The Ultimate Survival Endless Guide

Theory and Practice

v2.0

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Contents

Preface

This PDF was created via LaTeXby Klaus[1], thus the Table of Contents looks different and many graphics were re-created.
It regards the interesting game **Plants vs. Zombies** for Windows, Mac OS and iPhone.

`http://en.wikipedia.org/wiki/Plants_vs_zombies`

1 Introduction

1.1 Overview

I really don't care what happens to the information presented on this page, post it wherever you like.

Any questions, comments, concerns, or if you have new ideas, new tactics, or just a willingness for PvZ discussion, you can email me:

emailisforidiots@gmail.com

1.2 Summary

This guide is designed to give you the requisite knowledge to build your own Survival Endless layout that will survive indefinitely. Whether you're here for curiosity, for fun, or for money, this guide will equip you with the latest and most effective strategies known.
You shall be a Survival Endless master even if you come in here not knowing what this mode even is.

This guide will be broken down according to how every build must deal with the zombie pressure. I'll be here to show you how each area of the map has its own tricks up its sleeve and what answers have been given to the problems presented.
Like any game with varied strategy, there is always preference for who wants to play what. Cob Cannons are such a dominant force in Survival Endless that every build can be categorized by how many Cob Cannons there are.
Before we go into the detail of Cob Cannons, I shall introduce you to the regionalization of the map.

[1]Klaus Breuer, http://www.breueronline.de/klaus/

2 The Layout

The map is a 9 column by 6 row grid and you'll notice a couple of things right off the bat. The map is symmetrical, therefore there is always a top region corresponding to a bottom region that deals with the exact same pressures but not necessarily at the exact same time. For simplicity, I will refer to each as pairs.
The pairs of rows in the water are referred to as Pool Rows. The pairs of rows closest to the edge of the pool are called Inner Rows. And finally, the outermost rows furthest from the pool are Outer Rows.
I do this because then you don't have to count the row to figure out which I'm referring to. This is very easy to visualize.

3 The Ground

You'll also notice there's a region of the map not labeled. It's the front-most 2x2 square on the ground. This is that way for good reason. No plant can survive there. You will find out very shortly that the primary difficulty of surviving Survival Endless comes from fighting the ground forces.
The Zomboni, Giga, and Catapult zombies will make quick work of anything placed there, even with maximum possible DPS (damage per second) from Torchwood plus Gatling with Glooms helping out.

The corresponding brown region (column 7 counting from the left) behind the death zone is reserved for highly replaceable plants, because they serve as a buffer and will undoubtedly come into contact with all sorts of zombies.
Only put easily replaceable plants here. This area is where you would put your queued up Freeze Shrooms, Spikerocks, or Fume Shrooms, but we'll leave the explanations for that later.

The orange region behind that (columns 5 and 6 counting from the left) are important because they are very safe. Unless a zombie breaks your front lines, these plants will see very little action.
Imps are thrown over it, and everything else attacks other regions before they get to this one. This is a very good place for Cob Cannons because of that. It is also the best determiner for how healthy

your base is because this **is** your main line. If any of the plants in this area are compromised for long, you will have some serious worrying to do.

The green region behind that (columns 3 and 4) are no different from the orange region except that they are vulnerable to Imps from the Gargantuars.
This restricts them from being Cob spots, but Pumpkins allow any other plant to be there. The main concern of this region is what should be done to take care of those Imps and the remaining spots are used toward helping out the rest of the build.

The final back region, which happens to be blue (and columns 1 and 2), has very special properties because of the unique pressures it has to face.
Catapult zombies go directly for your 1st column of plants, so this region **must** contain an Umbrella plant. The remaining 3 slots must then protect the base from Digger zombies that also happen to target the 1st column. If that's not enough, this area must also handle the Imps who overshoot the previous green region.
We'll discuss later on how that is accomplished, but now on to the pool regions.

4 The Pool

The pool is far, far simpler than the ground because of simpler zombie design. Only Dolphins and Jacks will give you trouble. Notice how you can plant things right up front because of the easier nature of these zombies.

The first region, the red (columns 8 and 9), represent the area that will be directly dealing with the mass of regular zombies, but there is always the constant threat of an immediate Jack explosion.
The Jack steps onto the map and explodes instantly after, taking out either one or both of the plants in that region. Although very rare, it can happen at any time without warning. This fact is very important for the 6 Gloom setup because Glooms are a vital part of the build's DPS; they're expensive, and take long to replace.
The vast majority of builds use the power of this setup; there are exceptions but this region's vulnerability is important to the survival of **a lot** of layouts. We'll discuss how to deal with it in detail.

The white region behind that (columns 5, 6, and 7) is a very stable area because only Dolphins and ambush zombies (that pop from underwater at the middle and end of the level) nibble at your plants (column 7 is also safe from ambush zombies).
The Dolphins are the bigger threat because they waste no time getting over there and getting to work. This area will require constant Pumpkins most of the time.

The backmost purple region of the pool (columns 1, 2, 3, and 4) is completely and utterly safe. You will lose before these plants are compromised. They don't even need Pumpkins. They serve as good Cob spots or areas to put your Twin Sunflowers.

That concludes all the regions of the map. Now let's move to the plants you're going to be putting on these regions.

5 The Plants

The design philosophy of a successful Survival Endless build involves using the upgrade plants. These plants get 50 sun more expensive for every instance of that plant on the field in Survival Endless, which is a unique restriction for this mode. Many plants start costing 700 – 1100 sun at any given point.
People would assume that using cheaper un-upgraded plants would be the way to go, but the goal of using upgrade plants is to make a build so good, by maximizing the effectiveness of each tile, that losing the expensive plant is extremely rare.

5.1 Offensive Plants

5.1.1 Gloom-Shroom

This is the heart and soul of **any** successful Survival build that I've come across.
The reason why we categorize builds by number of Cobs is because not every build has Cobs, but every known successful build up to this point has Glooms. These guys have unparalleled DPS to all the zombies within a 1 tile radius of itself. With enough of these guys, everything will fall.
They do have a few weaknesses, though. They suffer most from the upgrade plant penalty. Their price will range from 500 to 1200 sun normally because of the abundance of Glooms you'll have on the field. They also have a long cooldown, so they can only be built or replaced one at a time in between long intervals.
Don't forget that you need to wake these guys up too since it's during the day, which is another 75 sun.
They are also extremely vulnerable to Jacks. Even though they can make quick work of Jacks once they're in range, the Jacks can still explode when they're close but still alive. Jacks can take out 1 – 2 Glooms in an instant, and are considered very dangerous for this reason.
Since Glooms are the bread and butter of nearly every build, the survival of the build is contingent on keeping them alive. Replace as soon as possible.

5.1.2 Cob Cannon

While the Glooms are required by every build, the Cob Cannons are extremely influential in how you play your build. These guys require two slots and cannot use Pumpkins.
So, any spot where any zombie has a decent chance of nibbling on these plants will be off-limits. They can easily cost 1000 sun just like Glooms, have a long cooldown, and the void left by their death can definitely be felt. Replace as soon as possible.

They work exactly like Cherry Bombs with their blast radius, which is a 3x3 area centered on where you click. They also have the added benefit of having a lower cooldown of 30 seconds when the Cob lands.
A lot of builds are designed around the constant use of extreme force of these explosions at the front of the map. They also have the benefit of being ungrabbable by Bungee zombies because they're too big.
One can come up with interesting layouts to make their base less vulnerable to Bungees with this information.

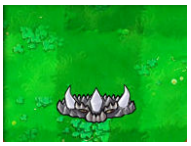
5.1.3 Fume-Shroom

This mushroom is the little cousin of the Gloom. While these do not attack nearly as fast as the Gloom does, their range is a lot longer. They, like their cousin, attack all units in their range, which happens to be exactly the 4 tiles in front of them.
This has certain advantages and complements the weakness of Glooms rather beautifully. These guys are extremely useful for taking out Jacks and Zombonis, in addition to adding more DPS to everything in the row. Combinations of Fumes and Glooms can make you immune to Jacks, which is very important as we shall see later on.
They also have a low cost and low cooldown, which makes them easily replaceable, but you do need the Coffee Bean. Their overall DPS contribution is small so their priority is less.

5.1.4 Winter Melon

Melon-Pults should not be used in Survival Endless.
There has been some controversy over their DPS vs. Winter Melons, but I've personally tested it myself and Winter Melons not only do more damage to zombies than their unupgraded counterparts (unless the shot is blocked by buckets, doors, etc., then it's equal), but they also provide that lovely splash snare. The snare in PvZ is very useful because it is a 50% reduction of movement **and** attack speed. Very few builds can live without the synergy potential of snare.
These guys attack their row at any distance and vary their initial timing, but it stays constant after that. Their impact does a sizeable amount of damage (4 – 5) to the zombie they're targeting and 1 damage to everything within a 1 tile radius of that impact point. It is highly recommend having at least one Winter Melon in each row (even Pool) for this reason.
They all do well to cover for each other. If you only have one in the row, be warned that it can get distracted by landing Imps if it's too far back, or zombies will just naturally become unsnared by random chance.
There is nothing wrong with adding additional Winter Melons to the important rows if the build benefits from it.

5.1.5 Spikerocks



These guys have their place in Survival Endless, but it's not for what you think. They are mainly used as buffers for Gargantuars, actually.
A Spikerock can take 9 swings before it dies (3 per spike) or tire pops from Zomboni/Catapult zombies. They are moderately expensive and their cooldown is also moderate. So they're replaceable but not as easily as other things.
Because of this restriction, you can't just wantonly place them like you could in other modes. They still can't go in the death zone mentioned earlier, but the brown region right next to that is where they find good use.
In Cob builds, they serve as a deterrent for Dancer zombies, Zombonis, and Gargantuars. However, they cannot handle them alone. They're only used as a safety net if you make mistakes with the Cob timing. In this fashion, you can actually afford the upkeep.
Another interesting application of Spikerocks is actually for Digger zombies. If placed in the far left column where the Digger zombies pop out, they will die before they reach the next plant. It's rather nifty but I never use them that way because they do not help with the Imps. You can use them for Imps too, but then they can't be used for Diggers. I'll explain in detail about this later.
They also can attack any and all zombies within range, ignoring shield damage, treating most zombies as the 10 hp lamers that they are, which is pretty cool.

5.1.6 Gatling Pea/Torchwood

Finally we have Fire Pea builds! These guys are really great at burning down just about anything, but it's tough to push back a huge wave when there's Zombonis and Screen Door zombies and Gigas to deal with.
By themselves, they cannot manage certain units, but with the help of Freeze Shroom or Cob Cannons, there seems to be work-arounds.
Their strength is that they melt things. Their weakness is their inefficiency with their shot. If their shot gets blocked, they suck really hard.
Diggers and Imps can get in the way real quick, so some players put a Split Pea in front of the Torchwood to handle both the Digger and the Imps in that row, since the Split peas can shoot a double fire shot backward. It contributes about as much as 1 Gloom's worth of DPS to Diggers and 1.5 Glooms to Imps.
Some other people put Fumes in front to counter Screen Door, or Spikerock to counter Giga/Zomboni. But there are still a lot more limitations to them.
They only damage things right up in front, and unsnare potentially dangerous zombies. Unsnared Gigas are scary.

You normally have to dedicate an entire row to Peashooter/Torchwood, and it only seems to be viable for the outer row. They serve as an alternative to Fume/Winter Melon since the bread and butter DPSer types are few and far between. They're fun builds and they're useful if you want a challenge.

That concludes the offensive plants. You'll notice that I've omitted a great deal of plants you normally would use in other modes. However, in Survival Endless, they either do a negligible amount of damage because of their single target nature, or their use is too impractical for the magnitude of units you're going to face.
Now, we shall move on to the niche plants.

5.2 Niche Plants

The niche plants, as the name implies, serve a very specific and unique function that is either required or recommended for any and all layouts. Luckily there aren't too many of them.

5.2.1 Umbrella Plant

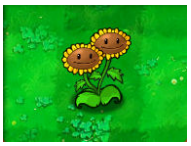
These guys are absolutely necessary, end of story.
They serve the function of blocking (within a 1 tile radius of their placement) the Catapult shots, which ignore your Pumpkins and destroy your plants with just a couple of hits. The Catapult zombie will always attack the backmost plant of its row, so it is required that you put an Umbrella Plant in the blue region on the map (ground columns 1 or 2) because only in those spots can the Umbrella reach the back.
For builds where you potentially leave the back columns open, it'll still attack the farthest back planted tile, so you cannot avoid it. After that, Catapult zombies can be ignored.
Umbrella Plants also have the added bonus of blocking Bungees from stealing your plants. Aside from the necessary 2, you can have additional ones in your map. Bungees are usually not a big threat for reasons we shall see, so it's not entirely recommended.
You can make interesting designs using a combination of Umbrella Plants, Cob Cannons, and Gloom Shrooms to block off your valuable plants from this threat.

5.2.2 Cattail

These guys are very useful for constructing a build before its completion, also good for picking off some zombies in a significant amount, and also good for helping with Digger zombies sometimes, but they're mainly used for Balloon zombie control. You need two of these Cattails to take care of air

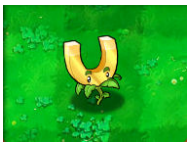
indefinitely.
There is another stipulation, and that's if the Cattails are too close to the front (3 tiles or less from the right edge), then they have a chance of letting a Balloon zombie pass.
Cattails attack the closest zombie to them (always air first) and continue sending lagging shots to a unit until it is dead. The closer they are to their target, the less downtime they have in between target switches, which means more DPS.
Cattails are also not necessary and as an alternative you can bring along a Blover.

5.2.3 Twin Sunflower



They're powering your army and providing you with the currency to build your plants up. These should be kept in safe spots and in spots that are not very useful for other offensive plants.
The number of Twins required will be dependant on your play style. If you must make regular use of Cherry Bomb, Jalapeno, Squash, and Freeze Shroom, then 5 – 6 will be your recommended amount, because you also have to deal with Jack accidents and Pumpkins.
If you rely on Cobs and little use of items, you can get away with 2 – 4 Twins depending on the skill of the player and the maintenance required of the layout.

5.2.4 Gold Magnet



For those who want to use Survival Endless as a means of getting money, having about 2 of these on the map gets the vast majority of coins that drop.
A lot of optimized Survival builds are designed for those who are way past their need for money and are only it for the challenge. So, you can usually take one of these builds and replace 2 of the less necessary plants for Gold Magnets. Just make sure you know what you're doing, otherwise you'll find out the hard way.

5.2.5 Pumpkin

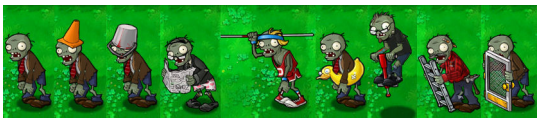
This is a no-brainer, an absolute must, and I usually forget that this is even a plant.
Whether or not you need the Imitater version of this depends on the maintenance requirements of

your build, which is the sum of your debt accumulated by Imp, Digger, Dolphin, and Football zombies. Jack explosions and Gargantuar/Zomboni squashings also affect this, but it's hard to factor their small influence into it.

Now that we're done with the tools you'll be working with, it's time to take a look at the opposition you'll be facing.

6 The Zombies

6.1 The Horde



These are the Regular, Conehead, Buckethead, Newspaper, Pole Vaulting, Dutchy Tube, Pogo, Ladder, and Screen Door zombies. For all intents and purposes, these guys can be ignored if you're doing the build right. They're the lowest on the totem pole because of their relatively unexceptional nature and are good for fodder and money.

6.2 Jack-In-The-Box Zombie

Jacks are quite possibly the simplest and most complex special zombies of Survival Endless. If not for these bastards, we would've had a fully automated build by now.
Alas, Survival Endless actually requires thinking, and we have our thanks to these guys, the killer of Gloom builds. They can be worked around.
They are of average health, equivalent to all the other bipedal specialist zombies (17hp) and they attack normally too. Their one special feature is that at (seemingly) random intervals, they explode and take out anything within a 1 tile radius. This can be disastrous for close range plants because there seems to be no way around getting close with the zombie horde all the time.
Well, I've already gone on long enough about how evil they can be, so what can people do to handle this threat? Well, there's one way of taking care of inner row Jacks, and two ways of taking care of outer row Jacks.

For inner row Jacks, you require two pool Glooms and 1 Fume that attacks off-screen.

Notice how the absolute right edge is about a third of another tile, which means zombies can be attacked before they even get on the grid.
The Fume can be closer but not too close for obvious reasons. Immediate Jack explosions should not plague you as long as you satisfy those conditions.
I've never personally witnessed a Jack explosion with this setup, but the rarity of Jack accidents requires a humungous sample size before we could get statistical confidence.

For outer row Jacks, you can Cob them before they reach your plants (which doesn't work out so well for those inner row Jacks since they explode before you can react) or you can use a special arrangement I discovered a while back to lead to the first Cobless build, which was a big deal because it was unheard of to not be using 6 Cob Cannons to get past 100.
Here's the bare minimum required to be Jack immune in their exact positioning.

It also has the added bonus of taking out Zombonis by itself along with most any other zombie except Football zombies and Gargantuars.
Now, we'll get a little more into discussion about this arrangement because there actually is some variability at a cost. For some odd reason, that exact distance from the right edge makes the build perfectly immune, no matter what. If the arrangement is moved forward one tile, it'll be crushed rather quickly, so the only alternative would be to move it back.
s it turns out, the farther back you move it, the more vulnerable to Jacks it becomes. One tile back, it may take your Gloom's Pumpkin (if the Gloom has no Pumpkin when the Jack nicks you, then it dies) with a very small chance of taking it out in one go.
This is still perfectly manageable and I've seen it put to good use in a lot of the minimalist Cob builds, where they only have 2 – 4 Cobs and let the zombies come to them, allowing the small number of Cobs to recharge in time.
Just remember that every tile you scale back, you lose 2 possible spots to be used for other plants, like Winter Melons.

As a final note, I've studied a lot about the nature of Jack explosions and their timing. The positions at which they explode are constant and occur usually as they cross the border from one tile to another. This a rough estimate and not necessarily true the farther back in the base you let them go.
Also, the farther they get, the more likely chance they have of blowing up since their missed opportunities for exploding continue to go up. At first it's, say, 1/8, then 1/7, then 1/6, etc.
These are just some things to keep in mind, and one day it'd be really helpful to find out exactly where all the explosions occur.
The final thing I'd like to mention is what really makes Jacks a force to be reckoned with. When you're in the later waves where multiple Jacks come out, they have a very deadly cascade effect as a product of not only weakening your defenses but increasing their probability of exploding as they go along. One blows up and takes out a Gloom, so the other 2 live, then another blows up a couple seconds later, and so on. This means that a chain of Jacks can take out 3 Glooms in an instant, possibly 4 if they take out your replacement before it can help.
That is also something to keep in mind and Jacks are always to be taken seriously.

Now, for Jack recovery, I'm going to assume you've sustained heavy losses, otherwise there's nothing to recover from and you're fine and dandy. But that will not always be the case.
When you hear a Jack Explosion, there's two possibilities, Inner Row or Outer Row. It is definitely within your interest to figure out which. Drop everything and assess the situation. Once you have a successful endless build, the only serious threat are these guys, so there is never harm in being too careful.
If its Outer Row, depending on the setup, you're usually safe and it's a lot easier to notice the damage since you're not going to be having Zombies obscuring your plants on the main line.
Inner Row, on the other hand can get pretty messy when Gigas come out. I always check my 6 Gloom first if I'm using it and I'll immediately replace a Gloom if 1 – 2 are taken out. Cannot stress that enough. Immediately. Every second you hesitate is another second only your 2 Glooms are handling the Gigas and not 3 or 4.
My next step is delay. Freeze Shrooms are great for this, and you don't have to go overboard with consumables unless the pressures really on. I'll Cherry Bomb afterward and that'll usually take care of 2 waves of zombies. Cherry Bomb is best if your build needs consumables for the outer row too. After that the Gloom/Cob cooldown should be up and your second replacement is finished.

If you run into more desperate situations, time delay is everything. Throw cheap squashable plants to protect your other plants, because you don't loss of your good plants begetting more loss of your good plants.

6.3 Zomboni

These guys are the ice machine rovers of death. They cannot be slowed and have a surprising resistance to damage especially by Winter-Pults. They leave a trail of ice behind that blocks placement of any plants there (sorry consumables!). Jalapenos can melt the row it affects but it's not that useful for this function because of its long cooldown.
Zombonis also flatten any plant in its way, making it especially dangerous and it is the second most likely reason you'll die in Survival Endless, next to Gargantuars.

Zombonis are usually taken care of by Glooms or Cobs, same as everything else. Inner row Zombonis that are not taken care of by Cobs or Spikerocks are taken out by the 6 pool Gloom setup.

Even with the 6 Gloom, they will reach that third tile from the edge if it's a Spikerock or a plant with a Pumpkin. Unpumpkined Fumes can survive surprisingly, which is why that inner row Jack setup actually works (see page 13).

Outer row Zombonis are taken care of similarly. You can either use the outer row setup for Jacks or rely on the all-powerful Cobs (see page 13).

I'd like to make a note that you should notice which plants have Pumpkins and which don't for good reason. Yes, you do actually need 2 Fumes and 1 Gloom as they are bare minimum for this to work.

Now you're probably all wondering why Pumpkins can make or break whether or not you get flattened by Zombonis. The answer lies in the fact that Pumpkins add width to the plant. If the Zomboni touches the plant, it gets flattened, so a Pumpkin decreases the distance the Zomboni has to travel to reach your plant. Pumpkins make your plants fat.
It really is that close and it is definitely worth it because now you can ignore even the monstrous Zombonis. Unpumpkined plants are obviously vulnerable to Football zombies, so you can use Pumpkins in the Zomboni's absence or just deal with the replacement costs (150, big whoop).

6.4 Balloon Zombie

Make sure you either use 2 properly placed Cattails or always bring the Blover card when they come around. Balloon Zombies can be snared by Freeze Shroom only and when their balloon pops, they can sometimes land on those unpumpkined plants annoyingly.

6.5 Football Zombie

They're more just annoying than difficult. They're the zombie that makes you want to Pumpkin your front but can't because of Zombonis. They'll eat your snare too because they just won't die.
When Football Zombies are in the composition, I usually pay extra attention to the snare application over the waves. Freeze Shroom is very good at destroying any damage/snare debt accumulated as a result of these jerks.

6.6 Catapult Zombie

Make sure to put an Umbrella in each 2x2 back corner, then you can forget about them. If you're not damaging the outer row Catapults, they'll eventually get bored (technically run out of ammo) and move forward.

6.7 Dolphin Rider Zombie

He's another of the more complicated zombies but with a very simplistic effect at the end of the day. He can take initial hits before entering the pool, but never enough to be killed off. He jumps in with invulnerability and arcs over your plants with invulnerability. He also happens to be immune to snare when in this leap-frogging process.
He's not actually invulnerable, because he can be killed at any point by a Cob, and Freeze Shroom works on him too. If you have the standard 6 Gloom, he'll land on your third column of Glooms and start nibbling away.
Without the Cob, you can only kill him so quickly, so he is usually guaranteed to get bites off. If he's snared prior to getting into the pool or Freeze Shroomed, then his damage will be vastly reduced.
Dolphins require the most frequent Pumpkining because of their numbers and speed, so you must always keep watch of that. Winter-Pults are very unreliable with their start times for attacks, so good luck getting them to nail the Dolphins.

6.8 Digger Zombie

These guys are very straight-forward, too, and you actually don't want to use Magnets for them. There will be just too many of them for your poor Magnets so you need dedicated ways of kicking their butts when they pop out of the ground.
That leaves you two viable options, Glooms or Spikerocks. A Spikerock will take them out with no damage felt but at the expense of doing no damage to Imps (unless you build another 2 Spikerocks for their column, usually 3 – 4).

Returning back to Glooms, there is a Gloom arrangement where you just leave the back column empty, forcing the Diggers to walk a tile. It is a similar concept to the Spikerock. With 1 well placed Gloom, you can achieve Digger immunity and have 1 Gloom's worth of DPS for Imps.
The only issue is that this takes up a whopping 3 spots. However, the 2 blank spots aren't entirely unusable and can be used for Freeze Shroom slots. There are some builds that rely on stockpiling a large number of Freeze Shrooms so this has its obvious use.
For 95% of the other builds out there, you can do the standard 2 Gloom and fill up those back slots with whatever.
3 Glooms are required to take out a Digger without a single nibble. 2 Glooms is a good balance since they sometimes take them out with small damage or no damage at all.
Glooms are affected by the same variable starting time as Winter-pults, essentially, so how much damage you take from a Digger is dependent on when the Gloom wants to get off its lazy butt. This randomness will plague you in a lot of things, and this is no exception.

6.9 Gargantuar

Bum, bum, buuuum. The most intimidating zombie ever conceived for this game. The only zombie in the game that can sustain a heavy damage consumable. Some people say he **is** the difficulty of Survival Endless and he is the biggest reason you will fail.
He specializes in crushing noob builds and laughs as he strolls right past your Starfruit and Threepeaters. Nothing short of unmitigated rape will stop these titans. You might think you're cool for putting down 8 Cattails and you took down that one Giga all by your lonesome, but fast forward 50 flags and now 12 Gigas come out with 8 Zombonis and the Football zombies are eating all of your snare. Yea, good luck. Go find another guide. There's no solution.

Just kidding. Even though Gargantuars can take a heavy damage consumable, they can't take two. The red eye Gargantuars, a.k.a. Gigas, are only 50% more HP, so they take 3 (their Imps are also 50% more hp). Henceforth, I shall refer only to Gigas, because if you can take down Gigas, you can take down their weaker counterpart. As a matter of fact, some builds even ignore the weaker brother, *cough* Cobless setup.

Rule of thumb, always snare the Gigas. Unsnared Gigas will squash their way to your Umbrella Plant before you can even press the space bar to rest your arthritic hands.
There are three ways to handle Gigas: Cobs, Glooms, Firepeas, or some combination of all those. It turns out that 3 tiles and a Spikerock gives you enough room to Cob the living hell out of Gigas if you have 6+ Cobs. So, for Cobs, both outer and inner rows are handled exactly the same.
The Inner Row only seems to require 1 cob blast though if you have the 6 Gloom watching your back, since having 3 Glooms worth of DPS apparently helps out somewhat.

Now for those of you wondering how you can stop 12 of these guys without constantly bombing them with napalm, well you have to pump your build with more Glooms, like crack (or Fire pea like crack).

And you still have to use heavy damage consumables, just now they're cards instead of cobs, and they cost sun, not spots.
They never really wanted to balance a build strong enough to handle 20 Gigas without cheating (the number always changes because God laughs at you), so there you go. Either Cob spam or Cherry Bomb, Freeze Shroom, Jalapeno, and Squash spam.
So, how do you manage without sucking on the teat of Cob Cannons? Well, you do literally stuff as many Glooms as possibly you can.

Exhibit A

Take note of the seriousness of this image. These are god slayers and take their job very seriously.
Also take note of the Freeze Shroom in the picture. It's a reminder that the Gigas must be snared the whole time. It also shows that these 5 Glooms can't do it alone and they need a Freeze Shroom when the Giga's in range of all of them. 5 Gloom beatdown while frozen equals dead Gigas. This requires Freeze and Imitator Freeze.
There are other ways of taking out Gigas.

Exhibit B

Note that you still require full snaring and 4 open spots. The Winter Melon obviously doesn't have to be up front. This one takes up more space than Exhibit A but is more independent because you don't need the Freeze Shroom normally.

Now, for the outer rows. They're a little more difficult to handle because of Jacks. You can't just put 4 Glooms in a row and call it a day. If we take our answer to Jacks and Zombonis, and add an additional Gloom to the mix, we can work without Cobs.

This setup has precisely enough DPS to take out normal Gargantuars by themselves, and since Gigas are only 1 consumable away... you use Cherry Bomb, Jalapeno, and Squash to bridge the gap.
This is the first non-Cob outer row solution to Gigas that doesn't get its butt handed to it by Jacks. Scale it back and it has the effect described in the Jacks section.

I just want to add that all these answers to Gigas make their younger brother garbage. You can ignore Non-Gigas with these heavy damage-dealing formations outside of some crazy flukes.

To top it off, people can use the minimalist form of the Jack/Zomboni answer in conjunction with a small number of Cobs, usually 2 – 4. This requires that you scale it back at least 1 or 2 tiles from the original position, because the build is placing a lot of emphasis on those Cobs. Heavy Freeze Shroom spam also seems to make this work.

Now, for Firepea:

(By Market Trojan Prince)

The arrangement seems to be 4 Gatling and a Torchwood for the entire row. Those Spikerocks there also are necessary and must be maintained during downtime waves. On another note, dead Gigas absorb peashots, which sucks.

Aside from the above listed methods, there aren't any more tested ways of dealing with Gigas that isn't highly situational or impractical. I'd also like to make a note that these are the only methods that can handle things by themselves. Hybridizing and synergizing is definitely recommended.
There is but two more zombies to deal with.

6.10 Imp

These fat midgets have the potential to be very annoying if you don't watch out for them.
When a Gargantuar reaches its 50% hp mark, he'll take the time to throw the little guy from his back to about 5 tiles ahead of him. Imps land on the plants in columns 2,3, and 4 the vast majority of the time. So they breach basically the two back regions on the map. Since many Gargantuars can come out at any one time, there will be many Imps at one time.
However, their attack is slow and their health is low, so you don't need to Pumpkin often when they show.

One way discovered so far to take care of Imps effectively is to also use Glooms in the back.

Like so. The formation doesn't need to be exactly that, but the Glooms must be in range.
Now, to discuss Gloom placement. Even though Gargantuars throw their Imps relative to their own position when they get to 50% HP, the range at which they land can be generalized. If they move too far in, they won't even bother throwing their Imp. This can make things more difficult be cause that throw serves as a good way to stop the Gigas for a short while.
No throw means less time to DPS them down before they reach your plants. Only bases that are scaled really far back have to worry about this, though.

With that in mind, there are two columns that Glooms can be placed in to hit 99% of the Imps that land. The red bracket is where they land, and the yellow bracket is the area for effective Gloom placement.

Notice that the right side of the yellow bracket is not within range of Digger zombies, so ideally the left side of that bracket is the most bang for your buck since it hits 99% of all Imps and 100% of all Diggers.
I'd also like to point out that the transition from 2 Gloom to 3 Gloom coverage for Imps is not very noticeable.

This is why Glooms for Digger zombies are probably more useful than Spikerocks. Why? Because, if you lay down Spikerocks to take care of Digger zombies, you have 0 Glooms to take care of Imps. This is what the setup would look like:

So for 3 slots, you're getting 3 Glooms worth of damage to Diggers (3 Glooms = 2 Spikerocks) and 1 Glooms worth of damage to Imps. If you use Glooms for Diggers, like the one shown earlier, for 2 slots you get 2 Glooms worth of damage to both Imps and Diggers.
Now, simple math dictates that $3 + 1 = 2 + 2$. So for 2 slots, you get the same overall DPS. Not to mention, the difference between 2 Glooms of damage to Diggers is minimal compared to 3. It's all about diminishing returns and maximizing your effectiveness per tile space. However, some people have made successful builds using Spikerocks in the third row to take care of Imps too, which looks really cool, but still an inefficient tile placement until proven otherwise.
Only high # cob builds can afford to sacrifice $4 - 5$ spaces for what can be handled in 2.

One final note is that Imps are very wide and heavy-set, so their hitbox is actually larger than where they land. So, horizontally speaking, Glooms can reach them about $1.3 - 1.4$ tiles away aside from the normal 1 tile range.
We shall see that this is the same for Bungees too.

6.11 Bungee Zombie

These guys come every beginning of a flag (end of first half and end of second half), but not at the beginning of the level. They vary in number, even in the later flags, from just about 1 to 10 at a time.
There are multiple ways of dealing with Bungees. You can either block them with Umbrella Plants, which is somewhat hard to manage with a very large base, or DPS them down before they pick up your plant and leave.
So, how does one go about that? Well, snared Bungee zombies surprisingly stay down twice as long, but they have 23 health so it is still quite a feat to bring these guys down in time. You can use a properly timed Freeze Shroom, which will freeze them in place if they're out and not moving, snare them, and damage them. The key to timing it is to see the targets land, wait 3 seconds, then Coffee Bean the Freeze Shroom. If it works out, they should be frozen as quickly as they possibly can. This way, your Winter-Pults, Glooms, or Cobs can handle them.
You can also Cob them without any help if you have good timing and reaction speed.

The final way is for your base to handle it all by itself. This requires extreme Gatling plus Torchwood DPS (which doesn't always work especially if they're behind the Torchwood), or Winter-Pults and Glooms.
With enough Glooms, they'll die snared or not, which means your 6 Gloom front will always be safe. However, if you don't have space for such a large amount of Glooms, you'll need to enlist the help of Winter-Pults. Because Winter-Pults and Glooms both start at random times with their attacks, their delay can be so long that you need at least 1 Winter-Pult and 4 Glooms just to secure a plant 99.9%. 3 Glooms will be around $90 - 95\%$ security.
If you already have a Winter-Pult in every row, every plant not covered by an Umbrella must be in range of 4 Glooms for that kind of security. But like the Imps, the Bungees are wider; therefore their

horizontal hitbox allows them to be hit by Glooms 2 spaces away. This does not work vertically but it does have an effect on diagonals.
To clarify what I mean exactly, consider the following:

Both Glooms will attack the Zombie, because he is within 2 horizontal spaces of the Glooms. If you fail to achieve 3 – 4 Glooms for some spots, whenever those spots get targeted, you must use a Freeze Shroom or be prepared to replace the plant.

7 Build Practice

7.1 Actually Building Your Layout In-Game

I won't go into too much detail about it because it's very easy to do. I'll just tell you what I normally do.

For the first level, I bring:

- Sunflower
- Imitater Sunflower
- Potato Mine
- Lily Pad
- Cattail
- Pumpkin
- Fume
- Gloom
- Bean
- Garlic

The beginning is all about getting your economy up. The only focus should be building Sunflowers uninterrupted until 80-90% of the map is Sunflower.
Now, obviously, the early zombies won't let you go that easily. That's why I bring the Potato Mine. You can use the Rake too, but you'll need the Mine for the 2nd and possibly 3rd zombie.
Now, I'd be careful about your initial Sunflower placement. I normally put them all in one row. I'm

making sure to place the original Sunflower every time the cooldown is up so I want the odds of me having to use a Potato Mine early to be as low as possible. That's why I stick to one row and just a throw two Garlics up front and call it a day.
Another tip is to always prioritize original Sunflower over Imitater when you can only afford one in the beginning. It takes like 3 seconds for Imitater to activate unlike the instant original, so if the cooldown of the original comes up before those 3 seconds, it would've been faster just to wait.
Also, a rule of thumb for Potato Mines, 3.5 spaces is about the proper amount you need to place away from the zombie.

So after you're done and you're all Sunflowered up and you got your Garlic protecting the Outer Rows, you'll notice Potato Mines don't cut it anymore. You have to stop Sunflower production a little bit to save for a Cattail but they literally take care of the rest of the wave for you.
Once you have two, you can focus on producing more Lily Pads, making more Sunflowers, and starting to add Pumpkins and Glooms to your build.
That's pretty much it for the first level. The rest is pretty easy and I leave that to you.

7.2 Consumable Tips

My general philosophy with consumables is to use them as effectively as possible. That requires two things. Infrequency (timing) and placement (spacing).
Now when I say infrequency, they very well may be used every time their cooldown is up, but I want your attitude to be "reluctant to use it unless for good reason." They cost Sun, and you don't know when you will need it, so don't waste it. Aside from using them less often, you can just make use of them better to achieve the even more efficiency.
For example, Jalapenos attack the whole row. They can attack $2-3$ waves worth of zombies if you wait long enough, so you can double or triple the effectiveness of these guys just like that. Cherry Bombs work this way to a lesser extent and can reach 2 waves at a time. Cobs are just free Cherry Bombs but they follow the same rules.

Freeze Shroom is my favorite consumable, so I'll give a disproportionate amount of time to them. Despite people saying that Freeze Shroom is only good for Gloom/Fume builds, **every** build could use more time.
Let's get past the obvious, though. This guy Freezes things in place, but where should things be frozen in place? Close to your plants, duh! Freeze next to your Glooms, your Spikerocks, your Fumes, whatever. Timing is of the essence. Many builds require that you Freeze properly and in optimal DPS positions.
Next, you need to protect these guys from getting killed. Do you have spots well protected by Glooms? Queue some Freeze Shrooms there. It's always nice to have at least 1 dedicated slot to Freeze Shroom, because wasted Freeze Shroom is probably the second leading cause of death aside from Jack accidents.
You can use Freeze against Gigas to help burn them down, against Jacks to prevent their explosions, against Diggers/Dolphins to stop their nibbles. Freeze Shroom is very versatile and powerful. You get more sun and less cooldown on all the rest of your cards because of that bought time. You can also rest yourself and set the game to your pace. Every time a hard wave starts, open with a well-timed Freeze for good measure. Stops Bungees and ambush zombies in their tracks and it makes your snare rotation more efficient.
Leaving them asleep is perhaps their best attribute, because now you can have more Freeze Shroom

than a person should ever have.
Something a little less known is that a Freeze Shroom will still activate if it's awake when killed/flattened, so you can time it where a Giga swings and activates the Freeze Shroom for you.

One last note, Puff-Shrooms are great if you have extra card slots. They're free and amazing against Gigas. Their low cooldown makes them excellent buffers against Football zombies too.

8 Build Theory

If you don't understand the fundamental workings of what's going on, it is very difficult to establish truly successful survival builds. I think one of the most fundamental things we can talk about is the orthodox 6 Gloom.
The reasons why you have successful builds, usually, are those pool Glooms. You can't just put a Gloom out in front on the ground, otherwise it'll get squashed. That space must be earned by enough pool DPS to clear enough zombies for the Inner Row. The bare minimum is not until 3 tiles; this has been experimentally proven. Therefore, the closest you can get to working on the Outer Row starts 3 tiles back. So we have the Pool Row covering for the Inner Row. And the Inner Row covering for the Outer Row.
So, now you can see that the highest DPS possible buys you the most freed tiles for the subsequent row. More tiles usually means a stronger defense, so a good objective for designing your build is to squeeze in as much DPS as *necessary* for all 3 types of rows.

There is one more factor we must consider too with build theory. We must understand that all we're really doing is bringing a Zombie HP pool to zero before it reaches our base. That's a set number in terms of time and hp per wave. So then we can treat each tile as a unit of damage done over a distance.
Let's look at a build using this row analysis.

Let's take the inner row for example. Disregarding the Freeze Shroom, that's 3 on-screen tiles before the zombies reach your plants. This means in 3 tiles, you need to do enough damage to kill them. Since they travel at a constant rate, that can be equated to seconds. If it takes X seconds to cross a tile, you'd need to do Y damage in X seconds. Going from 3 tiles to 2 tiles is 66% of the distance and thus you're doing 66% of your original damage. If your original damage amount was the bare minimum to survive, then you need a 50% damage increase to compensate. (1.5 x 0.66 = 1.0)

Now, I obviously wouldn't scale the Inner any more forward, because that would contradict what I already said about it being impossible. 50% is a tremendous increase in DPS, but the farther back your build goes, the less the penalty there is for making it 1 tile closer.
For this build, the Inner row is most vulnerable because it is the closest to the horde and loses a Gloom right off the bat if you mess up. The Outer row is most incompetent because it has the weakest defenses at its disposal. Instead of 5 Glooms and 3 tiles like Inner, Outer has only 2 Glooms and 2 tiles where those Glooms get to do their damage.
Fumes help too, and I've always been under the impression that Fumes attack at 1/4th the speed of a Gloom, so 4x the distance with 1/4th the DPS = 1 tiles worth Gloom damage. Still not nearly as much as the Inner row though.
By looking at builds with this perspective, you can quickly figure out the vulnerabilities and strengths of any layout.

After learning all this theory, it's time to see these things put into practice. It's one thing to memorize the tactics laid down by your forefathers, it's another to see these in action. Like I said, I categorize these builds by their number of Cobs, from 0 to 8. There are builds that are more than 8, but they're no different from the 8 Cob.

9 Build Database

9.1 Cobless Builds

See page 27 — I happen to be the designer of this build, so I have the most knowledge about the first successful Cobless build out there. There are some modifications to this build that make it different from the standard approaches. For one, the Umbrella plant is optimally placed so this build is Bungee immune. For two, there is a third inner row Gloom that is used for Imps and also acts as a safety net. That third layer of Gloom defense makes this build very resilient to Jack explosions because you can still survive with a completely lost layer of Glooms.

You should see that this build is a combination of the inner row answer to Gigas (5 Gloom which requires Freeze Shroom and its Imitator) and the a non-Cob answer to outer row Gigas (which requires consumable rotation).
The original Pumpkin card is enough to cover for the maintenance.

There are two weaknesses to this build. The first of which is dealing with the fact that every zombie will get uncomfortably close to your base, so visibility and pressure issues will arise, like finding spots to place your Freeze Shroom.
The second problem is that it can't do anything to stop the premature Jack explosion of the pool Glooms. This can be a game breaker if you do not replace them immediately and react accordingly.

Since you'll be down a Gloom for a little while, it is difficult to prevent any other loss of plants in the mean time, especially that first inner row Gloom.
The key is to focus all your consumables on stalling time and minimizing damage. That means Freeze, Puff Shroom, Cherry Bomb, etc. Cherry Bombs have the added benefit of affecting both rows, so use the Cherry Bomb for the afflicted side before the Jalapeno.

The key to the consumable rotation is to use them only when the Gigas are about to smash your plants. Use the Squash as often as possible because of its cheaper cost and lower cooldown. Aside from that, don't let your Freeze Shrooms go to waste all too often, and make sure to queue up Freezes during the breaks.
The highlight of this build is that for non-Giga levels, you can watch the destruction of all the zombies completely automated. It is rather beautiful to see everything fall without you doing much of anything. It also provides an alternative to the usual Cob spam that's required of you for the Cob builds. People recommend this build if you don't like all the excessive clicking of Cob Cannons.

As a little bit of trivia, I call this layout the Elegant Build because it actually handles Imps better than if you had stuck 3 Glooms in the back for Diggers and just had 2 Glooms in the front of the Inner Row. Since Glooms have greater horizontal range, and Imps are fat to begin with, the Gloom coverage overlap is optimal for 99% of the Imp landings and that completely surprised me.

v2.0 — This build has really stood the test of time. All I could do was modify one of the pool Winter-Pults so it could get a Freeze slot.

9.1.1 Firepea

I'm glad now that more people have invented cobless builds. Variety is the spice of life and now we have Cobless Firepea builds:

(By Market Trojan Prince)

(By *Unknown*)

(By jokxurwq)

If we look at the patterns behind these Firepea cobless builds, the trend is to use Gatling/Torchwood over Winter-Pult/Fume in the outer row. The maximum number of Gatling Peashooters seems to be 5 and < 3 seems to be only for Cob builds or Gloom support (more on that later). They require

full rotation of consumables, including possibly Puff Shrooms.
Some seem to only handle one side being Firepea while the other side is the minimal Gloom/Fume arrangement with either additional Fumes, the Fumes being pushed way back, or they're behind Spikerocks. They make ample use of Freeze Shrooms by having at the very least 2 Freeze slots. Some seem to stockpile 6!
They're great for keeping the rest of the wave stopped while the Firepeas work through the crowd.

9.1.2 Gloom/Fume/Pult

Here are some other Cobless builds I could find that use Gloom/Fume/Pult.

(By shui152)

Here we see that shui152 opted for 1 tile scale back to get that 4 space inner row and to allow maximum time for Freezing. Snaring might be an issue (due to low Pult count) but the build makes regular use of Freeze Shrooms.
What's very interesting about this layout is that it used the idea of turning the back column into extra Freeze Slots. If you have a sufficiently high amount of blank spots, you can store a ridiculous amount of Freeze Shrooms that can last you entire waves. With this in mind, you can make builds go where they normally couldn't otherwise.
This build is also interesting because of its Fume/Gloom arrangement. Because it is so scaled back and reliant so much on frontloading damage with constant freeze, he managed to move the Fumes 1 tile forward relative to the usual setup.
When Zombonis come along though, that front Fume will probably get flattened, though.

(By WanderingWind)

(By *Unknown*)

The third build is notable for its different way of handling Dolphins, for one. They'll jump over that initial Gloom and move a lot more slowly along the water tile. That Dolphin answer also handles Jack accidents more effectively, because, at most, you lose one Gloom.

You'll also notice the unpumpkined Inner Row Gloom, which indicates to me that it's probably not worth Pumpkining. Jacks definitely have a chance of blowing it up, but now any one given Jack accident can be manageable.
I'd also like to make note of that front pool Gloom and how optimally placed it actually is. It's the only position for that Gloom to attack Gigas in all the Inner Row tiles.
Also, almost 1600 flags for a cobless build.

9.1.3 More Own Versions

(By Draco89123)

So, I basically made my own version using that nifty Freeze Shroom trick.
The biggest issue is that you need to use them if Diggers pop out. They will always eat your Freeze Shroom. 1 Freeze Shroom can handle a lot of Diggers though, so you can conserve them if you rotate properly and watch for future Diggers by their animation underground. You should use the doomed ones first.
You can also Pumpkin the Freeze if Freeze importance > Pumpkins.

And finally, here's my take on the Firepea:

(By Draco89123)

Everything seemed to be really strong, and it seems just as strong as the other Firepea builds I tested, so I'm sure it can go the distance too.
Things can get hectic because Firepeas, even if they actually aren't, seem faster than other Cobless builds. There's a low margin for error when it comes to unsnared Zombies (even with Freeze).

9.2 Two Cob Builds

The main trouble of these builds is that they quickly let unsnared zombies get by, so Freeze Shroom is a must for its equalizing power. It gets everything snared and removes the debt accumulated for lost time.
These are probably the slowest builds because they require the zombies to go the most distance before the next wave comes. As a result, you can get away with a low Sunflower count.

(By FlyinFree)

FlyinFree's build employs the delay tactic and making full use of those 2 Cob Cannons. It seems like this build also requires full consumable rotation and both the Pumpkin card and its Imitator. He also uses Spikerocks for Diggers because he wants to keep the Gloom cost down just in case he loses the pool Gloom or that front ground Gloom.
You can see too that he employs the most stripped down version of the Zomboni/Jack answer. It was his build that actually showed me the second Gloom in this formation was unnecessary.

My version of this build does not require a consumable rotation, but I do bring a Freeze Shroom and Cherry Bomb just in case. When there are Jacks in the level, I replace those regular sunflowers for Fumes to handle the Jack accidents. I rely on using Puff Shroom and its Imitator to severely slow down the Gigas so that my Cobs can take care of them.

(By *Unknown*)

Someone had also used my Cobless build "Elegant" and added 2 cobs to it. Surviving on 2 Twins is very baller and goes to show how stable Cobs can make a build. It also goes to show that Cob

designs and Cobless design aren't incompatible. They synergize a little too well, actually.

9.3 Three Cob Build

(By *Unknown*)

I don't know whether or not to put 3 Cobs into the 2 or 4 Cob category, but they play more like 2 cobs so we'll just go with that. They usually require moderate consumable use like the other 2's but allow you to cut down on Sun usage.

9.4 Four Cob Builds

4 Cobs are probably the easiest and most flexible of builds. 4 Cobs is halfway to constant Cob spam every wave, so the Cob rotation for this build involves Cobbing every other wave and just drawing out the zombies long enough to take care of the in between.
These are usually the most lenient builds as far as timing and difficulty is concerned.

`http://www.youtube.com/watch?v=EkAb8SfzlAo`

I couldn't find a link to his setup, but there are a lot of videos of this guy's build (by Shapes112).

Shapes112's build is what introduced me to the flexibility of the 4 Cob and it shows the pacing of the game by these builds, which makes it very level and nonchalant.
I believe Shapes112 requires consumable rotation and all sorts of other hijinks based on its asymmetry and his constant switching of plants to fit his needs. He has definitely proven that 4 Cob can manage 1,000 flags just like the rest of them.

As inspiration from Shapes112's build, I decided to optimize both sides, make it symmetrical again, and make it so the build can always deal with anything that comes out and not need to switch things out. You can still switch things out, but basal form can handle anything without any modification. This build requires no consumable (except Blover) and no Imitater card, so I just bring Puff Shroom and its Imitater because you can never go wrong with free delays.

"Antipode Build." by Halibabica. This build shows off the power of 4 cob, since it can afford to sustain double sided fire pea.

Here is a direct explanation from the author himself:

Gatling Pea and Torchwood — It's important to understand how exactly they work. It's obvious that the fire peas do double damage and that Gatlings spit them out very rapidly but they only hit the first zombie in the row, right?
WRONG. When a fire pea collides with a normal zombie (normal being anything that isn't made of metal), it has a fiery splash effect that damages all other zombies nearby the target. The fire counteracts the effects of snare, but only on the initial target. Zombies hit by the fire splash take one point of damage and remain slowed from snare. This means that Gatlings shooting fire peas can hit multiple zombies at once, making them plausible for an Endless build.
But there are some zombies that can counter the Gatling + Torchwood combo which must be watched out for. When fire peas collide with screen doors, ladders, catapults, and Zombonis, they lose their splash effect and only do damage to the metal target that took the hit. This is the primary reason Gatlings and Torchwoods fail in Endless, and the reason why you can't rely on them alone. I'll repeat that: YOU CAN'T RELY ON THEM ALONE.
Gatlings and Torchwoods output tons and tons of damage; enough to drop a Giga-Gargantuar in about fifteen seconds. But they cant stop everything, and if you're going to use them, you need to have a plan for how to take out the metal zombies and everything behind the enemy front lines.
Otherwise, they get backed up and you have a huge wave of zombies knocking on your door before you know it.

Here's another unique 4 Cob:

(By zhy1013181)

Spikerock overload for the lulz and very minimalist Gloom/Fume arrangement for the outer row.

9.5 Six+ Cob Builds

Now that we've moved beyond just having 4 Cobs, the Cob rotation becomes extremely important for maintaining yourself in the later waves. These builds always rely on Cobs, even for simpler levels with the basic zombies because of the sacrifices they made to have such raw power. The Cob rotation involves Cobbing whenever you have a pair up, but only one pair per wave.
The idea is to Cob as late as possible. You can time this based on the Dolphins, but the best timer is to make it so the Cobs land right before the Zomboni is about to get popped by the Spikerock. That is a good way to get in the groove, and if you maintain that for every level, nothing will give you trouble. Football zombies, Dance zombies, Jacks, and Gigas still always pose a potential threat so they are the main priority of these builds.

To optimize Cob blast placement, target the inner row 7th column tile to hit everything within that open area. It helps against pool zombies and is best for dealing with the entirety of a wave with just 2 shots.
The next tactic, like all the other Cob builds, is to stall the zombies with Puff Shrooms and Freeze Shrooms if you need time for your Cobs to recharge.

(By Iamsooty)

This is the first successful build for Survival Endless. This defined what being a viable build meant and laid the foundation for all Cob builds out there. It established the idea of using Glooms in the back, using the orthodox 6 pool Gloom, and using Spikerocks and open space to buy enough time to kill everything with Cobs.
The card selection suggests that it required the usual consumable rotation, Pumpkin replacement, and Spikerock maintenance.

(By Proz)

This was the start of the 8 Cob builds. Why stop at 6?
The outer rows were always more vulnerable because they weren't getting Gloom protection. People answered that for the longest time with a butt load of Winter-Pults for the outer row, but then Proz decided to be really ballsy and put an extremely vulnerable Cob Cannon on the front lines and just made his Cob rotation constant.
With 8 Cobs and proper timing, there is no gap in between waves, so if done correctly, everything would be dead before they even reached the Cob Cannons. If a Cob Cannon does get eaten, or mistakes are made, then consumables are recommended to bring along as backup.

Finally, the rest of these images are just tweaks of the Cob design.
They're designed for ease of use with Freeze Shrooms, or more elegant Umbrella Plant placement, or whatever. They essentially all follow the same Cob rotation.
My builds at the end show that the 6 pool Gloom is entirely superfluous for these setups, and as a result, Jacks are no longer a concern, which makes Sun no longer a concern.

(By Cob Cannon)

(By Taikanataur)

(By Draco89123)

(By Draco89123)

(By EL)

We have an interesting rearrangement of the last 2 cobs and the Firepea answer in the outer row. This seems like a very balls-out build and likely to progress quickly.
I'm pretty sure ambush zombies will eat your front Cobs too, so you must time it well enough where they don't get a single bite. This is one of the more precision-oriented builds.

(By EL)

A whimsical build that's surprisingly effective. It uses Kernel-Pults that can help stop Gigas (I'd assume?). It requires good Cob timing to manage this on only 2 Twins, though. Just another demonstration of how OP Cobs can be.

Here are four more slightly modified 8 Cob setups. You can see interesting answers to Imp/Digger zombies with the use of space in 8 Cobs. They are the least reliant on tile efficiency because all you really need are the Cobs, so you can get away with arrangements like these and be really creative.

(By *Unknown*)

(By *Unknown*)

(By *Unknown*)

(By *Unknown*)

A novel 8 Cob. No Bungee to protect yourself from the Catapults! This relies on precise timing, because Spikerocks can only take 9 shots before they die. It may sound like a lot now, but wait until 3-4 Catapults come out per row.

9.6 Ten Cob Builds

For fun, here's 10 Cobs to show you how ridiculous it can get!

(By *Unknown*)

(By *Unknown*)

If any of you know the names of authors for some of these, please email me so that I can give credit where credit is due. I apologize but Google translate was bugging out for some of the names.

10 Zombie Stats: HP

Special thanks to A Guy for his contributions.

- Regular: 10
- Conehead: 27
- Buckethead: 65
- Football: 80
- Pole Vaulting: 17
- Newspaper: 8 Newspaper + 9 Zombie
- Screen Door: 65 blocked, 10 penetrated
- Dancing Zombie: 17
- Backup: 10
- Ducky Tube: 10
- Ducky Tube Conehead: 27
- Ducky Tube Buckethead: 65
- Snorkel: 10
- Zomboni: 60
- Bobsled: 14 bobsled, 10 per zombie
- Dolphin: 17
- Jack-in-the-Box: 17
- Balloon: 1 for balloon, 10 for zombie
- Digger: 15
- Pogo: 17
- Yeti: 46
- Bungee: 23
- Ladder: 25 for ladder, 17 for zombie
- Catapult: 35
- Imp: 3
- Gargantuan: 150 (2 Consumables worth)
- Giga-Gargantuan: 300 (3 consumables worth)

11 Conclusion

Hopefully this guide will be complete enough for you to not only be able to play a build past 100 flags, but design a new build past 100 flags.

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