

Industry allocated project number

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Indicate (X) client(s) to whom this final report is submitted. Replace any of these with other relevant clients if required.

**NB: The instructions in red, throughout the template, should be omitted from the final document.**

## FINAL REPORT (Type reporting year)

### 1. PROGRAMME AND PROJECT LEADER INFORMATION

	Research Organisation Programme leader	Project leader
Title, initials, surname		
Present position		
Organisation, department		
Tel. / Cell no.		
E-mail		

### 2. PROJECT INFORMATION

Research Organisation Project number	
Project title	
Short title	

Fruit kind(s)	
Start date (mm/yyyy)	End date (mm/yyyy)

Key words	
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### 3. TOTAL PROJECT COST

	CFPA	DFTS	SAAPPA SASPA	SATI	Winetech	THRIP	OTHER
<b>TOTALS</b>							
<b>Total cost of project from start to date in real terms</b>						<b>R</b>	

Approved by Research Organisation Programme leader (tick box)

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THIS REPORT MUST INCLUDE INFORMATION FROM THE **ENTIRE** PROJECT. ALL TABLES, GRAPHS AND FIGURES ARE TO BE INCLUDED IN THE BODY OF THE REPORT.

#### 4. EXECUTIVE SUMMARY

*This must report on the **ENTIRE** project. Address the objectives and milestones of the project as well as the impact of the study on the industry, **not exceeding 500 words**. You can overtype the example.*

##### **Objectives & Rationale**

We tested the prediction that the abundance and diversity of arbuscular mycorrhizal (AM) fungi are influenced by resource availability and plant community composition by examining the joint effects of carbon dioxide (CO<sub>2</sub>) enrichment, nitrogen (N) fertilization and plant diversity on AM fungi.

##### **Methods**

We quantified AM fungal spores and extramatrical hyphae in 176 plots after 7 yr of treatment with all combinations of ambient or elevated CO<sub>2</sub> (368 or 560 ppm), with or without N fertilization (0 or 4 g N m<sup>-2</sup>), and one (monoculture) or 16 host plant species (polyculture) in the BioCON field experiment at Cedar Creek Ecosystem Science Reserve, Minnesota, USA.

##### **Key Results**

Extramatrical hyphal lengths were increased by CO<sub>2</sub> enrichment, whereas AM spore abundance decreased with N fertilization. Spore abundance, morphotype richness and extramatrical hyphal lengths were all greater in monoculture plots. A structural equation model showed AM fungal biovolume was most influenced by CO<sub>2</sub> enrichment, plant community composition and plant richness, whereas spore richness was most influenced by fungal biovolume, plant community composition and plant richness.

##### **Conclusion and Discussion / Recommendation**

Arbuscular mycorrhizal fungi responded to differences in host community and resource availability, suggesting that mycorrhizal functions, such as carbon sequestration and soil stability, will be affected by global change.

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**5. PROBLEM IDENTIFICATION AND MOTIVATION**

*State the problem which was addressed and the ultimate aim of the project. Include any deviations from the original application form.*

**6. OBJECTIVES**

*List the objectives detailed in the Project Application.*

**7. PERFORMANCE CHART (for the duration of the project)**

Milestone	Target date	Extension date	Date achieved
1.			
2.			
5. Journal publication(s) – final milestone <i>(list intended Peer Reviewed and Popular/Semi-Scientific publications. Completed publications are to be listed in detail under point 11d).</i>			

**8. WORKPLAN (MATERIALS AND METHODS)**

*List trial sites, treatments, experimental layout and statistical detail, sampling detail, cold storage conditions and examination stages and parameters.*

**9. RESULTS AND DISCUSSION**

*State ALL accumulated results from the start of the project, including a short discussion where applicable.*

**10. CONCLUSIONS AND RECOMMENDATIONS**

*Include the project's impact on industry and return on investment. Refer to the Project Application.*

**11. ACCUMULATED OUTPUTS**

*List ALL the outputs from the start of the project. The year of each output must also be indicated.*

**a) TECHNOLOGY DEVELOPED, PRODUCTS AND PATENTS**

*Indicate the commercial potential of this project, e.g. Intellectual property rights or commercial product(s).*

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**b) SUGGESTIONS FOR TECHNOLOGY TRANSFER**

*Provide steps taken to ensure the transfer of the gained/new information/knowledge to ultimately benefit the South African fresh fruit industry.*

**c) HUMAN RESOURCES DEVELOPMENT/TRAINING**

*Complete the following table, adding more lines if necessary.*

Student Name and Surname	Student Nationality	Degree (e.g. MSc Agric, MComm)	Level of studies in final year of project	Total cost to industry throughout the project
Honours students				
Masters Students				
PhD students				
Postdocs				

**d) PUBLICATIONS (POPULAR, PRESS RELEASES, SEMI-SCIENTIFIC, SCIENTIFIC)**

*Please list outputs to date at project completion using the format illustrated in the example below. INCLUDE LINKS TO ANY PAPERS ALREADY PUBLISHED*

Fernández-Fernández F, Antanaviciute L, Van Dyk MM, Tobutt KR, Evans KM, Rees DJG, Dunwell JM, Sargent DJ. (2012) A genetic linkage map of an apple rootstock progeny anchored to the *Malus* genome sequence. *Tree Genetics & Genomes* 8, 991-1002.

Bester C, Mansvelt EL, Jolly N. Van Schalkwyk D, Blomerus LM, Smit L, Pieterse W-M, Tobutt KR. (in press) The value and impact of the ARC Infruitec-Nietvoorbij genebanks. *Acta Horticulturae* (in press).

**e) PRESENTATIONS/PAPERS DELIVERED**

*Please list using the format illustrated in the example below.*

Koopman TA, Meitz JC, Tobutt KR, Lennox CL. (2012) Molecular characterisation and pathogenicity of South African apple scab populations. Presentation at Research Forum at Stellenbosch University, Plant Pathology Department, 23 March 2012.

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**12. PERSONS PARTICIPATING IN THE PROJECT** *(Excluding students)*

Initials & Surname	Highest Qualification	Degree/ Diploma registered for	Race (1)	Gender (2)	Institution & Department	Position (3)	** Cost to Project R

*\*\* (Only applicable to persons who participate as Consultants or on Contract)*

<sup>(1)</sup>Race      B      =      African, Coloured or Indian  
                   W      =      White

<sup>(2)</sup>Gender     F      =      Female  
                   M      =      Male

<sup>(3)</sup>Position    Co     =      Co-worker ( other researcher at your institution)  
                   Coll   =      Collaborator ( participating researcher that does not receive funding for this project from industry)  
                   PF     =      Post-doctoral fellow  
                   PL     =      Project leader  
                   RA     =      Research assistant  
                   TA     =      Technical assistant/ technician

**13. BUDGET**

**TOTAL COST SUMMARY OF THE PROJECT**

YEAR	CFPA	DFTS	Deciduous	SATI	Winetech	THRIP	OTHER	TOTAL

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**EVALUATION BY INDUSTRY**

This section is for office use only

Project number	
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Project name	
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Name of Sub-Committee*	
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Comments on project

Committee's recommendation
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- Accepted.
  
- Accepted provisionally if the sub-committee's comments are also addressed.  
Resubmit this Final Report by\_\_\_\_\_
  
- Unacceptable. Must resubmit Final Report.

Chairperson \_\_\_\_\_ Date \_\_\_\_\_

**\*SUB-COMMITTEES**

**Winetech**

Viticulture: Cultivation; Soil Science; Plant Biotechnology; Plant Protection; Plant Improvement;  
Oenology: Vinification Technology; Bottling, Packaging and Distribution; Environmental Impact; Brandy and Distilling; Microbiology

**Deciduous Fruit**

Technical Advisory Committees: Post-Harvest; Crop Production; Crop Protection; Technology Transfer  
Peer Work Groups: Post-Harvest; Horticulture; Soil Science; Breeding and Evaluation; Pathology; Entomology

**SATI**

Technical Committees  
 SATI Research and Development Committee

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