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Gelling With a New Substrate

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Jiffy Group's new Jiffy Gel substrate won this year's Product Innovation Award at the 2026 Indoor Ag-Con in Las Vegas, so I sat down with Kyle Freedman to find out why it's so unique and what the benefits might be for growers considering incorporating it into their growing regime.

Kyle is the global segment manager for CEA at Jiffy, as well as the Jiffy Gel product manager, and he told me this product had been in development for a number of years, first at a startup company Jiffy works with and then through Jiffy itself. They ran it through years of testing in a commercial setting to ensure it was viable for indoor production.

What resulted is a powder product made up of plant-based materials that also contains the macro and micronutrients necessary for young plant production. The powder is mixed with water and poured into trays to cure into a pathogen-free, sterile substrate, which is ready for planting in as little as an hour (depending on temperature). There are a number of benefits, Kyle noted.

"[The] powder is a fraction of the finished volume, meaning there is significant savings on freight cost," he said. "Once you receive the material, the storage space required is very minimal. And all of that is really unlocking these benefits that we really haven't had in the substrate industry for quite some time because we're always talking about tons of finished volume, which means we're shipping large volumes."

The consistency is flexible, but still rigid—more rigid than, say, Jell-O. But if you held it in your hand and squeezed hard, you would crush it. Essentially, it's rigid enough for automation to be able to handle it, but it's biodegradable and eventually breaks down to nothing (more on that in a bit). Growers need some equipment to get started with it and those products are available through third parties.

Fitting Into Existing Production

I asked Kyle to walk me through the process from start to finish. He said growers would order powder based on the volume of substrate they would need. On arrival, they would mix it with water, along with a few simple additional steps, then pour it into existing trays. Of course, existing trays have drainage holes, and Jiffy and its partner have developed a tray mask to plug the bottom holes so when the tray is filled the gel won't leak out. Once it cures the mask can be pulled off. Kyle added that you can use the Jiffy Gel for anything, like buckets, sheets (for crops like microgreens) or other forms, but most often they would see it used in trays.

The curing process depends on temperature, but typically it only takes about an hour at room temperature. Cold storage would speed up the process, while warmer temps would make it take longer. Kyle said growers could program the process so it's made a day ahead of time and ready for sowing the next day.

"That really gets baked into your process and your lead time on knowing how much material you need for whatever you're producing," he added. "There's different ways to work with that, but in general the curing time is pretty quick."

From there the gel works with seeding automation the same as any other substrate, you can plant directly into it and a machine (or person) can make a dibble for the seeding systems to use. Another option is to brush the surface of the gel, which essentially breaks the surface tension and seed on top. Cuttings can be stuck directly into the gel, as well, making clonal propagation or tissue culture a great application.

The Jiffy Gel works well for the germination and propagation portion of the growing process and roots grow through the gel. But Kyle said it's not necessarily copy/paste when it comes to treating this like other substrates in a few instances. The main consideration is that while Jiffy Gel is water-based, it still requires watering post germination.

"One notable difference between gel and other conventional media is that the pore structure is not the same. The gel has very tiny pore structure and it's not going to let water infiltrate the same way as other media," Kyle explained. "That's one big difference in consideration when it comes to irrigation and management that you have to be aware of. For example, a lot of people who use automated seeders will seed and then they have a watering module at the end that will water the seeds in. We do not do that for gel because you would just flood the surface of the tray and then all of your seeds would be sitting in water."

The Jiffy Gel can be transplanted into hydroponic systems, whether it's Nutrient Film Technique (NFT), Deep Water Culture (DWC) or ebb-and-flood systems. At that time growers can resume their typical growing regime, as the gel will start to biodegrade during the growing process.

"It will break down throughout that time or at the end of cultivation," Kyle said. "You could manipulate that if you wanted to slow that down through irrigation management, but we find most growers would like it to break down by harvest.

"If they're doing any sort of cut leaf lettuce or herb, then your waste is basically your roots and growing media, so then there's not much waste at the end. And that's the ideal scenario because then you're not paying to manage your waste stream."

Additional Applications & Info

This substrate technology can be used in most growing applications, but right now it has its best fit in CEA

production, particularly leafy greens, herbs and microgreens. It also works well for propagation in other CEA crops like tomatoes, peppers and cucumbers, and Jiffy is looking into applications in cannabis and root stock for certain tree fruits.

There’s an OMRI certification in process, too, for organic growers. And while the product was just launched last summer (2025), there are several growers in the U.S., Europe and Asia using it. Growers interested in trialing it can contact Jiffy directly. **IG**