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Brazilian Animal-drawn NT planters

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There are two basic designs of NT planters: the first evolved from the Gralha Azul/IAPAR prototype and a second evolved from the "fuçador" plow. The first design is represented by the models Mafrense, Iadel to some extent, Ryc, and the second by Werner, Triton (a copy of Werner) and Fitarelli. The latter are regarded as Minimum-tillage planters.

Farmers from the Southwestern and Central-Southern region from the State of Paraná, Brazil, facilitated by IAPAR Farming Systems Research (FSR) group, have been doing some evaluations of these models. This evaluation is complemented by technical evaluations conducted jointly by IAPAR researchers and technicians, with extension agents. Summarized below are key points of the equipment:

- The planters that evolved from the "fuçador plow", particularly the Werner model, are the most suitable to African conditions (in my opinion), because they are lighter, simple in adjustment and less expensive. However, 1) the options of seed plates are very few, which can result in plant population below or above the desired. 2) due to the hitching characteristics, the model for oxen (with shaft) is more efficient than the model for horses. 3) to have its efficiency improved, the models for oxen and horses must have a hitch point with different options so as to provide different levels of ground clearance for the coulter; a protection structure must be provided in order to avoid risk to the animal; the furrow opener is too wide, resulting in excessive soil disturbance at the furrow; 4) the size and shape of the seed hopper can be optimized in order to allow more autonomy and avoid seed losses at the bottom of the hopper. During our participatory evaluations, we assessed that the Werner model is preferred by farmers who own oxen and cultivate in stony and hilly areas.
- The Triton model is a new option to Werner, and the manufacturer has done some of the adaptations suggested above: more seed plate options and a narrower furrow opener.
- The models evolved from Gralha Azul/IAPAR prototype are preferred by the farmers who own oxen or horses (like in Central-Southern region). The models with two land wheels are suited only for flat areas. The advantages of those equipment are: more options of seed plates; good penetration at the furrow opener (chisel types), particularly the Ryc and Iadel models. Disadvantages are: high cost; more complex in adjustments, heavier.
- Besides the one-row models, there are some manufacturers which produce multiple-row planters: Fitarelli, Picetti and Mafrense.

Photos and information on the main models are presented below.

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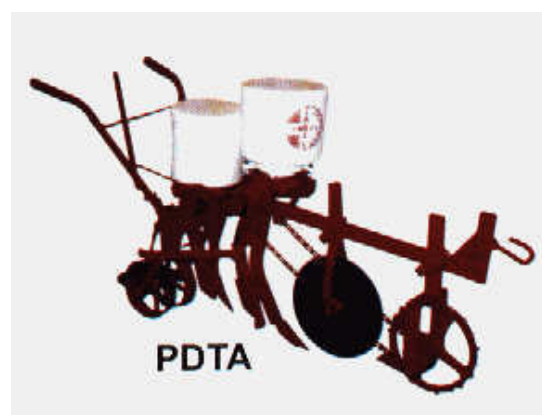
²The reports are available in Portuguese and can be requested to mfsribei@pr.gov.br



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Table 1 – Main characteristics of some Brazilian animal-drawn NT planters.

<i>Fabricante / Modelo</i>	<i>Corte da cobertura</i>	<i>Regulagem para corte e penetração</i>	<i>Sulcador fertilizante</i>	<i>Sulcador sementes</i>	<i>Controle da profundidade</i>	<i>Acionamento dos dosadores</i>	<i>Cobert compact</i>
MAFRENSE -1 row	Disc coulters	Hitch point and furrow opener	Shovel	Double disc	Front wheel	Front wheel	"V"-t double v
MAFRENSE -1 row and 2 land wheels	Disc coulters	Hitch point and furrow opener	Shovel	Double disc	Front wheel	Two front wheels	"V"-t double v
MAFRENSE - 2 rows	Disc coulters	Hitch point and furrow opener	Shovel	Double disc	Two front wheels	Two front wheels	"V"-t double v

RYC	Disc coultter	Hitch point and furrow opener	Shovel	Shovel	Two front wheels	Rear wheels	Para double v
IADEL	Parallel double wheels	Hitch point and furrow opener	Shovel	Shovel	Front wheel	Front wheel	Para double v
MARCASSIO	Parallel double wheels	Hitch point and furrow opener	Shovel	Shovel	Two front wheels	Two front wheels	Para double v
FITARELLI – 2 rows	No	Weight	No	Double disc	Land wheels	Land wheels	Roda la plar
FITARELLI – minimum tillage	No	Shovel	Shovel	Shovel	Operator	Front wheel	Nc
WERNER – minimum tillage	No	Shovel	Shovel	Shovel	Operator	Rear wheel	Rear w

Source: Ribeiro et al., 2000



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