efficient foragers," says Tim. "They gravitate directly towards the most edible foods, as if by spiritual guidance." Palatable root crops tend toward quick degredation and/or extinction in the wild, for example, because desirable roots and the roots relative physical proximity to key predators, make them especially vulnerable. Stringy roots with noxious flavor typify plants in the wild, because sweeter genetics get eaten out of existence. Not surprisingly therefore, we see a direct correlation between plant edibility and plant domestication through the centuries. For example, as we bring plants into the protection of our gardens we can actively reduce high tanin levels to increase nutritional benefits, but in the process we remove a trait that makes plants less palatable to critters and prevents them from rotting.

"Now there's a place for royalty, you might say, the delicate things of the plant world," Tim observes, "but we definitely need crops possessing more of the mountaineering aspect... drought resistance, tolerance to low fertility (which means the ability to proliferate roots in search of nutrients), disease resistance, the ability to continually reproduce in the wild, and suchlike. The more energy a plant has, the more robust it is, the more likely it is to overcome the difficulties in a more natural environment."

THE FUNDAMENTALS OF LONG-TERM NUTRITION

A lifetime devoted to breeding a wide variety of food crops in domesticated, fertile gardens & infertile, wild mountain situations has gifted Tim precious comparative insights into the fundamentals of robust, long-lived cultures. "There's things that time will tell you that nothing else will," he remarks.

For complicated reasons, Tim feels that perennial grains lend themselves to combining many of the essential qualities he has been seeking to usher forth, in a food.

Structurally, for example, they represent a starchy, staple food crop and yet the focus of attention isn't the plant base – a big plus in circumventing the predatory intent of ground-based critters such as gophers. "And although small herbivores like squirrels will topple grains like falling timber, and go stand on the stumps and shuck them with their hands to get at the good stuff, the bigger herbivores, such as deer, have to use their mouths. They can't strip the awns. If they try to eat them, they choke to death." Most perennial grains have awns. (See piccies.)

The robustness of grasses, and perennial grasses at that, lends them added ecological horsepower, too. "Grasses pretty much hold their own until the trees start shading them out in 5-15 years," Tim avers. "I mean, look out the window. And although there are places where annuals hold their own – deserts, for example – in the Western States, at least, perennials always have the advantage." Why? Because unlike annual grains, the perennials photosynthesize more months of the year, and put down a root system that keeps on going deeper, like trees – which gives them the capacity to 'dig in', reach sources of nutrients, and create symbiotic relationships over time.

"Of course I've looked at tree crops," Tim notes. "Although tree crops, such as nuts, are also perennials and can tolerate poor soils, they take years to yield a crop. Walnuts can take up to 15 years. We starve in the meantime."

FAST YIELDS & PERENNIALITY: THE UNION OF OPPOSITES

Perennial grains are fast, moving quickly to yield. On fertile soils, sown in the Fall, they will produce a bountiful crop within a year – on poor soils, within 2-3 years.

The quickness is evident from day one. I've personally witnessed the vitality of perennial grains relative to other plants. They germinate quickly, with great vigor. Almost immediately, the root systems develop an astonishing tenacity. The plants are tough: they survive neglect.

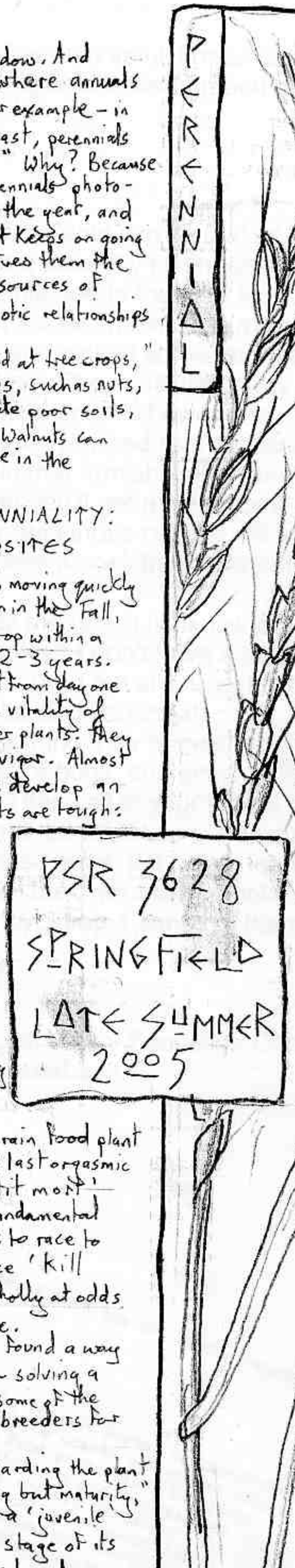
This speed to yield on the one hand, and the tendency to peremnialize on the other, perhaps marks the highpoint of Tim's achievement, because it elegantly conjoins what have historically proven to be 2 highly contradictary evolutionary traits.

Seed making – a trait we wish to encourage in a grain food plant – typically sounds a grain's last orgasmic hurrah before it dies. 'A petit mort' that ain't so petit. This fundamental tendency of high yield grains to race to maturity + dry down + hence 'kill themselves' naturally sits wholly at odds with a tendency to perennialize.

Tim appears to have found a way through this incompatibility – solving a conundrum that has stymied some of the world's most tenacious plant breeders for the better part of a century.

Essentially, by stewarding the plant away from "focusing on nothing but maturity," by encouraging a reversion to a 'juvenile' or 'leafy' state at a critical stage of its evolutionary cycle, he has reduced grain's annualness.

We can witness this same tendency to revert to a juvenile (vegetative)



«ONE DOES NOT DISCOVER NEW LAND WITHOUT CONSENTING TO LOSE SIGHT OF THE SHORE FOR A VERY LONG TIME.»
–ANDRE GIDE