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1. **What your own-choice quantity was and how it fits into the simulation**

Ans: For this simulation, I introduced FireEvent as an additional agent. It represents environmental disturbances such as wildfires or extreme heat waves. FireEvent is modeled to occur randomly but infrequently, with its intensity 0 or 20. When FireEvent is active (i.e., greater than 0), it drastically reduces grain height by simulating vegetation damage. This also indirectly affects the deer population, since deer depend on grain as a food source. The FireEvent variable introduces an external, non-cyclical disruption, adding realism to the simulation and demonstrating how sudden environmental shocks impact ecological balance.

2. **A table showing values for temperature, precipitation, number of deer, height of the grain, and your own-choice quantity as a function of month number.**

Ans:

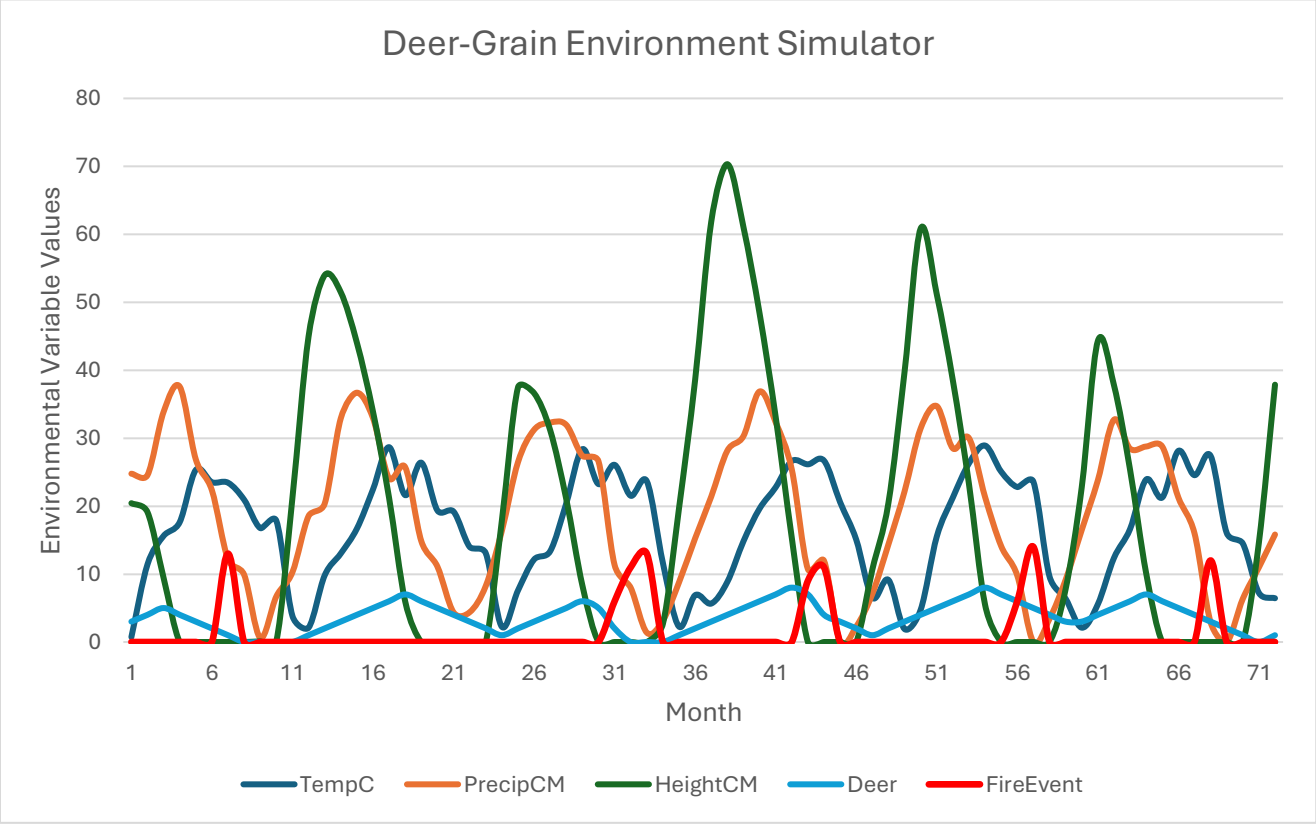
Month	TempC	PrecipCm	HeightCm	Deer	FireEvent
0	0.73	24.77	20.43	3	0
1	11.42	24.56	19.11	4	0
2	15.61	33.87	9.43	5	0
3	17.63	37.58	0	4	0
4	25.32	26.87	0	3	0
5	23.52	22.32	0	2	0
6	23.44	12.16	0	1	13
7	20.94	9.9	0	0	0
8	16.76	0.61	0.09	0	0
9	17.84	6.71	0.14	0	0
10	3.82	10.28	21.26	0	0
11	2.1	18.53	44.96	1	0
12	9.8	20.35	53.98	2	0
13	13.02	32.91	51.48	3	0
14	16.68	36.69	44.05	4	0
15	22.46	32.96	33.9	5	0
16	28.67	24.08	21.2	6	0
17	21.61	25.73	5.96	7	0
18	26.39	14.84	0	6	0
19	19.36	11.1	0	5	0

20	19.2	4.37	0	4	0
21	14	4.38	0	3	0
22	13.07	8.24	0	2	0
23	2.24	16.36	17.87	1	0
24	7.58	26.46	37.46	2	0
25	12.14	31.23	36.63	3	0
26	13.36	32.29	31.17	4	0
27	20.42	31.95	21.01	5	0
28	28.38	27.38	8.31	6	0
29	23.24	26.59	0	5	0
30	26.07	11.32	0	2	6
31	21.52	7.98	0	0	11
32	23.66	1.38	0	0	13
33	11.61	3.19	2.69	0	0
34	2.26	8.79	19.71	1	0
35	6.89	15.26	38.59	2	0
36	5.66	21.4	61.86	3	0
37	8.85	28.16	70.32	4	0
38	14.83	30.3	61.05	5	0
39	19.63	36.87	48.36	6	0
40	22.77	32.33	33.12	7	0
41	26.63	25.4	15.34	8	0
42	26.15	10.73	0	7	9
43	26.69	11.96	0	4	11
44	20.58	0	0	3	0
45	15.07	2.26	0	2	0
46	6.53	7.08	10.65	1	0
47	9.14	14.37	20.47	2	0
48	1.91	22.15	39.73	3	0
49	4.73	31.43	60.85	4	0
50	15.5	34.72	51.19	5	0
51	21.26	28.5	38.5	6	0
52	26.29	30.01	23.26	7	0
53	28.91	21.34	5.48	8	0
54	25.07	14.11	0	7	0
55	22.81	9.77	0	6	6
56	23.59	0	0	5	14
57	9.66	3.4	0	4	0
58	6.38	9.14	7.76	3	0

59	2.11	16.47	22.73	3	0
60	5.55	23.79	44.29	4	0
61	12.36	32.71	37.81	5	0
62	16.62	28.46	25.36	6	0
63	23.91	28.77	10.12	7	0
64	21.27	28.76	0	6	0
65	28.13	21.26	0	5	0
66	24.55	16.01	0	4	0
67	27.4	2.92	0	3	12
68	16.06	0	0	2	0
69	14.5	6.36	0	1	0
70	7.23	10.98	14.64	0	0
71	6.44	15.82	37.87	1	0

3. A graph showing temperature, precipitation, number of deer, height of the grain, and your own-choice quantity as a function of month number. Note: if you change the units to °C and centimeters, the quantities might fit better on the same set of axes.

Ans:



4. **A commentary about the patterns in the graph and why they turned out that way. What evidence in the curves proves that your own quantity is actually affecting the simulation correctly?**

Ans: The graph reveals strong seasonal patterns in temperature and precipitation, which directly drive the behavior of grain height and deer population. During months with moderate temperature and sufficient rainfall, the grain height increases steadily, providing more food and allowing the deer population to grow. However, during the summer months (around months 5–8, 17–20, 29–32, etc.), FireEvent is triggered under hot and dry conditions. These fire events cause sharp collapses in grain height, which are clearly visible as steep drops in the HeightCM curve. Immediately following these grain crashes, the deer population also declines due to reduced food availability. The timing and intensity of the drops in grain height and deer population closely match the occurrence and strength of the FireEvent spikes, proving that FireEvent is actively and correctly affecting the simulation. This pattern confirms that FireEvent introduces realistic, impactful disruptions into the ecosystem dynamics, accurately reflecting the intended behavior of environmental disturbances.