

# Mesa Verde Voices

## Episode 2: Corn = Life

**Host, Cally Carswell:** *Mesa Verde Voices* is made possible by a grant from Mesa Verde Country, Colorado, where one day just isn't enough. Find out more at [MesaVerdeCountry.com](http://MesaVerdeCountry.com).

*(chime sound effect)*

### INTRO –

**Cally Carswell:** I'm Cally Carswell, and this is *Mesa Verde Voices*, a podcast about the ancient history of the Four Corners region and why it matters today.

*(music begins playing)*

**Carswell:** We are confronted on a daily basis with questions about what do to regarding the big issues of our time: food security, climate change, and migration...

It's tempting to assume that these are particularly modern problems with only modern solutions, but we're not the first people to face them. So sit back, and let's take a trip together into the past.

For more than 600 years, Ancestral Puebloan people occupied the Mesa Verde region, which covers southwest Colorado, northwest New Mexico, southeast Utah, and northeast Arizona. We're going to learn some things about them, and also about ourselves.

In this episode, how the farmers of today are helping archaeologists to reconstruct ancient corn harvests. They're doing this because they want to understand how changes in the environment affected peoples' ability to feed themselves.

*(chime sound effect)*

*(music ends)*

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**Carswell:** The story of human occupation of the Mesa Verde region is in large part a story about agriculture.

**Mark Varien:** The way we can first identify Pueblo Indian culture is when something really important in human society happened in the Southwest. And that important event was the introduction of agriculture.

*(music begins)*

**Carswell:** That's a guy named Mark Varien.

**Varien:** I'm Mark Varien and I'm an archaeologist that works in the Mesa Verde region of Southwest Colorado.

**Carswell:** So the advent of farming is what allowed Pueblo society to grow and flourish. But then...

**ARCHIVAL AUDIO:** A great drought settled on the Southwest. A 24-year drought that destroyed the crops and the game. The gods turned their backs on the people of Mesa Verde and turned a relentless sun upon the Earth...

*(music transitions)*

**Carswell:** And so people left. At least, that's the story archaeologists historically told.

**Varien:** One of the lines of evidence, as we've tried to figure out why people left, are the tree ring studies that have been done on the timbers that ancestral people harvested to build their building.

**Carswell:** Tree rings are living libraries. They contain loads of information about the climate of the past. Through tree rings, scientists can tell how much it rained and snowed from year to year. That's because in wet years trees grow wide rings. And in dry years they grow narrow rings.

**Varien:** And one of the things that one of these scientists figured out way back in the end of the 1920s is there was an extended period of drought between about AD 1276 and 1300. And that drought has often been used to explain why ancestral people left the region.

*(music fades out)*

**Carswell:** But Mark and some of his colleagues have come to think that the story is more complicated than that. Today they're using tree rings along with experimental gardens to try to reconstruct ancient corn harvests. They want to know if it's really true that ancient people weren't able to feed themselves during the big drought. Is that really why they left?

**Kyle Bocisnky:** People were growing corn here as their main form of subsistence.

**Carswell:** That's one of Mark's colleagues.

**Bocisnky:** I'm Kyle Bocisnky. I'm an archaeologist at Crow Canyon Archaeological Center.

**Carswell:** And here's just how central corn was to Pueblo peoples' diet.

**Bocisnky:** People here were eating between 75 and 80% of their diet in corn.

**Carswell:** And so yes, if the corn crop failed epically, it might have prompted people to move. The problem is that Kyle, Mark and their colleagues are finding that this whole premise — this idea that people couldn't feed themselves — doesn't totally hold up. We'll get to the details of that in a minute. But first we're going to look at how they got there — by learning how to farm like the ancient Pueblo Indians.

*(sound of a hoe working soil)*

**Varien:** Yeah, I'm hoeing weeds.

**Carswell:** On a sweaty afternoon in July, I found Mark Varien weeding one of the corn gardens at the Crow Canyon Archaeological Center.

**Varien:** Something we have to contend with that the ancestral pueblo farmers wouldn't have is bindweed.

**Carswell:** But the biggest challenge to growing crops here is the lack of water. In the Corn Belt, farmers who depend only on rain to water their fields generally won't grow corn anywhere that gets less than 25 inches of moisture a year. Here, the archaeologists can only count on about half that.

**Varien:** Keeping those weeds away is critical, because those weeds use soil moisture.

**Carswell:** It takes a special kind of corn — and a farmer with special skills — to make it work. Mark has been learning those skills from a group of Hopi farmers from Arizona who still grow the corn their ancestors grew in the Mesa Verde region thousands of years ago.

*(sound of farmers working in background)*

**Leigh Kuwaniwisama:** Nothing beats Hopi corn, I can tell you.

**Carswell:** Leigh Kuwaniwisama is one of those Hopi farmers. And corn has always been an important part of his life.

**Kuwaniwisama:** During sheep herding days, we carried very little water, especially during the summer. Of course, we got thirsty, and if we were near a corn field they would run over there and take a little bit of silk, and that was for water, the moisture. We would eat that.

**Carswell:** For the Hopi, growing corn is both a spiritual and a practical pursuit.

**Kuwaniwisama:** We are people of the corn. The corn at the time of emergence, time immemorial. Corn was given to us by the spiritual people, and they instructed us that this is our life, it is about humility, it is about compassion, industriousness, all of the good qualities of life, that is what the corn represents.

**Carswell:** Being able to grow corn in the desert Southwest requires an intimate knowledge of their environment. Instead of leveling out big fields like corn farmers might do in Iowa, the Hopi read the landscape. They look for ways to use its dips and folds to their advantage. That's how they selected the garden site Mark is weeding today.

**Varien:** They wandered into this space because if you look around you, you'll see that the sagebrush that's outside the garden is really tall. If you look just outside the perimeter of the garden where the tall sagebrush is, you see, you just go another 20 feet, the sagebrush goes from being 7 feet tall around the garden, to being 2.5 or 3 feet tall. It's not super obvious, but we're standing in a very small drainage. The Hopi farmers clued into that fact: that this was drainage, that

it got more moisture, that that more moisture was what made the sagebrush grow taller, and that therefore it's a good area to clear and farm.

**Carswell:** Amazingly enough, when the archaeologists cleared the sagebrush for their garden, they realized that these modern day Hopi farmers weren't the first people to clue into the fact that the edge of this tiny drainage was a good place to grow things.

**Varien:** While we were looking at it that day, there were a couple of rocks sticking up in the garden. Hopi people will sometimes create field shrines where they'll make prayers to help ensure a good harvest. I remember one of them said, "We could use these to make a little field shrine here." It was about a week later that they'd left, and Paul Ermigiotti and I, who work together at Crow Canyon, came out here to start grubbing the sage and clearing this field. We noticed that it wasn't just one rock, but it was actually a line of rocks. We immediately recognized that this was an Ancestral Pueblo check dam.

**Carswell:** It's basically a small embankment built by ancient people to trap water — in their own gardens.

**Varien:** So it was a real thrill to realize that this area that these Hopi farmers had picked was an area that their ancestors had farmed centuries ago.

**Carswell:** Once the site was selected, the Hopi farmers then taught the archaeologists their planting methods.

**Varien:** So one of their strategies is that they plant deeper than a modern farmer would plant. So they're getting the seed down into the moistest soil they can find, and that moisture is coming from the moisture that falls during the winter, and that has soaked into the ground.

**Carswell:** That might mean planting the seed as much as a foot deep.

**Varien:** A second technique they use is whereas a modern farmer would plant one seed in a hole, and have one stalk of corn, the Hopi farmers actually plant about a dozen seeds in each of these deep holes that they dig to deposit the seeds. Lots of those will germinate, and the plants around the outside will sort of protect the ones on the inside. And when they get up about knee high in early July, they come in and thin those out.

**Carswell:** But they still leave a handful of plants in each tight cluster. The bright green clusters are widely spaced in loose, meticulously weeded soil.

**Varien:** Each clump of corn has its own reservoir of soil moisture and they don't want those clumps competing with each other.

**Carswell:** As it turned out, mid-July was a perfect time of year to see why all of this is so important.

*(Varien works soil)*

**Varien:** The first thing you see is early tassel development. So we're really at a time when this garden is most fragile, because the moisture from the winter snows has almost been depleted and the moisture from the rains has yet to arrive on a really regular way. So, we were lucky this week,

we had somewhere between a quarter and a half inch of rain. And the plants look pretty happy right now. But for the rest of the flowering to happen and to actually produce ears of corn, we'll definitely need more rain over the next month.

*(male speaking in Hopi; Hopi farmers working in field)*  
*(Kuwaniwisama: "...corn #2...")*

**Carswell:** Luckily, enough rain came and in mid-October a group of Hopi farmers came to Crow Canyon to help harvest the garden.

**Ronald Wadsworth (Hopi Farmer):** In Hopi you know, we regard this as a human life. And you know how we get old and pass on. So we take the ears of the corn stalk and then we lay the stalk to rest. We lay everything flat on the ground. It's like having your body laid to rest. And life's supposed to be perpetual. So we take the seeds and in the spring, plant it, and life continues.

**Carswell:** There's also data collection happening today.

**Paul Ermigiotti:** And we're trying to determine how many ears come off of each plant. We're going to weight these wet and then a couple months when they're totally dry we're going to weigh them again. And try to estimate how much corn could this garden produce if it was the size that a family would need.

**Carswell:** Which brings us back to the question of what the scientists are learning from these gardens. How much would a big drought have affected people's ability to feed themselves?

*(music begins)*

**Bocinsky:** What we've learned are two things.

**Carswell:** Here again is Kyle Bocinsky.

**Bocinsky:** One: those style of drought, sure the one in the late 1200s was pretty big, but droughts happened all the time.

**Carswell:** People knew how to deal with drought. And even in the worst of times, they still had a decent amount of food.

**Bocinsky:** It wasn't the situation where everyone *had* to leave because of drought.

**Carswell:** So what else was happening?

**Bocinsky:** Well we think that there was a deeper social process at stake, where people entrusted the control of their environment to elites.

**Carswell:** Kyle suggests that those elites were entrusted with ensuring that the rains came and provided good harvests. And when it came to food, the drought created haves and have nots. It compounded inequality that destabilized the social structure.

**Bocinsky:** Some people could still feed themselves, the people up here on Mesa Verde probably did just fine. It's the best place to do agriculture in the Four Corners region. But people down off

the mesa, people at Hovenweep National Monument, for example, they were really struggling. And we think that that struggle, their inability to feed themselves down there that created unrest and it trickled up through Pueblo societies. And then that precipitated into a social decision — not an economic or environmental decision – a social decision to leave this region, and start some place fresh. They decided that this social system we have isn't working for us and the best thing we can do is move to a new place and establish a new way of being Pueblo.

**Carswell:** And they went looking for a new place to the south, along the Rio Grande.

(music fades out)

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(music begins)

**Carswell:** Thanks to the people of the Crow Canyon Archaeological Center and to the Hopi Tribe.

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