HOW TO TEST SEED GERMINATION WITH A SIMPLE VIABILITY TEST

BY AMY ANDRYCHOWICZ | 20 COMMENTS

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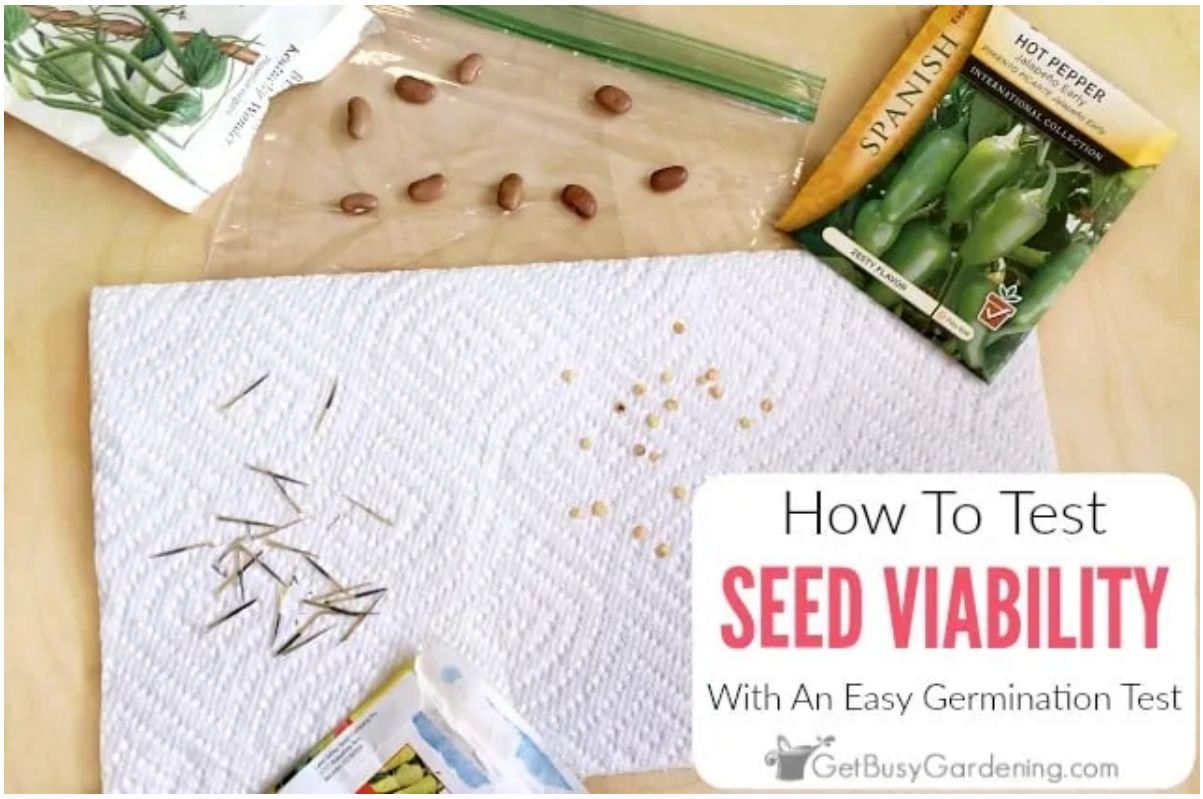
When you have a bunch of old packets lying around, how do you know if the seeds are still good? Perform a seed viability test! In this post I will show you exactly how to test the viability of seeds using a simple germination test method.



Pin it

If you enjoy **growing seeds**, you know that you hardly ever use up every packet. It's nice to build up a stash, and to be able to keep them for a few years after you buy them.

Not only is it less wasteful, it's a money saver too! I always have a nice stash so that I don't have to buy them every year.

But it's also important to understand that seeds don't last forever. There's no way to know if they are still good just by looking at them either – you have to do a seed viability test.

Before we dive into the steps for testing the viability of your seeds, let me define some technical

ABOUT AMY ANDRYCHOWICZ

I'm an author and expert gardener who loves growing ALL of the plants. From vegetables, herbs, and flowers to cacti, succulents, tropicals, and houseplants - you name it, I've grown it! My green thumb comes from my parents, and I've been gardening for most of my life. Read More...

WHAT DOES VIABILITY MEAN?

COMMENTS

Kellie says
Do lupine seeds need cold stratification before testing them for viability?

REPLY

Amy Andrychowicz says
Yes, and I would also nick their hard outer coating for best results.

REPLY

Stanton R de Riel says
Nothing like assuming a perhaps 10% viability on something like 3 -year-old columbine seeds, say, and being pleasantly surprised to then find hundreds sprouting in a nursery flat. I tend to find long seed viability, but then, I keep all my saved seeds frozen until use. A cautionary note: freezing will not prevent molding in incompletely-dried seeds! Seeds that lose a large proportion of water on drying (e.g. nasturtium) are particularly prone to this.

REPLY

Amy Andrychowicz says

This is important to understand because we only want to use good seeds with high germination rates for seed starting, otherwise we'll waste our time (and money) planting seeds that will never grow.

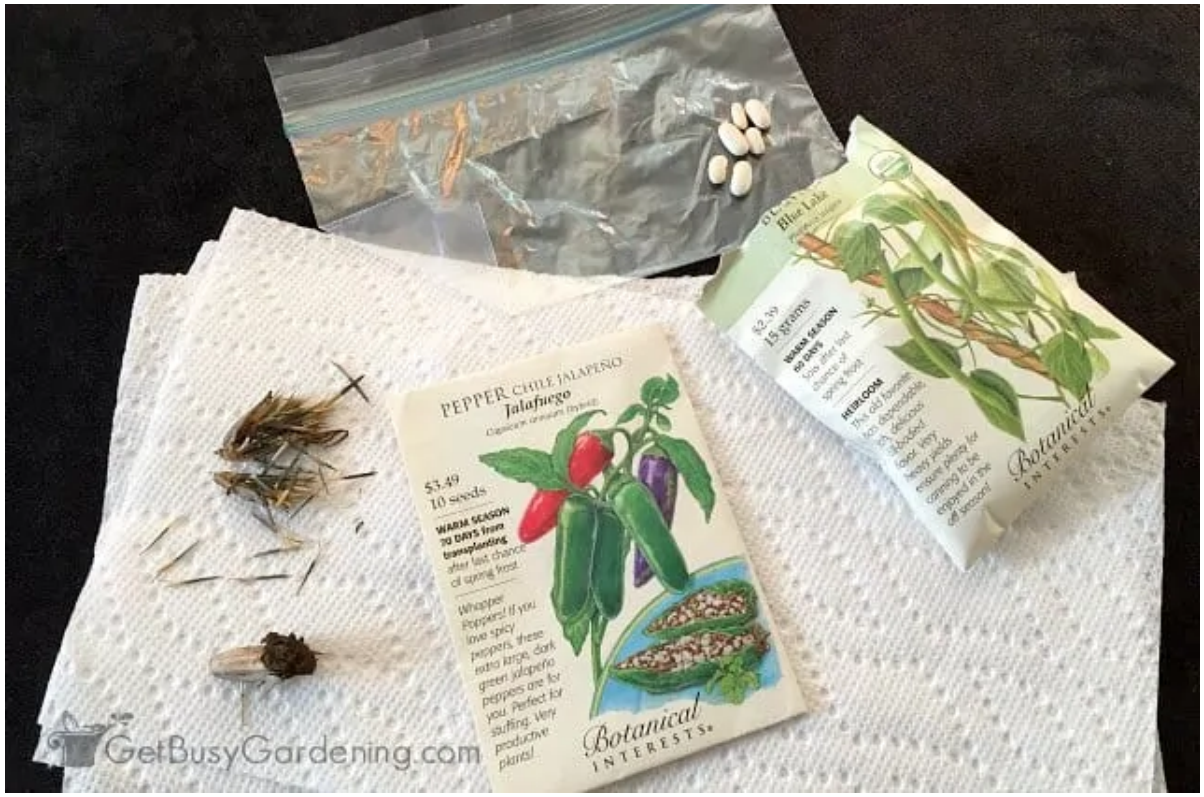
And this is why it's important to always test viability of garden seeds before you plant them so you don't waste time planting bad seeds.

HOW LONG DO SEEDS LAST?

One of the most common questions I get from new gardeners is *how long do seeds last?*. Unfortunately, there's not a set amount of time that seeds will last.

It depends on the type seed, and can also depend on how they are stored. Many seeds can be stored for several years, even decades, while others will only be viable for one or two years.

But one thing is for sure, seeds don't last forever. The good news is that you can use this simple viability test for any type of garden seed you want.



Paper towel germination and baggie test

WHAT IS A SEED VIABILITY TEST?

A seed viability test (aka seed germination test) is basically just a way to figure out if your old seeds

will grow by testing seeds for germination.

Performing a seed viability test is really the only way you'll reliable be able to tell if seeds are viable.

It's very easy to do, and something you should definitely get into the habit of doing every year if you have old seeds, or have collected seeds from your garden.

HOW TO TEST VIABILITY OF GARDEN SEEDS

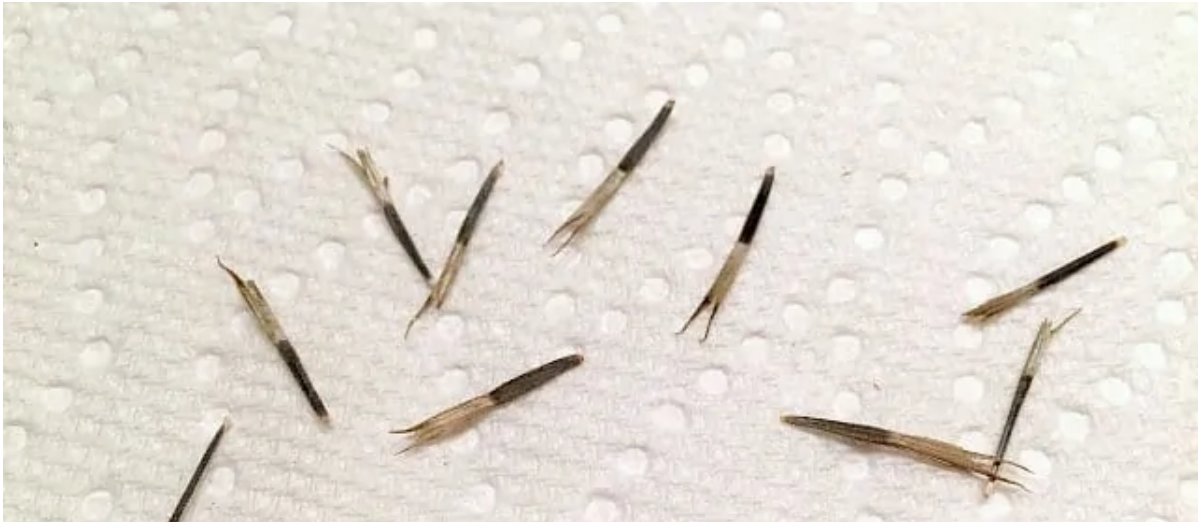
A standard germination test on older seeds can be done using the paper towel germination and baggie test. This is one of the most common methods of testing viability of seeds.

Sprouting seeds in wet paper towels is super easy, and doesn't take very long. Plus, you don't have to worry that your sample seeds will go to waste, because you can plant the seeds that have germinated in the paper towel.

Supplies Needed For Your Paper Towel Test:

Don't worry, you don't need any fancy germination test equipment for this, you can use items you already have around the house.

- Zipper baggie (I like to use the **snack sized baggies**, but the **sandwich baggies** also work great)
- Paper towels
- Old seeds
- **Sharpie marker** or **paint pen**
- Water



Paper towel test with marigold seeds

STEPS FOR THE PAPER TOWEL GERMINATION & BAGGIE TEST

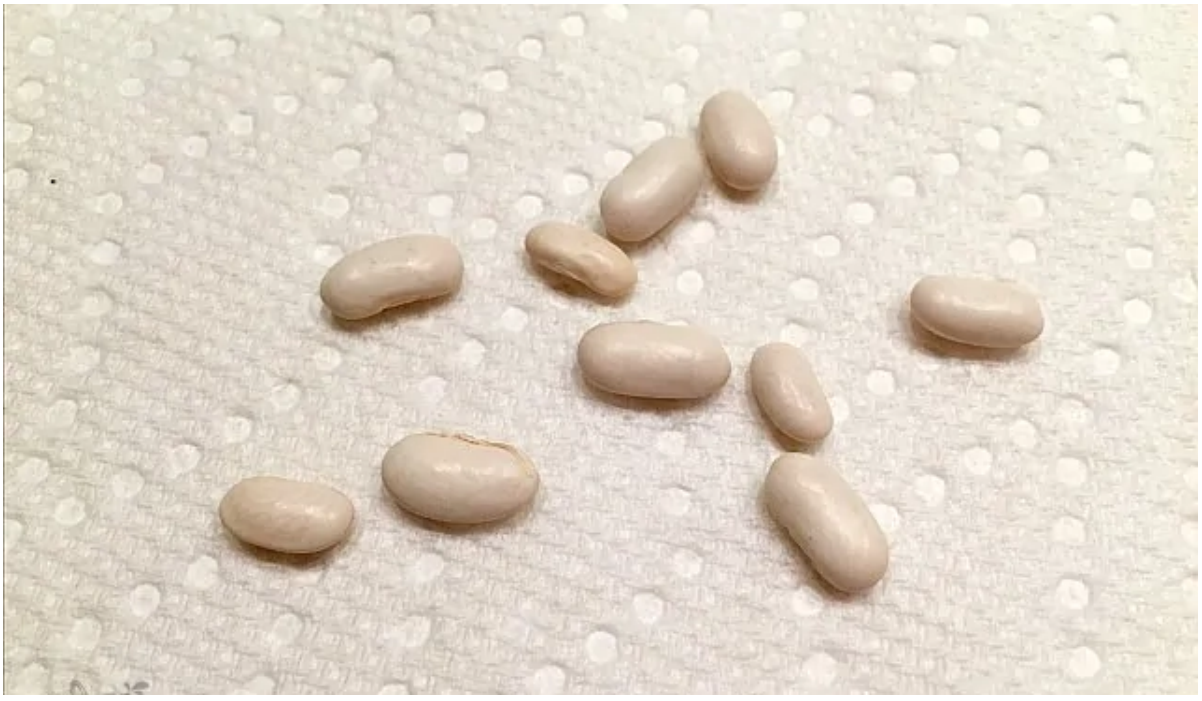
You can use as many seeds as you want for the seed testing, but I recommend using ten sample seeds for easy math. However, if you don't have that many seeds to spare, then you can use fewer seeds.

But I wouldn't use less than five seeds otherwise your seed viability test won't be very accurate. Here's how to germinate seeds in a paper towel with the baggie test, step-by-step…

Step 1: Prepare the paper towel – One or two wet paper towels will be sufficient for the test.

Wet down the paper towel, wring it out a little and lay it on a flat surface (you want it damp but not dripping with water, so don't ring out all the water).

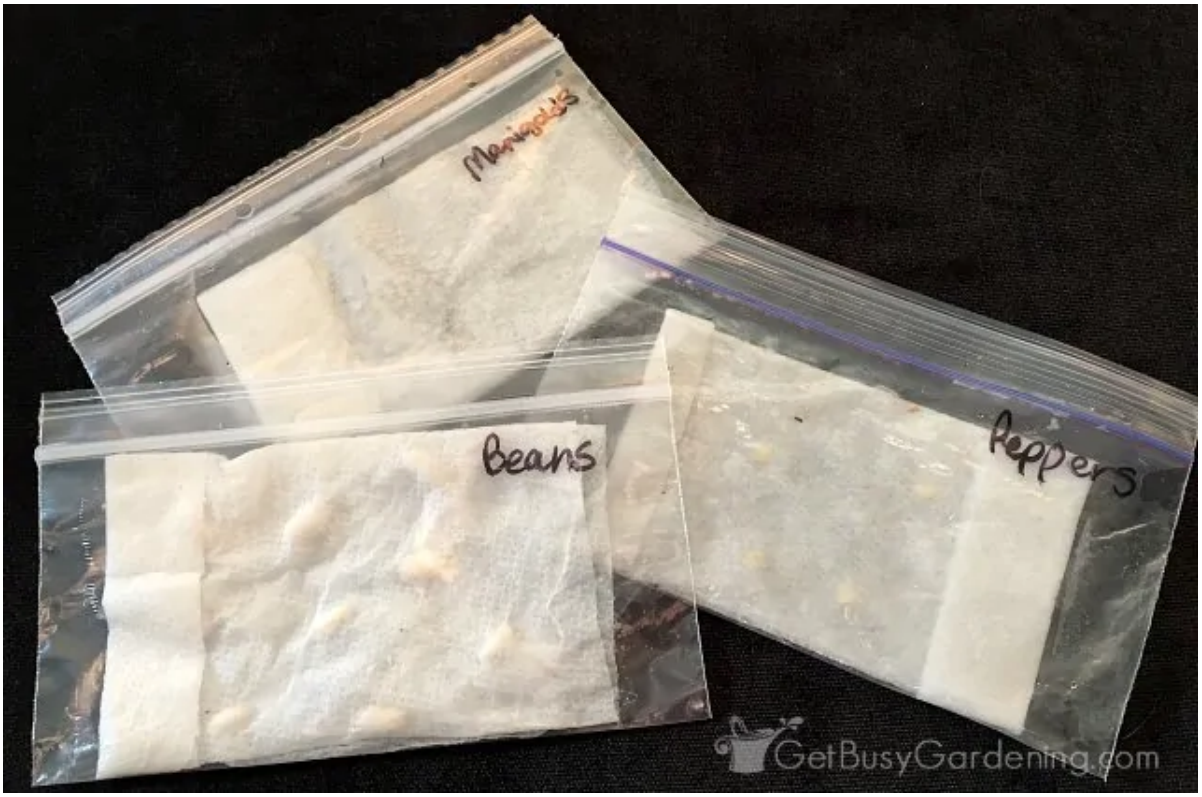
Step 2: Place sample seeds on the wet paper towel – Nothing fancy here, you can simply lay the seeds on top of the wet paper towel, just make sure they aren't touching each other.



Testing old green bean seeds

Step 3: Fold the paper towel – Carefully fold the seeds into the paper towel, and gently press down to ensure the towel comes in contact with the seeds (so there aren't any air bubbles in there).

Step 4: Label the plastic bag – Use a **paint pen** or **permanent marker** to write the name of the seeds you're testing on the baggie (and the date if you're starting your seed viability tests on different days).



Germinate seeds paper towel plastic baggie

Step 5: Put the paper towel into the bag – Place the folded moist paper towel with the seeds in it into the **baggie**, and zip up the bag.

Step 6: Add heat – Put your seed viability test bags in a warm location (out of direct sunlight). The top of the refrigerator, next to a heat vent, or on top of a **seed starting heat mat** would be good places.

Now that you've got your seed viability test set up, forget about it for a few days. Then check the

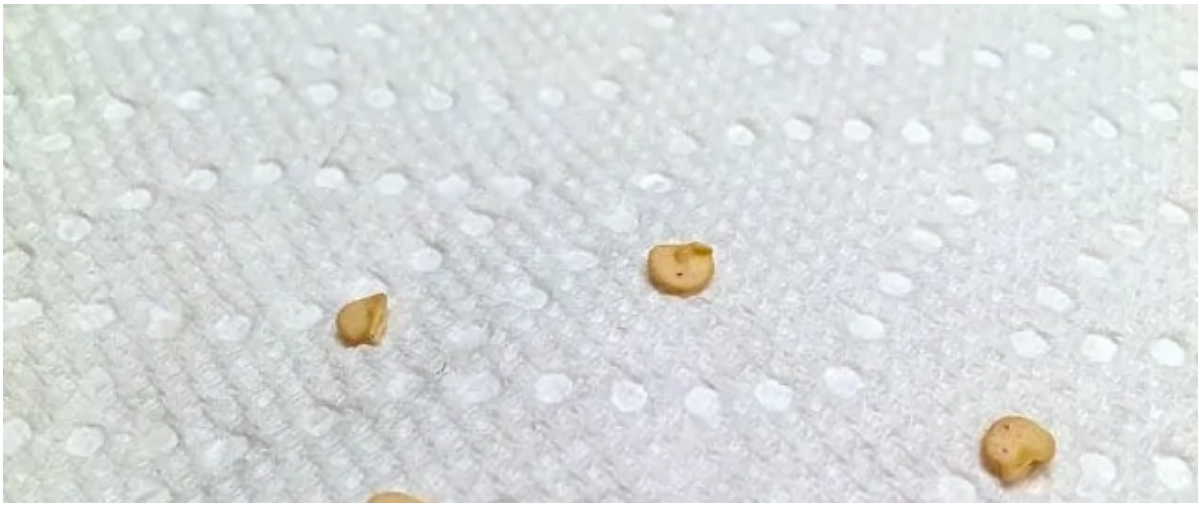
seeds every couple of days to see if any have germinated.

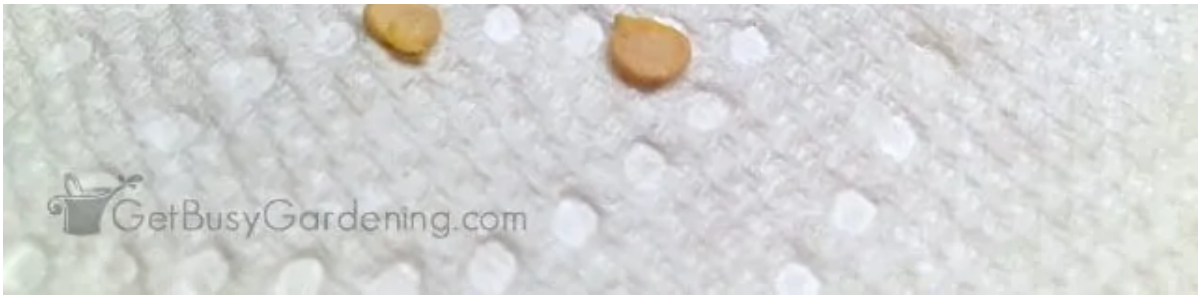
You can usually tell if any seeds have germinated by looking through the baggie, but sometimes you have to remove the paper towel and carefully unfold it to check the seeds.

Bean seed germination after three days

Keep in mind that some seeds take longer to germinate than others, so be patient.

In my seed viability test, it only took a couple of days for the green bean seeds to start germinating. But green beans are fast growing seeds.





Testing viability of old pepper seeds

My marigold seeds and pepper seeds on the other hand were much slower to germinate, and I didn't see signs of life until the sixth day of my seed viability test.

Most seeds will start to germinate within a week to ten days, but let them sit in the baggie for at least two weeks before you give up.

Each time you check your seeds, make sure the paper towel isn't drying out. You never want the paper towel to dry out or it will impact the results of the germination test.

If your paper towel looks like it's drying out, then you can just add a little bit of water into the baggie to wet it again.

If you're planning to plant your sample seeds, then I recommend removing each one that has germinated and planting it in soil right away.

Otherwise the sprouted seeds could start to mold or rot if they're left inside the baggie for too long.

Sample green bean seeds have all germinated

HOW TO TELL IF SEEDS ARE GOOD OR BAD

Use this seed viability chart to check how good your seeds are. This chart is if you used ten seeds for your seed viability test. Otherwise, you can adjust the math if you used a different amount of seeds.

> **Viability Of Seeds Chart**
> 10 seeds germinated = 100% viable
> 8 seeds germinated = 80% viable
> 5 seeds germinated = 50% viable
> 1 seed germinated = 10% viable

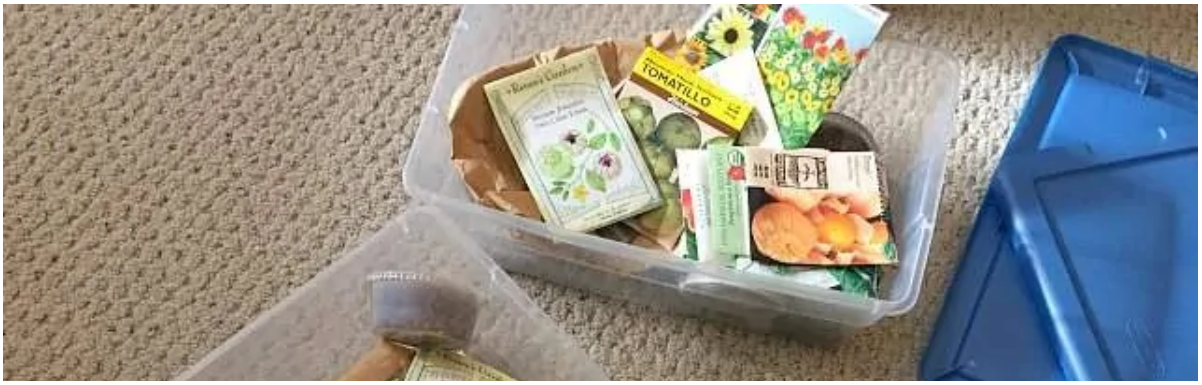
You get the picture. So, after you test viability of garden seeds, you can plan to start more seeds to compensate for the low viability of old seeds.

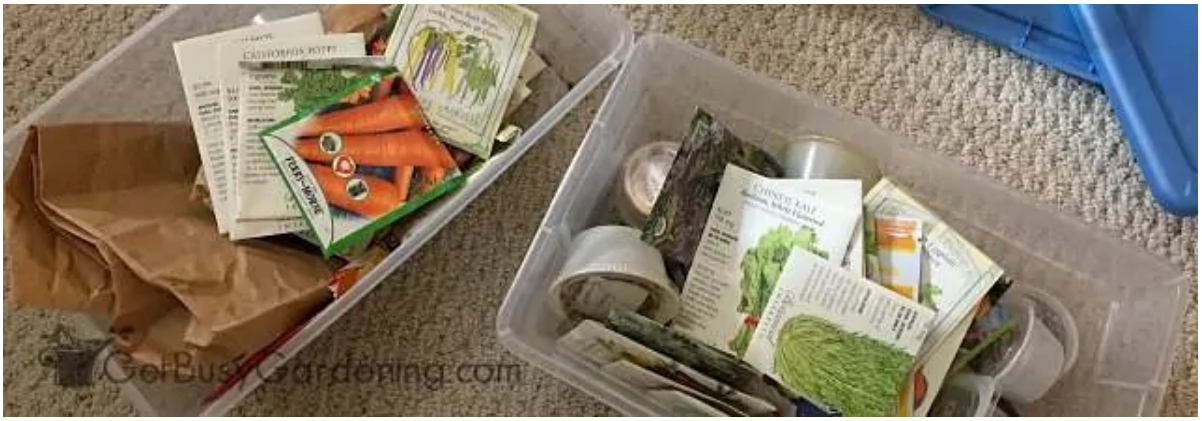
Plan to start more of the seeds with a lower germination rate (or toss them out and buy new seeds).

For example, if your seed germination percentage test rate is only 50%, then you should plant twice as many seeds than you need to ensure you're planting a decent number of viable seeds.

If your seed germination percentage rates are in the 80-100% range, then you know the seed quality is good, so you can plant less of those seeds.

Otherwise, if you don't want to mess with it, then I would consider any seed germination test that results in less than a 50% viability rate bad seed that can just be tossed out.





Old seed packets

As for the test results of germinating old seeds from my stash… the green bean seeds were 100% viable, the marigold seeds were 60% viable, and my pepper seeds were 80% viable.

Pretty good results for a bunch of old seeds – and that means I won't have to buy seeds this year!

After you're done with your seed viability test, you can plant the seeds that germinated if you want to. Just be careful not to break off any of the delicate roots.

Related Post: **Tips For Starting Seeds Indoors**

WHAT TO DO IF SEEDS DON'T GERMINATE

Like I said above, be sure to give it a couple of weeks to allow slower seeds to germinate before giving up on your seed viability testing efforts.

But, if the seeds are not germinating in the paper towel after 4-6 weeks, or the seeds are rotting, then you can either throw away those old seeds, or you can try testing another batch.

If you're trying to grow a type of seed that's rare or hard to find, then I would try germinating another batch. You could also use the paper towel method on all of the seeds you have left, and then plant any of them that germinate.

If you like to save seeds from your garden, or have a stash of old seeds sitting around, take the time to do this simple germination test on them.

Remember, seeds don't last forever, so it's best to test viability of garden seeds to make sure you're not wasting your time and money planting bad seeds.

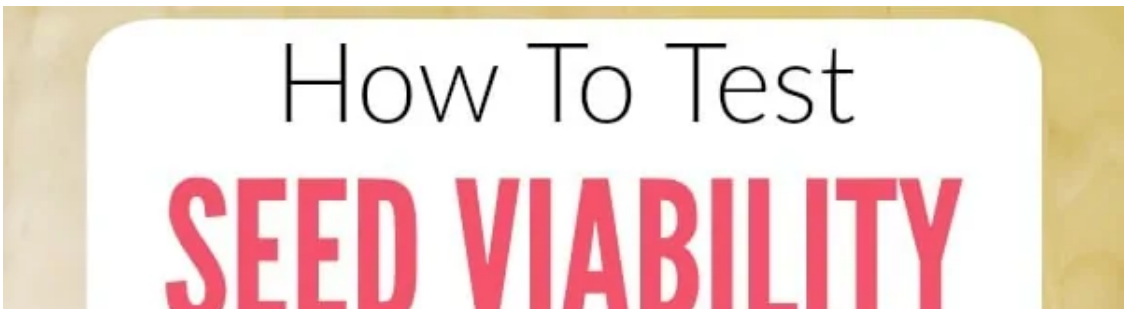
Need more help? If you're tired of trying to figure out how to grow seeds by trial and error, then my **Online Seed Starting Course** is for you! This comprehensive online course will teach you everything you need to know about growing anything you want from seed. Stop wasting time and money, and finally learn how to grow your seeds. **Register for the course today!**

Or, maybe you're just looking to kick-start your growing season indoors? My **Starting Seeds Indoors eBook** would be perfect for you. It is a quick-start guide that will get you started indoors.

MORE SEED STARTING POSTS

- **Tips For Growing Seeds Indoors For Beginners**
- **How To Make Your Own DIY Seed Starting Mix (with recipe!)**
- **How To Make Newspaper Seed Starting Pots**

Do you use a different seed germination test method to test viability of garden seeds? Leave a comment below and share your experience.



Yes, I bet freezing seeds does help to preserve their viability, and it definitely adds the element of cold stratification for seeds that need it. But does it work for seeds that aren't cold hardy (I would think nasturtium seeds would be ruined after freezing?).

REPLY

Stanton R de Riel says

Time frozen does not count for cold-stratification requirement. For cold-strat., seeds must be moist and typically refrigerator-chilled. That enables the degradation of the germination-inhibitor material(s) in the seed.

I've never done comparative testing on fully dehydrated seeds, stored at RT vs. frozen, for length of viability. Fleshy, hydrated seeds that are frozen are killed by the *physical* formation of ice crystals (which puncture cell membranes), not by temperature per se — and ice crystal formation would be minimized in properly dried seeds both by the low water content (less ice to form!) and by the high soluble solids content (makes for a much lower freezing point for any water present).

Frost-tolerant (i.e. temperate-zone) trees typically protect their cambium cells in winter by loading them up with soluble small molecule materials, such as amino acids (proline), sugars, or sugar alcohols

Amy Andrychowicz says

Very interesting, thanks for all the details about seed viability and freezing them. It's fascinating. Nature at work. 🙂

Bowen Hu says

none of the seed has viable I even bought a warmth mat but it was a waste but as you say, Amy, "it never hurts to try" so I'll try again, Sigh.

REPLY

Amy Andrychowicz says
Oh bummer, sorry to hear that none of your seeds were viable. Must have either been really old seeds, or immature ones. Good luck next time!

REPLY

FRANK REXFORD says
how long do newly collected marigold seeds have to incubate before they can be planted?

REPLY

Amy Andrychowicz says
I don’t think they need any time, you should be able to plant them right away.

REPLY

Mike Vinh says
This is very helpful, Amy. Great article. I will start doing this for my saved seeds

REPLY

Amy Andrychowicz says
Awesome, hope they're all viable for you! 🙂

REPLY

Aaron Charlton says
This is really cool. I have some seeds that I need to do this with. I was just planning on tossing them, but testing them is a much better idea. Thanks for the cool article.

REPLY

Amy Andrychowicz says
You're welcome. It never hurts to try! Have fun.

REPLY

Erlene says
I needed this. I just found some seeds with an exp. date of 2014 and will be trying this. Thanks!

REPLY

Amy Andrychowicz says
Great! You're welcome.

REPLY

Lin says
Thank you for this timely post. I have some older seeds and were just wondering if they were worth planting. Now I know how to check to see if they are!!

REPLY

Amy Andrychowicz says
Awesome, you're welcome!

REPLY

Heather says
Interesting.. I have so many to seeds to test Amy. Thanks!

REPLY

Amy Andrychowicz says
You're welcome!

REPLY

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