WHY YOU SHOULD CONSIDER NO-TILL ON YOUR FARM!

ENVIRONMENTAL DEGREDATION.

Many people are becoming aware of the plight of our environmental conditions and some times fear and panic are the reactions we get from the fanatics, media and authorities. Yes it is not good at present but there are practices and changes in life style which can be brought about that will have a positive effect on restoring some of the negatives displayed at present by our precious planet. One of these is NO-TILL or CONSERVATION TILLAGE in producing crop's, pastures vegetables and even in your own garden at home.

WHAT IS NO-TILL?

The essentials of a No-Till system are that a narrow slot is made through the organic/mulch layer into the soil, the seed and fertilizer is placed into the slot, then covered with soils and compacted sufficiently to ensure adequate contact between seed and soil. Soil disturbance is reduced to a minimum.

- NO-TILL practices provide a residue/mulch layer on the soils surface and
- Results in the accumulation of organic matter in the soil.
- Organic matter consists of a vast array of carbon compounds in the soil such as dead or living plant or animal tissue
- Organic matter is the lifeblood of a fertile soil- without it, agricultural production is not sustainable.
- When organic matter decomposes, the end product is humus, a stable product resistant to further decomposition.

There is a very close relationship between the effects of No-Till, organic matter and soils structure – they are inextricably interlinked.

THE ADVANTAGES OF NO-TILL

- **Reduced soil erosion**
- An improved soil environment (soil structure, water infiltration, moisture retention, soil health and cat ion exchange capacity)
- South Africa looses 400 million tons of top soil annually from water erosion
- Two million hectares of cropland on the Highveld is subject to severe wind erosion- losses of 20to 60 tons per hectare of fine material (the most fertile) can be experienced annually.
- Many storage dams are under threat and are no longer functional because of sedimentation
- Dams in S.A. could be losing between R70 and R100 million worth of storage capacity each year due to sedimentation (2005 figures)
- Many of the wetlands have been damaged by cultivation and drainage. Sedimentation has decreased their capacity to store water.
- 45 of the river estuaries in KZN are in a serious stage of degradation
- When organic carbon is lost, due to cultivation and erosion, carbon dioxide is released into the atmosphere contributing to global warming. For example within two generations the maize triangle in South Africa could no longer exist.

- **Water and moisture conservation**
- Water infiltration rate into the soil is greater under No-Till than under conventional tillage, and runoff as well as runoff intensity is reduced.
- There is scientific evidence that water infiltration is highest in No-Till soils with a permanent vegetal cover
- No-Till/organic matter increases the water holding capacity of the soil, thus reducing drought stress
- At Cedara agricultural research station in KZN two storms totaling 132mm, with a rainfall intensity or 88mm/hour, 40 percent of rain that fell ran off from the conventionally tilled plots, whereas 17 percent ran off the No-Tilled plots.
- Rainfall storage efficiencies increase from 26% for fallow soils to between 40 to 60 % when tillage is minimized.

- **Reduction in evaporation from the soil**
- Once water has infiltrated the soil, the surface mulch reduces soil moisture loss by reducing soil temperatures as well as evaporation from the soil surface.
- Crop residue on the soil surface can reduce evaporation from the topsoil by an estimated 50mm of water available, on average, for plant growth in high summer when the crop really needs it. Such a benefit would be even more important in the marginal cropping areas with a lower and more erratic rainfall.
- Evaporation losses are often underestimated. They can amount to as much as 85% of the available water in the top 150mm, on an unprotected soil.
- Under No-Till, evaporation from the soil surface could be reduced drastically, this could be at least 75% where the soil cover is 70% and as much as 90% with a full surface cover.

- **Reduction in machinery cost:**
- In No-Till, where tractors operate on the surface, their rolling resistance is significantly reduced and less power is required. With the strain on tractors being lower, running and maintenance costs are also lower.
- R. Stubbs dairy farmer Near Howick reports a fuel saving of between 30 and 40liters of diesel per hectare per annum. And around 300 hours on a tractor per annum.

✓ **Labour saving with No-Till**

✓ The lower physical inputs required in a No-Till system can result in time saving. This could be as much as 500hours on a 50ha land, that is 10 working hours per hectare. This would amount to a saving of virtually one working day per hectare of planted area.

❖ **Yield improvements using No-Till.**

❖ No-Till systems improve soil conditions and even heavy, poorly drained soils may show increases in yield when compared with other systems of crop production, in the long term.

❖ No-Till ususally results is
  - More stable yields, especially in dry years
  - Gradually increasing yields, with reduced inputs and
  - Improved food security.

❖ Improved yields have been reported on a regular basis once the effects of No-Till have started to settle.

❖ In the Western Cape No-Till has resulted in a 33% higher yield for wheat for the top five farmers in the systems who have on average been applying No-Till for 10years.

❖ On Gourtan Farm in the Winterton area of KZN, since starting N0-Till in 1992, yields of irrigated maize, soya's and wheat have doubled.

❖ R.Stubbs Karkloof Howick reported increase in yields on his farm from
  - Maize silage 11 to 13tons of dry matter per hectare dryland
  - Maize grain form 5.8tons to 9tons per hectare dryland.
  - Earthworms in the soil have increase from zero to 300 per cubic meter

This has all happened over a 10 year period on his farm.

CONCLUSION

No-Till can have substantial positive financial, environmental, social and health benefits for South Africa and the world

All The above detail was taken from "NO-TILL ADVANTAGES AND BENEFITS IN CROP PRODUCTION" COMPLIED BY Dr. A.VENTER