

AB@0, >3>@>48G:0-Aster

gradinar, ?5BJ:11 N;82008-14:55:25

"@528AB>54=>3>48H=>@0AB5=85 AB@0B08;8Callistephus chinensis 5
8725AB=0?>25G5:0B>1>3>@>48G:0848<8B@>2G5.\$>@<0B0
=0E@0AB01820?8@0<840;=0,:>;>=>284=08@07:;>=5=0.
&JDB8:JA=>;OB>-A5?B5<2@88>:B><2@8.&25B>25B5A0
@>7>2>,G5@25=>,1O;>,6J;B>8;8;02>. 4=>3>48H=8B5
0AB@8=0@>4JB=85=0@5:J;1>3>@>48G:8,<>651870I>B>
FJDBOB=09->18;=>2=0G0;>B>=0A5?B5<2@8,:>30B>A5
G5AB20>645AB2>>3>@>48G=>8<09:8B5=0<0;:845F0
>B820B2FJ@:20B0701;03>A;>2A@07:>H=81C:5B8>B578
:@0A828,=5?@5B5=F8>7=8,5A5==8F25BO.
#=30@8OB5A0A8<2>;=05A5=B088<5B>8<>7=0G020
5A5==0@>70,0=03@JF:8"0AB@0"5?@>AB>"725740".
=08AB8=0AJA2>8B5103@8B5>F25BO20B5A5=B08AJ74020B
?@07=8:70>G8B584CH0B0.

535=40B0@07:0720,G50AB@0B0587@0A;0>B?@0H8=:0,
?04=0;0>B725740.0:>?@57=>IB0B8E8G:>A5?@8B08H2
3@048=0B04>B578@07=>F25B=8:@0A028F8,<>651815GC5H
:0:B5A8H5?=0B,@073>20@09:8AJA2>8B5A5AB@8-725748.
@0A820B0;535=405@>45=022@>?0,=5157CG0AB85B>=0
0AB@>=><8B5,<0:0@G5F25B5B>54>H;>?@8=0A>B7B>:.
0@86:8OB0AB@>=><;5:A0=4J@-=@8-01@85;0A8=82
<;04>ABB0A887CG020;=0C:0B070=515A=8B5B5;0,0
>AB0=0;0B0G0AB>B682>B0A8?>A25B8;=01>B0=8:0B0,
70=8<0209:8A5AJA5<59AB2>B>=0A;>6=>F25B=8B5.@57
18263>48=0B>9>B45;8;>BA5<59AB2>B>=00AB@8B5(Asteraceae)
=>28O@>4 Callistephus chinensis,:>5B>2?@52>4>B4@52=>3@JF:8
>7=0G020"?@5:@0A5=25=5F".

8B09A:8B50AB@8A0>:>;>4000A>@B0,:>8B>1>B0=8F8B5
>1548=020B2403@C?8,10B8?083:;0A0.@>4JB=00AB@8B5
=01@>O20>:>;>2502840.
J@28B50AB@8A018;8<0;:>?>-@07;8G=88A0?>?04=0;82
2@>?0>B8B09?@5482503>48=8.0@0AB8B5;=8O8
682>B8=A:8A2OB=08B09?>>=>202@5<58<0
=09-@07;8G=8?@>B82>@5G828A2545=8O.!0<><0;F8=0
52@>?59F8A0CA?5;840?>A5BOB B07840;5G=0AB@0=0,

:>OB> B@C4=> 4>?CA:0;0 GC64>75<F8 2 75<8B5 A8.
J@28B5, :>8B> ?@>=8:=0;8 2 B>78 =5>18G05= A2OB, 18;8
A25I5=8F8B5- AB@0=AB20I8 ?@>?>254=8F8. "5 =5 A0<> A5
>?8B20;8 40 ?@>?>2O420B E@8AB8O=AB2>B> A@54 <5AB=8B5
68B5;8, => 87CG020;8 8 =@028B5 8<, 8AB>@8OB0, :C;BC@0B0 =0
AB@0=0B0, @0AB8B5;=8O 8 682>B8=A:8 A2OB. ">20 AJ2A5< =5 5
18;> ;5A=> 8 ?>=O:>30 A5 =0;030;> 40 A5 459AB20 8 ?>
4@C38 =0G8=8. "0:0 18;> 8 ?@571728 3>48=0, :>30B> 2 8B09
?@8AB830 D@5=A:8OB <>=0E 8:>;0 =:0@28;. 0 @07;8:0>B
4@C38B5, B>9 8<0; A?5F80;=0 7040G0>B NA85, 48@5:B>@0 =0
:0@;A:0B0 1>B0=8G5A:0 3@048=0 "@80=>= 2 5@A09;.
?@>4J;65=85 =0 ?>;>28= 3>48=0 NA85>1CG020;
=:0@28; =0>A=>28B5 =0 1>B0=8:0B0, CG8; 3> 40
@07?>7=020, >?8A20 8>B3;5640 @0AB5=8O.

"09=>, :@859:8 A5>B>G8B5 =0 G8=>2=8F8B5 =0 :8B09A:8O
8<?5@0B>@, =:0@28; @07<5=O; 8:C?C20; @0AB5=8O, :>8B>
?>A;5 87?@0I0; 2J2 \$@0=F8O. 54=0>B ?@0B:8B5,
?@8AB83=0;8 2J2 5@A09;, 8<0;> 8 A5<5=0>B 3@048=A:0
0AB@0. ">20 F25B5 AJ1C48;> 8=B5@5A0 =0 D@5=A:8B5
3@048=0@8, >A>15=> A5 708=B5@5AC20;8>B =53>
A>1AB25=8F8B5 =0 F25B0@A:0B0 D8@<0 8;<>@5=8. =>3>
A:>@> A5 ?>O28;8 ?J@28B5 A>@B>25 8 0AB@0B0 A ?@02>
70?>G=0;0 40 A5 =0@8G0 3@048=A:> F25B5. &25BOB0, :>8B>
87@0A=0;8>B A5<5=0B0, ?@8AB83=0;8>B 8B09, 18;8 A 54@8
F25B>25, O@:8 103@8, A 6J;B0 B8G8=:0. 0 ?@J2 ?>3;54
?@8;8G0;8 =0>18:=>25=0<0@30@8B0 8;8 =0 F25B>25B5 =0
1>6C@0, 8;8 =0 E@870=B5<0. J2 \$@0=F8O F25B0@8B5 38
=0@8G0;8"F0@8F0B0 =0<0@30@8B:8B5". =5 A0 A1J@:0;8,
70I>B> 0AB@0B0 5>B <=>3>1@>9=>B> A5<59AB2> =0
A;>6=>F25B=8B5.

@571752 3>48=0>B \$@0=F8O 0AB@8B5 A0 ?@5=5A5=8 2 =3;8O 8
?>AB5?5=> 2 FO;0 2@>?0. :@0O =0 %V 25: 25G5 A5
:C;B828@0B A>@B>25 A 1O;0, 28>;5B>20, G5@25=0, ;8;020,
@>7>20, A8=O 8 ?C@?C@=0 103@0. A>15=> ?>?C;O@=8
AB020B 0AB@8B5, :>30B> F25B0@OB "@ND> @07?@>AB@0=O20 2J2
\$@0=F8O @07:>H=8 A>@B>25 A 1>6C@>284=> AJF25B85 8
@07=>>1@07=8 103@8. >.:JA=> 2 5@<0=8O A5>@30=878@0
3>;O< F5=BJ@ 70 A5;5:F8O, :>9B> AJ74020 <=>3> :@0A828
A>@B>25, :>8B> 8 4=5A A5>B3;5640B =02AO:J45 2 A25B0. !)
8=B5@5AJB:J<0AB@8B5 A5 ?@>O2O20 2 :@0O =0 % % =0G0;>B>
=0 % % 25.;, 2 CA8O ?@5730-B5 3>48=8 =0 % % 2. # =0A 2 =AB8BCB0
?> F25B0@AB2> 2 53>20= ?@57 ?>A;54=8B5 3>48=8 A0
AJ74045=8 B@8=>28 A>@B0 0AB@8: ;030, 045640 8!018=0.
AB@0B0 :0B> A8<2>; AB@0B0 5 A8<2>; =0 ;N1>2 8
87OI5AB2>. >5BJB 8@468; A<OB0;, G5>;B0@8B5 =0
1>3>25B5 A0 C:@0A5=8 A 0AB@8.

8B09 0AB@0B0 >7=0G020 :@0A>B0, >G0@>20=85, A:@><=>AB,
A<8@5=85 8 5;530=B=>AB. 0 4@52=8B5 3J@F8 B0 18;0
A8<2>;=0 ;N1>2B0 8 B5 O ?>A25I020;8 =0 D@>48B0. 0B>20
0AB@0B0 18;0 G5AB> A@5I0= 0<C;5B.

09-F5==0=0 7B>: A<OB0;8 0AB@0B0 A ;8;02>-28>;5B>28
F25B>25. !B>;5B8O 2 >@5O, 8B09, /?>=8O A :>@5=8B5,
ABJ1;0B0, ;8AB0B0 8 AJF25B8OB0=0 0AB@0B0 ;5:C20;8
1 @>=E8B8, B@0E58B8, BC15@:C;>70, 01F5A8 8 30=3@5=0=0
15;8B5 4@>1>25, 1>;5AB8 =0 1J1@5F8B5 8 G5@=8O 4@>1.
!C?5=0 ;J68F0 ACE8 8;8 ?@5A=8 ;8AB5=F0 F2OB 4>102O;8 2
75;5=GC:>28 8 ?;>4>28 A0;0B8

"815BA:0B0 <548F8=0 ?@54;030 548= >B =09-5D5:B82=8B5
=0G8=8=0 ;5G5=85=0 :@J2>87;828 A;54 @0640=5 AJA
A2568 8;8 87ACH5=8 F25B>25 >B ;8;020 0AB@0. 0;820;8 38 A
2>40 8 <54 8 4020;8 =0 @>48;;0B0 40 ?85, :>30B> 70?>G=0B
@>48;=8B5 1>;:8, 70 40 <8=5 @0640=5B> ;5A=> 8 157
CA;>6=5=8O.

/?>=8O, :>30B> 548= >B AJ?@C78B5">E;04=55", 4>102O;8 2
E@0=0B0 <C ;8AB5=F0 >B 28>;5B>2>;8;020 0AB@0, ?@025;8
28=>, =0?8B:8 8 70?0@20;8 G09.

>@5O =56=8B5 65=A:8 ?@JAB8 ?@025;8 A?5F80;=0
=0?8B:0 >B 28>;5B>28 0AB@8, 2 :>OB> 4>102O;8 >3=5=8
F25B>25=0 ;0B8=:0 8 AB@J:>25 ?5;8=. 0;;0 G0H:0 >B B078
>E;045=0=0?8B:0 87?J;20;8 =>IB0 A =56=>AB, B>;8=0 8
;N1>2. >@8 548= 1C:5B >B ;8;028 8 28>;5B>28 0AB@8 I5
4>=5A5 2 4><0 28 B>;8=0 8 ?>:>9.

'>25:JB AB@0, @>45= >B 12 4>22 A5?B5<2@8 ?@8;8G0=0
725740 2=>IB0, @07A5920 <@0:0 AJA A2>O 25A5; 8 A?>:>5=
E0@0:B5@. >B>20 =5 5 1573@86=> 25A5;85, 0=0?J;=>
>AJ7=0B> ?>2545=85, B0:0, :0:B> A0<> AB@8B5 C<5OB 40 A5
4J@60B. 70B>20 =5 5 2J7<>6=> 40 =5 38 >18G0H.

0: A5 >B3;5640B 0AB@8 >;820=5B>, ?@8 0AB@0B0 B@O120 40 5
>18;=>, => B0:0 G5 40 =5 ?>438720 ?>G20B0. @57 ;OB>B>
>10G5 5 =C6=> ?@JABB0 40 1J45 28=038 2;06=0. 0?@>;5B 5
4>1@5 40 A5 ?@5A048 2=>20 ?@JAB, 1>30B0=0 EC<CA 8
704J;68B5;=> 2 <0;:> ?>-3>;O<0 A0:A8O. @57 ;5B=8B5
<5A5F8 ?>4E@0=209B53 ?JB8 =0 425 A54<8F8. >4@O7209B5
G5AB> AB0@8B5 @0AB5=8O, 70 40 ?>@0A=0B=>28 ;>=:8.
@54?>G8B0B A;J=G528 <5AB0 A C<5@5=0 2;06=>AB 8
70I8B5=8 >B 2OBJ@. @57 78<0B0 5 =C6=> 40 4J@68B5
A0:A8OB0=0 ?>-E;04=> <OAB>, 4>:0B> ?@57 ;OB>B> =5 5
?@>1;5< 4>@8 40 3> 87:0@0B5 2 3@048=0B0 8;8 =0 B5@0A0B0.
@57 ABC45=8B5 <5A5F8 2=8<0209B5 B5<?5@0BC@0B0=0
AB0OB0 40 =5 ?040B ?>411-12 3@04CA0. ?0A=> 5 8 B5G5=85B>.

07<=>6020B A5 G@57 A5<5=0. 09-4>1@0B0 ?>G20 70
A5<5=0B0 =0 0AB@0B0 5 ;5:> =0B> @5=0B0 8 EC<CA=0. 0
?OAJG=8 8;8 3;8=5AB8 ?>G28 0AB@8B5 AJI> A5 E20I0B, =>
F25B>25B5 8< =5 A0 B>;:>20 :8G5AB8. 0A0640=5B> B@O120
40 AB0=5 <0@B-0? @8; 8 ?>:J;20 707-21 4=8.

0 0AB@8B5 @07:0720B, G5...

>30B> >3 AJB2>@8; A25B0 , 725748B5 =0 =515B> 18;8
@07=>F25B=8. =0 75<OB0 @0A;8 A0<> ?0?@0B, E2>I 8 B@528.
&25B0 >I5 =O<0;>. !:CG=> 18;> =0 75<OB0. 5B> 254=J6,
?0;028OB 2OBJ@ @5H8; 40 >B:@04=5 F25B0 >B =515B>. CE=0;
?@57 54=0 =>I :>;>B> A8;8 8<0; 8 2A8G:8 725748 >B
=515B> ?04=0;8 2J@EC 75<OB0. "0<, :J45B> B5 18;8 2J@EC
=>I=0B0 ?5;5=0, >AB0=0;8 A0<> 4C?G8F8. ?@57 B578
4C?G8F8 ?@57 =>IB0 ?@>=8:=0;0 4=52=0B0 A25B;8=0. =0
ACB@8=B0, :>30B> A;J=F5B> 873@O;>, ?> FO;0B0 75<O
@07FJD=0;8 <0;;8B5 725748G:8 =0 F25BOB0.

20<0 40>A:8 <>=0E0 @5H8;8 40 87:0G0B 28A>:0B0 ?;0=8=0,
70 40 284OB 725748B5 >B1;87>. J;3> 2J@25;8 B5 ?>
B@J=;820B0 3>@0. @><J:20;8 A5 ?@57 1>4;828B5
E2>9=>28 :;>=8. 0B5@5;8 A5 ?> 5420 7015;568<8
?;0=8=A:8 ?JB5:8. J@70;O;8 A5 ?> A=56=8B5 ;54=8F8.
>:0B> =5 AB83=0;8 4> 2J@E0 =0 =09-28A>:0B0 ?;0=8=0 =0
;B09. >:0B> AB83=0;8 4> 2J@E0, B5 2845;8, G5 725748B5 A0
?0: B>;:>20 28A>:> 2 =515B> 8 =5 A0 AB0=0;8 4>@8 <0;;>
?>-1;87>. JBOB 8< =0704 18; 4J;J3. >=0A8B5 >AB0=0;8
157 E@0=0 8 2>40, 87?>4@0;8 4> :@J2 BO;>B> A8, 4@5E8B5 8<
A5 87?>:JA0;8. >GB8 157 A8;8 B5 A5 A?CA=0;8 >B ?;0=8=0B0
8 87;57;8 =0 54=0 ?@5: @0A=0 ?>;O=0, :J45B> 1J;1C:0;>
G8AB> ?>B>G5 8 @0ABO;8 :@0A828 F25BO." >3;54=8 :070;
548=>B <>=0A8B5, =85 87<8=0E<5 B0:J2 4J;J3 ?JB, 70 40
2848< :@0A>B0B0 =0 725748B5 =0 =515B>, 0 A5 >:0720, G5 B5
6825OB BC:, =0 75<OB0". 7:>?0;8 B5 =O:>;:> @0AB5=8O 8 38
?@5=5A;8 2 <0=0AB8@0. 0@5;;8 38 0AB@8.