

The Tepary Connection: A Visit With W. D. Hood

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His voice is lost in a roaring symphony of percussion as he pulls a lever and his enormous machine jumps into organized stationary action. It could have been invented by Rube Goldberg, Tom Swift or the producers of "The Dark Crystal". It's an apparatus in the classic sense of the term, with its moving parts all visible and performing independent jots—*shicka-shicha-shicha, dd-dd-dd-dd, clickity-clickity-clickity*—in a framework of solid vibrating old cabinetry. A brass plate displays its name "Clipper". This is W. D. Hood's bean machine.

Climbing to the top of the built-in ladder and lifting the flap on the hopper, Louis Romero, Hood's helper and partner since 1938, indicates with arm gestures over the noise the exact place to put the harvested tepary beans into the machine. He points out the sequence through which the beans pass in the cleaning process, the various stiff and soft brushes which remove the pod husks, the graduated series of screens which sort the beans by size and separate them from possible stones picked up from the field with the mechanized harvester, and the trolley which conveys the beans from one process to another, finally dropping them fully cleaned and sorted into a hopper to await the packaging process. Meanwhile the removed bean pods and other debris are sent out another chute through the corrugated metal wall to the outside where they can be retrieved in a wagon and composted.

The Clipper bean cleaning machine is the dominant component in Hood's spotless 30'x60' warehouse. It stands 15 feet high, bare-boned and archaic yet purposeful like a wise old man, next to a slick metallic new weighing and bagging

machine whose unseen parts make a steady electric whir. The beans are conveyed up from the cleaner, measured into hundredweight lots and chuted into suspended burlap bags for storage.

Hood and Romero radiate quiet pride in their operation and indeed it is a joy to behold. I had visited them a few times and was spurred on to know more about what makes these two fine people tick. How did they get into the tepary bean business, anyway? I had to know. They have played such a significant role in helping the world know about this important food source. While the "organic movement" people and "alternative agriculturists" were spreading the word about "new" crops such as teparies, beating drums and tooting horns, Hood and Romero were out in their fields silently and without fanfare *producing* them, and in turn providing beans to peddlers, markets and consumers. Without any beans on the market, all the talk and writing about these beans would have been worthless.

I first met Mr. Hood and Mr. Romero in 1980 while in search of a large quantity of teparies to serve at a native foods workshop for members of the Arizona-Sonora Desert Museum. I had met Hood's beans unknowingly in trading posts across southwestern Arizona in previous years and finally found who their source was—surprisingly not a long-haired Papago Indian grower as I had envisioned, but a down-home modern Anglo farmer who reads the Wall Street Journal and Fortune Magazine.

I told Hood of our intent to help Desert Museum members and visitors, particularly newcomers to the Sonoran Desert, better understand human cultural adaptations to desert living, desert plant adaptations, water conservation, etc., through demonstrations using teparies and other desert edibles. He absolutely refused to sell any beans to us. Instead he donated two hundred pounds! His generosity has increased from year to year since then and has immeasurably helped the Desert Museum staff and volunteers to reach literally thousands of visitors through experiential learning using teparies. It is amazing how many relevant interpretations and messages about desert ecology one can convey to a neophyte once he has feasted on an ancient and honorable food such as the tepary bean served by a native American cook. A good way to the brain and to the emotions is indeed through the stomach. What an incredible tool the tepary has been in this environmental education program!

On September 9, 1982, I met with Mr. Hood to find out what first inspired him to start into the tepary bean business, a relatively unknown crop even ten years ago. I hoped with such an interview to share what he has learned with others who may wish to grow teparies commercially or on a larger, more mechanized scale than the kitchen garden.

Hood's first words in our interview were to say that he has grown teparies from the beginning as a business venture, and to disclaim *any* intent toward proselytizing for the tepary for its own intrinsic worth or for the world's future. He shows stubborn amazement that seed companies from New Mexico, futurists from Paolo Soleri's Arcosanti, organic gardening writers from Emmaus, Pennsylvania, and even growers in South Africa are constantly contacting him for information or seed stock. He is the Tepary Connection. Like it or not, Hood and Romero are heroes of our time. About fifteen years ago when they began growing teparies, no one else in the United States was growing them other than a handful of traditional Piman farmers clinging tenaciously to familial ways and



W. D. Hood and a crop of recently root-knifed tepary beans, on his farm at Coolidge, Pinal County, Arizona. September 9, 1982. Photo by Martha Ames Burgess.

hoarding a coffee tin of planting seed from one year to the next. The tepary bean was a cultivar close to extinction.

This is Hood's story. As an irrigation farmer in the late 1960's situated out from the town of Coolidge, Arizona, in the broad arable valley of the Gila River south and east of Phoenix, Hood was seeking a new late summer crop to introduce into a rotation cycle following the barley and winter wheat harvest. Being in a hot desert area, the ideal crop he looked for would have low water requirements, would produce nitrogen, and would not need to be harvested—only turned under as green manure. He would go for a desert-adapted legume.

He had done some research and knew that the tepary bean had been grown commercially several times in Utah and along the lower Colorado River with no lasting success. Prior to the first World War it was a dryland crop. Soon after that time, with changing technology, the larger pinto bean became the bean of favor commercially and, according to Hood, teparies were preferred only by southwestern ethnic groups. As oral tradition goes, a grower near Mesa, Arizona, by the name of LeBaron had obtained tepary seed from the University of Arizona Mesa Experiment station and planted 200 acres. It was a very successful year's crop but LeBaron was unable to sell his unfashionable bean. The harvest remained many years in a dry warehouse near Chandler, Arizona—fortunately still good and viable—and that is where Hood obtained his initial supply of white teparies. "That was a good lesson," Hood quipped. "Only grow what you need." He also obtained by way of a peddler one large bag of mixed brown teparies grown in Sinaloa, Mexico, which were exceedingly variable and had to be sorted by color, removing many stones, cracked and shriveled beans and even

corn, before they could be planted. Hood used to call his brown teparies "dorados" due to their golden color when freshly harvested. In order to maintain a "clean" product, never has he mixed the white with the brown stock in his own planting.

Hood and Romero are first class problem-solvers. They had their hands full from the outset with teparies, having no one to offer them agricultural extension style advice.

Problem Number One, the difficulty in getting new seed, was solved by the obvious decision to raise a certain quantity for future planting and thus be self-sustaining.

Problem Number Two was the initial assumption about nitrogen. Didn't all legumes have bacteria in root nodules, which, beneficially for plants and planters, produce soil nitrogen? They found this to be not always true. With the help of Dr. Victoria Marcarian of the Department of Plant Sciences at the University of Arizona, they probed for nitrogen fixers and found them to be spotty or apparently absent. They did however isolate some of the bacteria and with an elaborate process developed by the Nitra-gin Company, Inc. (Milwaukee, WI 53209), an inoculum was produced which could be introduced into the soil at a useful depth of six to eight inches below root crowns. But extreme heat of the desert soil seemed to interfere with effective establishment of the inoculum. Continued research by the University on techniques for improving nitrogen fixation in desert legumes is still needed.

Gratifyingly, Hood found that teparies grown in the summer in the Coolidge area were not affected by the usual local spectrum of crop (mostly cotton) feeding insects such as *Lygaeus* bug, stink bug, or flea hopper. Although these types were observed, there was no economic damage. However,



A tepary bean field on the Hood farm. Five weeks after planting. Photo by Helga Teiwes.

Problem Number Three soon loomed in the form of red spider mite and white fly—species which pierce and suck the plants' life supporting juices, pests which had never posed threats to his crops before. To dodge this problem in subsequent years Hood and Romero changed the planting date to March and April in order to be able to harvest before onset of the harmful insect season. No insecticides could be employed since the Environmental Protection Agency routinely prohibits use of such chemicals where they might be transmitted into food.

Water for Hood's out-of-town farm came from the San Carlos Project and sometimes it was necessary to face the prospect of an empty reservoir. **Problem Number Four.** Hood and Romero devised a plan to raise each crop of teparies for a yield commensurate with the water supply. For example one acre-foot of water plus any rainfall would produce only enough growth for green manure. If more water could be allotted, increased productivity generally resulted in usable quantities of beans. The farmers determined that they should save back ten bags of each seed type, white and brown, as seed stock against low water years, being confident of the bean's long "shelf-life".

Thus far, the original goal of using teparies on a large scale was hardly being met. In his earlier years of tepary planting Hood would put in five to ten acres and harvest around 60 hundred-pound bags of beans, but goals for his tepary bean crop began changing as a market developed for the product. Hood claims it was the peddlers who helped make it a cash crop for him. A trader by the name of Klineman was running a "bread route" to several trading posts on the local Pima, Papago and Salt River Indian Reservations, and through him the Indi-

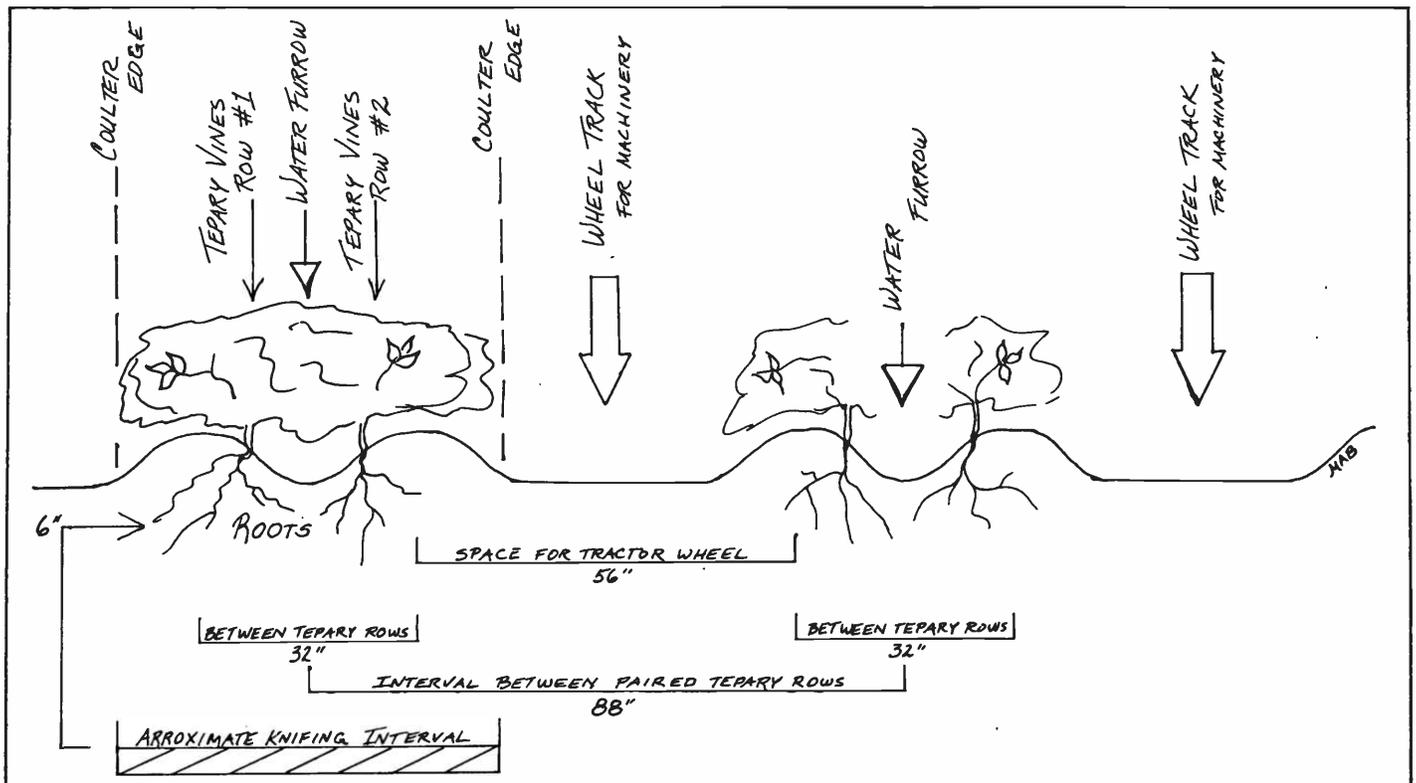
ans became consistently good customers. Lutheran missionaries at the village of Pisinimo on the western side of the large Papago Reservation were growing small quantities of beans and bringing them to Hood's machine for cleaning. They in turn would sell his teparies in Papagoland. In addition to these contacts, the Saguaro Spice Company in Phoenix would buy and distribute teparies to stores in Maricopa County in central Arizona. Hood's local outlet was Blackwater Trading Company near Coolidge. The market for the teparies was mostly native American. Noting the cultural preference, Hood observed that purchases (i.e. consumption) would slacken each summer because, in his words, teparies are "a hot food" and usually only eaten in cooler months. Now, in recent years a new Anglo demand has arisen with health food and bulk food markets: Cher's, AFCO and the Food Conspiracy in Tucson, stock teparies when available.

With more experience—and incentive—Hood was making some interesting observations about growing teparies under irrigated conditions. "The percentage of beans to foliage is higher with *less* water. But if you are raising teparies for yield-per-acre you need more water. A bean count on a small, low watered plant is 20 to 25 beans! This is remarkable." His is the voice of experience. "If you tried pintos or limas with the same conditions nothing would produce. A big (watered) tepary plant on good soil becomes a vine, with 100 beans per plant."

"Teparies are adapted to this (desert) area. They shed their flowers above 105° F but still thrive. They are making beans in Papagoland in September and October when it's cooler after summer rains. Coolidge is at the extreme for teparies. You see, our planting date is changed from the traditional. We are pun-



Hood's bean harvesting machine picks up the plants after drying on the ground for 5 or 6 days, threshes out the beans, threads up the vines and discards them back onto the field. They will be plowed under to mulch and fertilize the soil.
 Photo by Helga Teiwes.



Cross-sectional view of paired row tepary bean plantation method, W. D. Hood farm, Coolidge, Arizona. Drawing by Martha Ames Burgess.

ishing our plants with June heat to avoid the mites. If one were to start from scratch, try a desert elevation of about 3000 feet where it's just a little cooler."

In 1980 Hood "retired", sold the family farm outside of town and moved into town on a smaller farm a quarter section (160 acres) in size. No longer having sugar beets to bring income, he wanted to at least make the new acreage productive. I asked if growing teparies was for him now a hobby. Negative. "My object is to make money!" And it's lucky for us all that he has changed over the years to such a productive goal for tepary farming.

The new farm and its equipment have presented their own new problems. There is well water and the concomitant pump machinery, instead of San Carlos Project irrigation water. Hood talks business with the objectivity of an economist. "It's not really worth the capital investment for 60 acres worth of profit. The farm was marginal to begin with—with all the equipment." He is now up to an average yield of 500 bags and doesn't see the market growing appreciably. "That's not a good gross." A new combine just cost him \$40,000.00, and the pump for the well now needs repair. Expenses are really beginning to pinch—**Problem Number Five.**

On the new farm weeds have become **Problem Number Six.** Being situated very close to residences, a church and two schools, use of herbicide chemicals on a routine basis is ruled out. To solve the weed invasion Hood has chosen to plant only one half the acreage at a time, never more than 60 acres or so. The first to third year of planting on the same acreage shows a gradual weed build-up from sparse to rampant. After the third year's harvest Hood lets the fields lie fallow and sprays herbicide when no crops are planted. The following year the alternate acreage is planted.

So far the average yield has been 9½ to 10 bags (one hundred pounds each) of clean beans per acre, his best yield being 14 bags. But he believes that with concentrated effort and good conditions an optimum yield could be double this.

I asked Mr. Hood for a more detailed picture of his mechanized planting, cultivating and harvesting process, so he took me out into the field where there remained several rows of teparies in the last stages of growth and other rows already cut and drying in place awaiting harvest in the dry September heat. We sank to our ankles in loose sandy loam as he pointed out the double rows of beans with a wheel track for the machinery between each pair of planted rows. He explained that watering is done down the middle of the paired rows and that the teparies are planted on the inner side or slope of the row hill in close proximity to the water. In this way compaction from tractor wheels never interferes with water percolation or root growth. When the plants get large they stand only about two feet off the ground, vining and merging their foliage between the paired rows. Cultivation depends on plant growth. When the vines are small, Hood and Romero cultivate along the row very close to the plants and as growth spreads they move away from the plant. A machine called a Coulter is used to chop a regular trimmed edge along the foliage to keep the track clear.

It is about a hundred days from planting to harvest. When the beans are mature each paired row of plants is root cut or "knifed" using an underground blade at a depth of six inches. The blade goes below the tap roots to cut feeder roots and slightly lift the plants. Because the tepary bean pods open easily at maturity when shaken, the root knife seems to produce the least disturbance, thereby preserving a maximum number of beans. The uprooted plants dry in place for seven or eight

days or until pods are ready. Then Hood and Romero use a combine to harvest the paired row of dried vines. Hood says all of the equipment he uses is conventional machinery from the row planter on through every processor. "Any bean harvester would do," he advises openly.

Does Hood eat teparies himself? This was a testy question I had to ask. Yes, he does, and frequently! "I haven't had pintos in a long time." He likes to experiment with ways to cook them. "Of course the objection to all dry beans is flatulence. In order to reduce the effect I soak the teparies overnight and discard the water. I cook (boil) and discard the first water. I make a broth with ham hock and onion then I pressure cook for twenty minutes." He was hasty to say that he does not recommend his method to anyone else because of the possibility of a bean skin plugging the pressure cooker vent, which is a real safety hazard. Hood likes the high energy from eating teparies. "They're heavy and stick to your ribs. And you know, they are even better the second day after cooking." Eating teparies looks as if it agrees with him as he stands tall, hefty and strong.

W. D. Hood and Louis Romero now know far more about growing teparies than any county extension agent. It has been a process, in Hood's words, of "by guess and by God." Each year they have had to redesign the system and each problem has brought fresh innovation. I asked Hood what other advice might be given to prospective tepary growers. He apologetically admits he doesn't have a consistent formula to offer because each year has been different. The key, he suggests, is to know that growing teparies is going to be labor-intensive. Summing up his own reasons for farming teparies and presenting it almost as a gentle admonition, he advises "It's what you do for yourself."

Hood, at 62 with two children on their own independent careers and a grandson in his 20's who helps part time on the farm, feels that the challenges of growing teparies may be for a younger more vigorous farmer. His partner and friend Mr. Romero is 67, and the two sound as if they may want to treat themselves to a rest—while they're ahead.

Reflecting upon the way the history of farming has progressed in central Arizona, Hood muses on the irony of changes. Harnessing the major rivers such as the Salt and Colorado was developed for farming originally, and now most of the irrigation water goes to support municipal development. Communities grew up near the railroad which was put in to help transport farm products. Eventually the communities grew to a megalopolis consuming most of the arable land. "And now, the wealthy have gone to the foothills like Paradise Valley. That's where Phoenix belonged in the first place! . . . We're not like Mexico where they live on the rocky slopes and save the good low land for farming." It is a good lesson in geography to listen to him.

Since September of 1982 Mr. Hood has made some major decisions. With an irreparable pump and total dependence upon a well for irrigation, he and Romero have determined to call a halt to the tepary project. To the native Papago farmers growing teparies, garbanzos and devilsclaw in Pisinimo, Arizona with whom Hood has maintained a healthy exchange now for many years, he has given the gift of increased productivity—his new combine.

And the magnificent machine which has cleaned so many teparies? It stand awaiting a new residence, new purposefulness for another generation of bean growers—whoever next seeks its services.