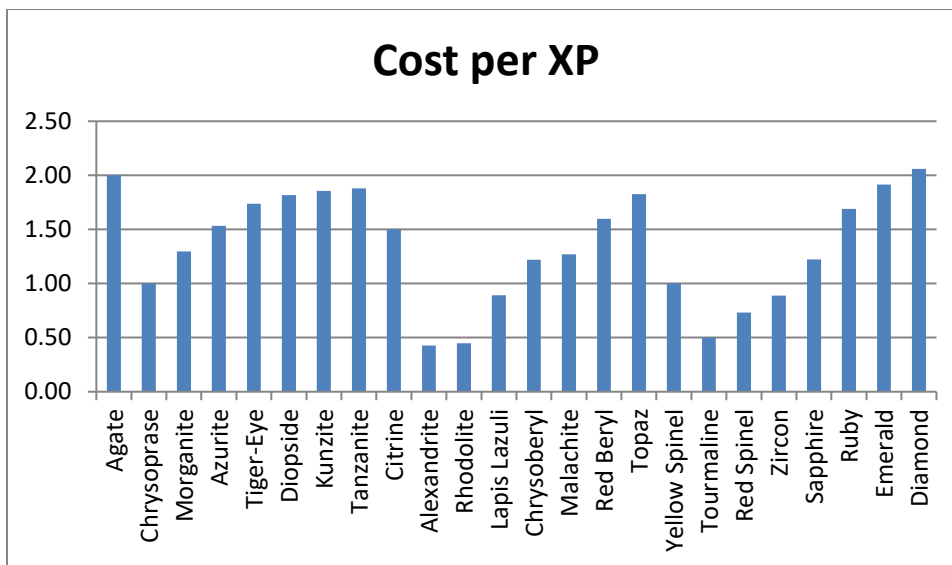
**Note 5:** The amount of food a player can get per hour, in general, decreases as the player gets in to the more advanced gems. The first gems in each grotto can be harvested to significant quantities, but they require constant attention to do it efficiently.



**Note 6:** To provide a low barrier to entry for the initial gems in each grotto, the cost per item of food retrieved is relatively low. That cost then jumps up with the second item in a given grotto and then trends downward. However, when a player looks at these in the list of possible crops, this number two item appears to be of a moderate amount of time investment and a decently high food yield.



Note 7: This chart details how much it costs to get 1 unit of food per hour.



Note 8: Ultimately, the goal is to get experience and advance through levels. This chart details how much it costs a player to earn each experience point.

### Energy Cost and Wither Time

In a game in which harvesting crops alone is the primary mechanism of advancement, then energy cost and wither time are more appropriate. However, for a game in which the harvesting crops is merely a step within a bigger mechanism for advancement, such as feeding pets, then energy costs and wither times are not necessary; time itself is sufficient.