AGRICULTURAL STUDIES Grade 8 & 9



ASSESSMENT GUIDELINES 2021

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Summary Progression and Assessment: Agricultural Studies School Name: ________ Educator/HOD - Summative-, formative assessment and curriculum progression control sheet.

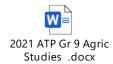
Term	Grade 8 - Knowledge Area	Progression	Grade 9 - Knowledge Area	Progression
1	 General farming, production factors and agricultural resources Development of agriculture in South Africa Basic resources for farming: Natural resources. Farming systems & farm Planning Safety and communication Tools, equipment and Machines and alternative energy Basic farm implements & Tools. Wind, Hydro, Biofuel, Biogas& Solar 	Curriculum: To date: Behind: Ahead: Formative: CW/HW: Infor. Tests: SBA: Assignment: Test:	 General farming, production factors and agricultural resources: Financial, Natural, & Human Pollution Farming methods Farm planning: Camps/ Fencing Safety and communication Tools, equipment and Machines and alternative energy Basic Farm implements & maintenance. Application of Wind, Hydro, Biofuel, Biogas& Solar 	Curriculum: To date: Behind: Ahead: Formative: CW/HW Infor. Tests SBA: Assignment Test:
2	Plant Production & Horticulture Soil as medium for production Soil Cultivation Requirements of plant growth Alternative planting mediums Identify crops produced in South Africa.	Curriculum: To date: Behind: Ahead: Formative: CW/HW: Infor. Tests: SBA: Assignment: Exam:	Plant Production & Horticulture Soil characteristics Soil Cultivation- Irrigation and drainage Requirements of plant growth- Nutrients, propagation etc Alternative planting mediums Economic importance of crops Explain and understand weed, pest and disease control Manual, Biological & Chemical control Integrated pests and disease management	Curriculum: To date: Behind: Ahead: Formative: CW/HW: Infor. Tests SBA: Assignment: Exam:
3	 Animal Production Identify different animal breeds (Cattle, Sheep etc) Identify the basic requirements for optimal animal production: Environmental factors Management 	Curriculum: To date: Behind: Ahead: Formative: HW/CW: Infor. Tests: SBA: Test: Assignment:	 Animal Production Purpose of different animal breeds (Cattle, Sheep etc) Apply the basic requirements for optimal animal production: Environmental factors Management Housing Care and health Nutrition - Feed components and fodder Breeding and selection 	Curriculum: To date: Behind: Ahead: Formative: CW/HW: Infor. Tests: SBA: Test: Assignment:
4	 Business planning and practices Good record keeping & Budgeting. Marketing and price setting Harvesting and Storage Processing and value adding 	Curriculum: To date: Complete: Formative CW/HW: SBA. Final Exam	 Business planning and practices Introduction to the development of basic SWOT analyses for a farming enterprise Apply basic record keeping concepts. Marketing and price setting Understand the basic principles of supply and demand in price determination. Harvesting and Storage Processing, Value adding & Packaging. 	Curriculum: To date: Complete: Formative CW/HW: SBA. Final Exam:

SIGNATURE AND NAME: HOD	SIGNATURE AND NAME: EDUCATOR

2021 Annual Teaching Plan: AGRICULTURAL STUDIES: Grade Gr 8



2021 Annual Teaching Plan: AGRICULTURAL STUDIES: Grade Gr 9



Summative assessment: Table for setting tests and Examination Common Papers and for school

Term	Format	Grade 8	Grade 9
1	Test 1 Section A: 20 Section B:55 Marks: 75 Time: 60 Min / Paper	Content: ATP Term 1 - Week 1-9	Content: ATP Term 1 - Week 1-9
2	Test 2 Section A - 20 Section B - 55 Mark allocation: 75 Time: 60 Min / paper	Content: ATP Term 2 - Week 1-9	Content: ATP Term 2 - Week 1-9
3	Test 3 - Section A: 30 Section B: 70 Time: 90 Min Marks 100	Content: ATP Term 3 - Week 1-9	Content: ATP Term 3 - Week 1-9
4	FINAL EXAMINATION Section A - 30 Section B - 70 Time: 90 Min Marks 100	Content Years work	Content Years work

Each assessment task for Grade 8-9 (Examination papers, tests, formal assessment tasks) must be set according to the following analysis instrument, indicating the levels for type of cognitive demand and difficulty of question within each type of cognitive demand.

Type of cognitive demand	%	Level of difficulty	%
Basic Conceptual, knowledge		Easy	40
RecallLiteral comprehension	30	Moderate	40
Making simple evaluation judgments in terms of previously acquired facts		Difficult	20
Comprehension, Application		Easy	40
 Understanding, application, analysis of previously acquired information in a familiar context. 	40	Moderate	40
 Making evaluative judgments that require the use of a range of previously acquired facts/information 		Difficult	20
Problem-solving		Easy	40
Analysis, interpretation, and application of information in a new or	30	Moderate	
unfamiliar contextSynthesis, creation of a novel solution or product,		moderate	40
 Evaluation or making judgment in relation to a mixture of old and new material or information 		Difficult	20

Programme of Assessment Gr 8

Grade 8	ı	Formal School-Based	Final End-of-Year Assessments		
	Term 1	Term 2		Term 3	Term 4
SBA	30% Date:	30% Date:	30% Date:		Add and convert the 3 terms marks to 30%
PAT	30% Date:	30% Date:	Date:	30%	Add and convert all terms marks to 30%
Theory	40% Date:	40% Date:	Date:	40%	Final written exam 100 marks convert to 40%
Term Report	100%	100%		100%	100% End of the year mark

AGRICULTURAL STUDIES

Supporting Documents for educator's and learner's portfolio

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DIRECTORATE: CURRICULUM - FET SCHOOLS

TEACHER DATA BASE Agricultural Studies (Keep original in Portfolio and send copy to

Subject	A	GRICULT	URAL STUDI	ES	
School					
Town					
Year 2021			Dist	rict:	
Telephone - school			·		
Fax – school					
E-mail – School					
Name of Principal/Direct	tor				
Cell number of principal					
E-mail – principal					
_					
Name of HOD / SUBJEC	T HEAD				
Cell number of HOD					
E-mail of HOD					
_					
Surname and initials of	Teacher				
Name of teacher					
Cell number of teacher					
E-mail – teacher					
Qualification of teacher					
ID number of teacher					
Persal number					
Years teaching experience in:	Agricultural	subjects			
Approximate duration of	each period		mi	nutes	
	8				
Number of periods per					
grade per week					
Name of textbook used	by learners				
Grade 8:	•				
Grade 9:					

Grade	Grade 8			Grade 9		
Classes						
Total number of						
learners per class						
English						
Afrikaans						

I.I INDEX FOR TEACHERS PORTFOLIO AGRICULTURAL SCIENCES GRADE 8-9

		INDEX	MINIMUM PIECES TO	O BE IN	CLUDED	IN THE	PORTFO	OLIO (SBA	1 File)			
INFORMATION SHEETS		 SUMMARY: Progress and Assessment WORKSCHEDULE/ATP (Appendix A) MARKSHEETS. Summary of Internal assessment marks. (APPENDIX B) INTERNAL MODERATION REPORTS 										
			Date	Signature	Report included (Y/N)	Date	Signature	Report Included (Y/N)	Date	Signature	Report included (Y/N)	
			School (Ice/term)									
			Cluster (I ce/year) District									
			Provincial					II.			l	
			The PORTFOLIO is NO		•		ecessary	memoran	dums an	d/or mar	king crit	eria for
			each assessment must		•		ed in for	r separate	e teacher	s and or	ades.	
Skills		I. SBA - PRACTICAL INVESTIGATIONS / WORKSHEETS / ASSIGNMENTS	Worksheets must be included in the portfolio. 3 per year minimum / 4 per year maximum, minimum of 50 marks per worksheet. (Labeled as $1.1-1.3$)					eet.				
Skills focused. Knowledge and or / Skills		2. PAT	One (I) per year per learner. Minimum time of 5 hours to complete the project. Clear framework and criteria must be given. (Labeled 2.1 - 2.3)									
Κ'n		DAILY/ WEEKLY ASSIGNMENTS/HOMEWORK	Minimum I/week Written work, Homework, class work etc. Testing knowledge, skills, and application Not considered for final mark.					on				
Knowledge and or / Skills	3	CONTROLLED TESTS	THREE papers minimum/year plus memorandum. (marking criteria) Minimum 50 marks according to prescribed format (Labeled as $4.1-4.3$)									
Final examination	4	FINAL EXAMINATION (Grade 8-9)	Examination paper plus memo. (4.1) According to prescribed format									

The content of the index and the content of the portfolio must correspond. The teacher portfolio must be moderated once a term on Appendix F by HOD, Subject head etc. — and must be included in teacher portfolio.

GRADE 8 Agricultural Studies Learner Summary sheet

DISTRICT:	CIRCUIT:
SCHOOL:	LEARNER:

Forms	of assessmen	t:					
	used nd or /	I Worksheet / Simulation Study / Project / Researd Achieved marks		I.I	1.2	1.3	
	Skills Focused Knowledge and or / skills	Date Marls allocated					30
%09	Practical skills	2. PAT - Practical skills Achieved marks Date	3	2.1	2.2	2.3	
	Pract	Marks allocated				30	
	Knowledge	3. Controlled tests (Ter Achieved marks Date	m I - Term 3)	3.1	3.2	3.2	-
	3	Marks allocated TERM TOTAL					40
Learner Year Ma							10
40%	Examination	4. End of the year examination	Pa	oer I(4.I)			
4	Exami			100		Total	10
		Year mark conver (60 %)	t to End of yea	r examination of (40%)	onvert to	Promotion Mar	k
nal a	ıssessm	nent:	$I_{\perp}\Gamma$				

EACH LEARNER SHOULD COMPLETE THIS FORM IN PERSON. EACH CANDIDATE IS REQUIRED TO PRESENT HIS/HER WORK FOR ASSESSMENT BY THE SCHOOL AND MODERATION BY THE DEPARTMENT. THIS COMPLETED CONSOLIDATION SHEET MUST BE

I declare that the tasks completed for the various assessment

Signature

Signature

types are my own work.

GRADE 8 Agricultural Studies Learner Summary sheet

DISTRICT:	CIRCUIT:

SCHOOL: LEARNER

Assessments							_				
Addedimente	Date	Max marks	Marks obtained	Converted weight	Converted mark	Term total	Weight of term	Final converted mark	Moderated mark		
		1	_	Term 1	1		<u>'</u>				
Activity Test PAT				30% 40% 30%							
Total Term 1						100					
Activity				30%							
Test				40%							
PAT				30%							
Total term 2						100					
Activity				30%							
Test	ļ			40%							
PAT				30%							
Total Term 3						100					
T											
Term 4						400					
Final exam	00.6			1.0		100	000/				
Progression mark	30% 30%										
End of year system	+ PAT Term 1- 3										
Progression:	End of year examination										
Progression:							100%				

Signature: Learner	Date	Signature: T	eacher	Date	
Signature: School moder	ator	Date	District Mod	erator	Date
Provincial Moderator	Date		School stamp	p: p	



- Activity:Test:
- PAT:



- > Activity: Soil > PAT: Seedlings
 - Test



- > Activity: Farming systems
- > PAT: Harvesting/ Value adding
- > Test



End of year exam

LEARNERS ADMISSION of

	Non- compliance
l,	in
	Full name and surname of learner
Grade wish to	state that I
(Grade & class gro	up) ☐ did not participate in a(n)
Indicate with an X	☐ did not complete my
	☐ did not hand in my
Agricultural Sciences	☐ Task relating to
	☐ Project/Assignment
	☐ Class test
	O, which was indicated as the due date for the said work. s indicated above is / or are as follow(s):
-	(s) provided, I further wish to state that I have been granted an extension and the indicated due date to complete the said work.
,	
	ension, the educator afforded me every opportunity to complete
the said work.	to honor the above arrangements, but failed to accede to the teacher's
numerous requests to comp	
Yours sincerely	
	/ /20





L.	Name of School Teachers Name Schools Contact Numbers							Landa Oraclas (N. a.)	L N 4		, N.			M 1 (1 0: (
Na	me of So	chool		l each	ers	Name				Sch	hools Contact Numbers	Mod	ierato	r's Name			Moderator's Signature
Gra	ide 8	9		Teache	r Por	tfolio A	vailal	ble	Yes	No	Learner Portfolio/s Provided	Yes	No	Moderat	or's S	Schoo	l
Pa	rt A										Teacher portfolio (Item	avail	abilit	y)			
1	Index. boun	d and div	rided	yes	no	comple	eted	yes	no	5	Homework on Work-schedule	yes	no	completed	yes	no	Comments:
2	Progression			yes	no	comple		yes	no	6	Summary mark-sheet	yes	no	completed	yes	no	
3	Teacher cor			yes	no	comple	ted	yes	no	7	Summary of Homework	yes	no	completed	yes	no	
4	Work-sched	lule		yes	no	comple		yes	no	8	Subject planning / Period planning	yes	no	completed	yes	no	
5	Summary of	f average	S	yes	no	comple		yes	no	10	Internal Moderation reports	yes	no	completed	yes	no	
	· ·	Ť		•				,		<u> </u>	· ·						
	Part B										Task 1 (Investigation)						
1	Task in port	folio				yes	no	7 F	7	Has the	e learner scores been recorded?	yes	no	Comments:			
2	Marking too					yes	no		8		he learner scores converted?	yes	no				
3	Is the task u			andard?		yes	no	」	Mark th		n learner portfolio and answer the question	ns:					
4	Has the tasl					yes	no	╛┖	9		marking tool user friendly?	yes	no				
5	Did the tead					yes	no		10		marking appropriate?	yes	no				
6	Has the tasl	k been m	oderated (internally)	?	yes	no	┙┖	11		obtain the same scores as educator?	yes	no				
										Tas	sk 2 (Formal Test 1 or 2) -	· Mark	c with	X			
1	Task in port					yes	no		7	Has the	e learner scores been recorded?	yes	no	Comments:			
2	Marking too					yes	no	_	8		he learner scores converted?	yes	no				
3	Is the task u			andard?		yes	no	╛┖	Mark th		n learner portfolio and answer the question	ns:					
4	Has the tasl					yes	no	4 4	9		marking tool user friendly?	yes	no				
5	Did the tead					yes	no		10		marking appropriate?	yes	no				
6	Has the tasl	k been m	oderated (nternally)	?	yes	no	」	11		obtain the same scores as educator?	yes	no				
_										Tas	sk 3 (Research Project) Gr	rade 1	10-11	only			
1	Task in port					yes	no] [7	Has the	e learner scores been recorded?	yes	no	Comments:			
2	Marking too					yes	no		8		he learner scores converted?	yes	no				
3	Is the task u			andard?		yes	no	IJ L			n learner portfolio and answer the question	ons:					
4	Has the tasl					yes	no	⅃ ᅵ			marking tool user friendly?	yes	no				
5	Did the tead	her use a	a realistic r	narking cr	iteria	yes	no	IJ L	10		marking appropriate?	yes	no				
										Tas	sk 4 (June Common Exam	ninati	on)				
1	Task in port	folio				yes	no	7	7	Has the	e learner scores been recorded?	yes	no	Comments:			
2	Marking tool in portfolio yes no 8 Were the learner scores converted?					yes	no										
3	Is the task u	Is the task up to the required standard? yes no Mark the task in learner portfolio and answer the qu					ns:										
4		ask been marked? yes no 9 Is the marking tool user friendly?				yes	no										
5		Did the teacher use a realistic marking criteria yes no 10 Is the marking appropriate?					yes	no									
6	Has the task been moderated (internally)? yes no 11 Do you obtain the same scores as educator?				obtain the same scores as educator?	yes	no										

IB. - AGRICULTURAL SCIENCES —LEARNER PORTFOLIO MODERATION



Par	t A				Learn	er po	rtfol	io (Item a	vaila	bility			
1	Name of learner 1			Learn	er consolidation form	ves	no	completed	ves	no	Comments:		
2	Name of learner 2				er consolidation form	yes	no	completed	yes	no			
3	Name of learner 3				er consolidation form	yes	no	completed	yes	no			
	Part B		l.	<u>,</u>	Task 1 (Investigation)								
1	1 Task in portfolio yes no Mark the task in learner portfolio and answer the questions: Comments:												
2	Has the task been marked?	ves	no	6	Were corrections ma				ves	no			
3	Has the task been moderated (internally)?	yes	no	7	Is the marking appro				yes	no			
4	Did the teacher use a realistic marking criteria	yes	no	8	Did the teacher use a		ubric for	marking?	yes	no			
5	Is the learner score recorded in front sheet?	yes	no	9	Do you obtain the sa	me score	s as edi	ucator?	yes	no			
					Task 2 (For	mal T	est 1	or 2) Ma	rk w	th X			
1	Task in portfolio	yes	no		Mark the task in learn						Comments:		
2	Has the task been marked?	yes	no	6	Were corrections ma	de, is the	re a me	morandum?	yes	no			
3	Has the task been moderated (internally)?	yes	no	7	Is the marking appro				yes	no			
4	Did the teacher use a realistic marking criteria	yes	no	8	Did the teacher use a	a memo/r	ubric for	marking?	yes	no			
5	Is the learner score recorded in front sheet?	yes	no	9	Do you obtain the sa	me score	s as edi	ucator?	yes	no			
					Task 3 (Re	searc	h Pr	oject) Gra	ade 1	0-11	only		
1	Task in portfolio	yes	no		Mark the task in learn	ner portf	olio and	l answer the qu	estions		Comments:		
2	Has the task been marked?	yes	no	6	Were corrections ma	de, is the	re a me	morandum?	yes	no			
3	Has the task been moderated (internally)?	yes	no	7	Is the marking appro	priate?			yes	no			
4	Did the teacher use a realistic marking criteria	yes	no	8	Did the teacher use a	a memo/r	ubric for	marking?	yes	no			
5	Is the learner score recorded in front sheet?	yes	no	9	Do you obtain the sa	me score	s as edi	ucator?	yes	no			
					Task 4 (Ju	ine C	omm	on Exam	inatio	on)			
1	Task in portfolio	yes	no		Mark the task in learn	ner portf	olio and	l answer the qu	estions	i	Comments:		
2	Has the task been marked?	yes	no	6	Were corrections ma	de, is the	re a me	morandum?	yes	no			
3	Has the task been moderated (internally)?	yes	no	7	Is the marking appro			-	yes	no			
4	Did the teacher use a realistic marking criteria	yes	no	8	Did the teacher use a	a memo/r	ubric for	marking?	yes	no			
5	Is the learner score recorded in front sheet?	yes	no	9	Do you obtain the sa	me score	s as edu	ucator?	yes	no			

Additional comments if any:		

Appendix A

SBA MODERATION REPORT (Done by H.O.D. /Subject head when teacher sets her/his own SBA Task)

This report should be completed for each SBA task contributing to the SBA mark of learners

DISTRICT		<u> </u>			<u> </u>			oducation
SCHOOL								education Department of
SUBJECT				GRA	ADE			Education FREE STATE PROVINCE
EDUCATOR(S)				•				
HOD								
DATE	Pre-mod	deration:	Р	ost-m	odera	tion:		
10% or a maxim	um of 6 t	asks have to be mode	erated	per su	ıbjec	t.		
TASK MODERA				•				
	l	PRE-MOD	ERATI	ON				
ASSESSMENT T	ΓASK		YES	NO	COI	MMENT	S	
The task correspond	ls with the p	rogramme of assessment						
The duration and tot	al of the tas	k are indicated and in						
accordance with CA	PS							
The instructions clear	ar and unam	biguous						
		the grade as stipulated in						
CAPS/provincial ass		re in accordance with						
CAPS/provincial ass								
The task caters for a								
		evels is done for the task						
and is included in po The task incorporate		pognitivo lovolo in						
		al assessment guidelines						
	rminology ι	used is appropriate and						
		ssment task is the same						
as in the memorando								
There is time allocat adequate	ed for the c	ompletion of the task						
	ıstrations, g	raphs or tables are clear,						
relevant and user-fri		·						
The task is neatly type	ped and the	numbering is correct						
MEMORANDUM			YES	NO	COI	MMENT	S	
Is neatly typed and i	ncluded in t	he teacher's file						
Is relevant and appro	opriate for n	narking of the set task						
Provides correct res	ponses to q	uestions in the task						
Mark allocation is ap	propriate fo	r responses expected						
Allows for alternative	e responses							
The memorandum /	rubric is cle	ar and neatly typed						
The memorandum /								
allocation and mark								
The memorandum /	rubric is use	er friendly						

The mark allocation is commensura						
difficulty and time allocated for com	•					
	P	OST MOD			T =	
MARKING			YES	NO	COMMENTS	
The total obtained is clearly indicat		nt of the				
task with a signature and the date in Marking is done in accordance with						
memorandum/rubric	ı ıııe					
Ticks used to clearly indicate where	e learners ob	tained				
marks						
The quality and standard of the ma	rking is acce	ptable				
Marks per sub-question are carried	out to the rig	ht of each				
sub-question						
The total per question is correctly a		dicated at				
the left top next to the question nur The marks are correctly added and		o the frent				
of the task	i tialisielleu t	o the nont				
The marks are correctly transferred	to the mark	sheet				
RECORDING			YES	NO	COMMENTS	
The subject recording mark sheet i	s included in	the		110	JOHN LITTO	
teacher's file						
The recording mark sheet is in acc						
guidelines given in the CAPS/provi	ncial assessr	nent				
guidelines	l l	J- 4l 4-				
The marks are correctly transferred the mark sheet	i from learnei	s tasks to				
The marks are correctly converted	according to					
CAPS/provincial assessment guide						
LEARNER TASKS MODERA					<u> </u>	
NAME OF LEARNER	MARK	MODER	ATED	COM	MENTS	
NAME OF LEARNER	WARK	MAF	RK	COIVI	IVIEIVIO	
1						
2						
3						
4						
•						
5						
6						
AREAS OF GOOD PRACTION	CE					
CHALLENGES						
RECOMMENDATIONS/FOL	LOW-UP					
HOD/OUR IEST HEAD						
HOD/ SUBJECT HEAD	Si	GNATURI			DATE	
						SCHOOL
TEACHER SIGNATUR					DATE	STAMP
PRINCIPAL	SI	GNATURI	=		DATE	

TEACHER SUBJECT INFORMATION/FILE

INDEX

- Personal information
- **Timetable**
- ❖ Subject matter
 - Agricultural Studies CAPS
 - Subject management related Matter
 - Subject lesson plans / Period planning
 - Minutes of meetings (copy)
 - Textbook/Notes register
 - Equipment registers.

SUBJECT MASTER FILE INFORMATION INDEX

❖ Official documents

- Agricultural Studies CAPS
- Assessment and planning guidelines.
- National Protocol on assessment
- National Policy pertaining program- and promotion requirements.

Subject related information

- Minutes of meetings School
- District Provincial invites received meetings and training.
- Originals of subject information received and/or CD with electronic copies of all documents.

Recording Sheet Grade 8-9(CAPS)

Appendix D

Agricultural Sciences	`		orma	al Ass	signn	1ents	s (Fo	rma	tive /	Asse	ssme	ent)		For	mal	(Sun	ımati	ve As	sess	men	t)				
	SBA - Practical Investigations / Worksheets			ıs /	PAT / Research Project				Controlled tests				k		FEAR MARK		mber tion Mark	Promotion Mark							
	1.1	1.2	1.3	1.4	Total	Final SBA	2.1	2.2	2.3	2.4		Total	Final CPAT	3.1	3.2	3.3	Total	Final Cass	MARCH Test	JUNE REPORT Mark	SEPT Report ark	FINAL CASS YEAR MARK	4.1	Final Exam Convert to	
Name of Learner						30							30					40	100	100	100	60	100	40	100
1																									
2																									
3 4																	_								
5																									
6																									
7																									
8																									
9																									
10																									
11 12																									
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16																									
17																									
18																									
19																									
20																									
21		<u> </u>	-	<u> </u>																					
22 23																									
24		1	1						1														-		
25			1						-																
26																									
Total Marks										<u> </u>															
Class Average																									
% Learners pass																									

Grade 8 - Cost of Hydroponic Systems as indicated in ATP

Floating Box System Tools needed

- > Tape measure
- > PVC cutter
- > 75mm Hole saw
- ➤ Electric or Battery Drill
- > Drill bit and tap drill bit for micro sprinkler nozzle
- > 20mm spade drill bit or hole saw
- > 35mm spade drill bit or hole saw

	Quantity	<u>ltem</u>	Price per item	<u>Total</u>
1	7	20mm PVC – T	R6.00	R42.00
2	4	20mm PVC – Elbow	R6.00	R24.00
3	12	Threaded micro sprayer nozzle (180 degree)	R10.00	R120.00
4	4	Threaded micro sprayer nozzle (360 degree)	R10.00	R40.00
5	12	75mm Net Pots/ plastic cup with holes	R1.50	R18.00
6	12	75mm Neoprene disc/ sponge cut into disc	R13.00	R156.00
7	1	20mm Grommet	R7.00	R7.00
8	1	20mm HDPE Insert Elbow	R5.00	R5.00
9	±250mm	20mm HDPE Pipe	R7.00 per meter	R7.00
10	1	100L Storage Box	R200.00	R200.00
11	±6m	20mm PVC Pipe	R9.50 for 2m	R28.50
12	1	20mm PVC Male adapter	R3.00	R3.00
13	1	1000L per/hour Pump solar or electrical	R300.00	R300.00
14	1	Mech filter bag for pump	R40.00	R40.00
			Total:	R990.50

Pipe System

Tools needed

- Tape measurePVC cutter
- ➤ Electric or Battery Drill
- > 50mm Hole saw and 20mm spade drill bit or hole saw
- > Screwdriver
- Scissors

	Quantity	<u>ltem</u>	Price per item	<u>Total</u>
1	4m	110mm PVC		
			R85.00 per m	R340.00
2	6m	32mm PVC	R32.00 per 4m	R64.00
3	4	20 mm PVC (to connect pump to top 110 mm PVC pipe, 110mm PVC pipes with each other and drain back to storage box from the last 110mm PVC pipe)	R R9.50 for 2m	R19.00
4	8	110mm PVC end caps	R13.00	R104.00
5	8	110mm pipe clips	R16.25	R130.00
6	8	32mm PVC T	R38.00	R304.00
7	4	32 PVC elbows	R14.74	R58.96
8	8	20mm PVC elbows	R6.00	R48.00
9	8	20mm grommets (drill hole in endcap and insert)	R7.00	R56.00
10	1	20mm PVC Male adapter	R3.00	R3.00
11	1	PVC glue	R50.00 for 50ml	R50.00
12	16	Screws for pipe clips	R16.00 for 25	R16.00
13	20	Plastic cup 50mm	R89 for 12	R148.33
14	1	Cotton stuffing	R459.00	R459.00
15	1	Water pump solar or electrical	R300.00	R300.00
16	1	Mech filter bag for pump	R40.00	R40.00
17	1	Coco-peat	R99 for 5kg	R99.00
18	1	Storage box 100L	R200.00	R200.00
			Total:	R2439.29

AGRICULTURAL STUDIES

Vertical System (Calculated for 3 rows with 6 openings each)

Tools needed

- > Tape measure
- > PVC cutter
- ➤ Electric or Battery Drill
- > 5mm Drill bit
- > 32mm hole saw.

	Quantity	<u>ltem</u>	Price per item	<u>Total</u>
1	5m	32mm PVC pipe	R R32.00 per 4m	R64.00
2	3	32mm PVC caps	R13.00	R39.00
3	18	32mm 45degree junctions	R38.00	R684.00
4	2	32mm PVC tees	R38.00	R76.00
5	1	32mm elbow	R14.74	R14.74
6	6m	15mm HDPE pipe	R3.00	R18.00
7	1	15mm HDPE insert end cap	R5.00	R5.00
8	1	15mm HDPE insert elbows	R5.00	R5.00
9	1m	5mm micro sprinkler tube	R6.00	R6.00
10	3	5mm barbed connectors	R1.50	R4.50
11	1	100L storage box	R200.00	R200.00
12		Rockwool, sponge or (Polyester/ cotton) stuffing	R30.00	R30.00
13	1	Water pump solar or electrical	R300.00	R300.00
14	1	Mech filter bag for pump	R40.00	R40.00
			Total:	R1486.24

<u>Vertical System with plastic bottles (calculated for 3 rows with 5 bottles each)</u> Tools needed

- > Tape measure
- > Trimming knife
- ➤ Electric or Battery Drill
- > 4mm Drill bit
- > Screwdriver
- > 5mm drill bit
- > 25mm hole saw or spade drill bit

	Quantity	<u>ltem</u>	Price per item	<u>Total</u>
1	15	2L plastic bottles	R -	R -
2	0.5m	Wooden plank	R-	R-
3	3	Screws	R16.00 for 25	R16.00
4		Potting soil	R35.00	R35.00
			Total:	R51.00

This system should be adapted to ensure constant water flow without or with a pump sytem. Using a bottle and allow gravitational water that flow through the system are suggested see picture below of how it is employed on a different system.



Swapping the bottles, create a flow of water.