



De Rust Grass Carp Farm

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De Rust Grass Carp Stocking Policy

All grass carp produced at De Rust, adhere to the conditions set out by the national grass carp policy and our EMP. We align ourselves 100% with the following policy statement in the grass carp protocol.

Policy Statement

The exotic Grass Carp (*Ctenopharyngodon idella*), although often effective in controlling aquatic weeds, is considered to pose a significant potential threat to certain natural aquatic habitats in South Africa. The stocking of this species should therefore be strictly controlled by a permit system. Furthermore only sterile (triploid), species pure, disease free, tagged fish from accredited producers should be stocked into non-sensitive waters in responsible manner.

DETERMINING STOCKING RATES

For the purposes of making a quick and basic assessment of the proposed stocking, a stocking model was developed. An online question form or PDF form is available on the website, www.grascarp.co.za this must be completed as accurately as possible. GPS coordinates of the dam and ID number is essential.

The following procedure is followed to determine the amount of fish to be stocked into a water body:

1. Establish the size of the surface area of the dam.
2. Determine the percentage of weed infestation in the dam.
3. Determine the weed stocking factor of the weeds in the dam.
4. Enter information into stocking model.
5. Select the specific water use or application.
6. Consider other factors such as water depth and average temperature.
7. Select stocking rate for the specific size of fish.
8. Maintaining sustainable results.
9. Perquisites to finalize stocking rates.
10. Permitting procedures.

1. Determining the size (surface area) of the dam.

A simple calculation is made to establish the surface area of the dam in square meters. The following formulas can be used:

- Surface area of square dams = Length x Width
- Surface area of triangular dams = $\frac{1}{2}$ x Length x Width
- Surface area of round dams = $22 \times$ dam radius x dam radius / 7
- Size can also be established using Google earth or maps

2. Determine the percentage of weed infestation in the dam.

Decide beforehand at what percentage stocking will be done, or estimate the percentage of weed infestation in the dam.

3. Determine the weed stocking factor of the weeds in the dam

In order to make an accurate determination of the stocking factor, it is important to make a positive identification of the weed type in the dam. To accomplish this, a website is used to identify the weeds. The link below should be followed:

<http://aquaplant.tamu.edu/plant-identification/>

A table of the most common aquatic weeds found in South Africa is available on our website.

After identifying the weed, the management options icon is selected. All the management options are listed as well as the weed factor in fish per acres.

4. Enter information into stocking model.

The following factors are taken into account:

- The depth of a dam
- Water surface area
- Type of weed
- % of weed infestation
- Water use
- Age of dam
- Nutrient load
- Highest seasonal water level
- Lowest seasonal water level

5. Select the specific water use or application

A decision is made as to what the dam is used for. In the case of an angling dam, stocking rates should be lower to provide some cover for smaller fish.

6. Consider other factors such as water depth and average temperature.

A series of other factors could be considered. The following is examples of factors that could play a role:

- Seasonal temperatures
- Other fish species present in the dam
- Soil type
- Water color
- Water level fluctuations
- Water quality
- Human activity
- Time frame for aquatic weed control

- Select a stocking rate for the specific size of fish
 - The ideal will always be to stock big fish. Factors such as the cost of air travel and transport for bigger fish, sometimes outweighs the mortality factor of smaller fish. The most economic fish size to stock is fish between 20 cm and 30 cm.

- Different sizes of fish are priced in such a way that irrardless of size, the eventual cost per hectare is more or less the same.
- The table below was compiled after years of research in the USA. It serves as a good guideline to determine mortalities in South Africa.
- The same type of predators and conditions are present in South Africa.
- Information was obtained from:
 - MANAGING AQUATIC VEGETATION WITH GRASS CARP
 - A Guide for Water Resource Managers
 - John R. Cassini, Editor

Triploid Grass Carp Mortality Rates. Information from Florida Game and Fresh Water Fish Commision, Aquatic Plant Management Operations Manual			
Size of Fish (inches)	Survival factor	Mortality Rate	Fish/acre
6.0	0.3333	66.6%	30
6.5	0.3703	63.0%	27
7.0	0.4000	60.0%	25
7.5	0.4347	56.5%	23
8.0	0.5000	50.0%	20
8.5	0.5233	17.4%	19
9.0	0.5555	44.5%	18
9.3	0.5882	41.2%	17
10.0	0.6666	33.3%	15
10.5	0.7500	25.0%	13
11.0	0.3333	16.7%	12
11.3	0.8989	11.0%	11
12.0	0.9595	1.4%	10

7. Maintaining sustainable results.

Grass Carp is a very hardy species of fish. Under average conditions aquatic weed control should be maintained for at least ten years.

The ideal would be to restock at 10% every year after the initial stocking. As this is in most cases not practical or cost effective, the dam should be monitored annually to follow the progress made. A good practice would be to take a photograph every six months from the same position overlooking the dam. Photos could then be compared to establish any changes in the visible weed infestation

Grass carp is just one of the tools available to manage aquatic weeds and should be managed as any other tool available. If there are weeds present that are not preferred weeds of grass carp, other control measures like mechanical or chemical solutions could be implemented.

8. Prerequisites for finalizing stocking rates.

A quote and proposed stocking model will be sent to the client for scrutiny and authorization.

The proposed stocking rates will then accompany the permit application to the relevant provincial nature conservation authority, for scrutiny and verification.

9. Permitting procedures.

No stocking will be conducted without the necessary permits.

Permitting applications can be conducted by us on your behalf.

